



The George Washington University

UNIVERSITY BULLETIN

2020-2021

Columbian College of Arts and Sciences
School of Business
Graduate School of Education and Human Development
School of Engineering and Applied Science
Elliott School of International Affairs
Health Sciences Programs in the School of Medicine and Health Sciences
School of Nursing
College of Professional Studies
Milken Institute School of Public Health

This bulletin covers GW's degree programs and courses for the schools listed here, with the regulations that pertain to academic programs. For information on GW's professional schools that are not part of this bulletin, see the following websites: www.law.gwu.edu and www.smhs.gwu.edu. The website www.gwu.edu contains institutional information as well as updated and expanded information on all GW schools, departments, and programs.

Information in this Bulletin is generally accurate as of September 2020. The University reserves the right to change courses, programs, fees, and the academic calendar, or to make other changes deemed necessary or desirable, giving advance notice of change when possible.

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Fall Semester 2020

Classes begin	Monday, August 31
Labor Day (no classes)	Monday, September 7
Fall break (no classes)	Friday, October 9
Thanksgiving break (no classes)	Wednesday, November 25–Saturday, November 28
Designated Friday	Tuesday, December 8
Last day of classes	Saturday, December 12
Final examinations	Monday, December 14–Tuesday, December 22

Spring Semester 2021

Classes begin	Monday, January 11
Martin Luther King Day (no classes)	Monday, January 18
Inauguration Day (no classes)	Wednesday, January 20
President's Day (no classes)	Monday, February 15
Spring break (no classes)	Monday, March 15–Saturday, March 20
Last day of classes	Monday, April 26
Make-up/reading day	Tuesday, April 27
Designated Monday	Wednesday, April 28
Make-up/reading days	Thursday, April 29–Friday, April 30
Final examinations	Monday, May 3–Tuesday, May 11
Commencement weekend	Thursday, May 13–Sunday, May 16
Spring degree conferral	Sunday, May 16

Summer Session 2021—dates to be announced

ABOUT THE UNIVERSITY

George Washington was determined to have a great national university in the nation's capital. His hope was that students from all parts of the country would gain a first-hand knowledge of the practice as well as the theory of republican government while being instructed in the arts and sciences. He bequeathed 50 shares of The Potomac Company "towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards it." Despite Washington's intentions, The Potomac Company folded and Congress never extended a "fostering hand," so the University did not take shape until a group of Baptist clergymen led by Reverend Luther Rice took up the cause. They raised funds for the purchase of a site and petitioned Congress for a charter. Congress insisted on giving the institution a nonsectarian charter stating "That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor, or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion."

Columbian College, as it was originally named, took up residence on College Hill, a 46-acre tract between the present 14th and 15th Streets extending from Florida Avenue to Columbia Road. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University.

In 1912, the University purchased 2023 G Street and rented 2024 Street, NW, establishing what would become its Foggy Bottom campus. Today, more than 100 buildings are situated on 43 acres in the heart of Washington, DC, bordered by the White House, John F. Kennedy Center for the Performing Arts, State Department, and World Bank, as well as numerous federal agencies and national galleries and museums.

GW's Virginia Science and Technology Campus (<http://virginia.gwu.edu/>), initiated for graduate studies, research projects, and professional development programs, is located along the high-tech corridor on Route 7, just to the west of Route 28, in Loudoun County. In 1998, GW established The George Washington University at Mount Vernon College; the Mount Vernon Campus (<http://www.gwu.edu/mount-vernon-campus/>) is on Foxhall Road in Northwest Washington.

The University's enrollments total approximately 27,800 students, of which about 12,000 are undergraduate students, 15,220 are graduate and professional students, and 580 are non-degree students. GW students come from all 50 states, Washington, DC, Guam, Puerto Rico, Virgin Islands, and 139 countries.

MISSION

Mission Statement

The mission of the George Washington University is to educate individuals in liberal arts, languages, sciences, learned professions, and other courses and subjects of study, and to conduct scholarly research and publish the findings of such research.

ACCREDITATION

Accreditation

The George Washington University is accredited by its institutional accrediting agency, the Middle States Commission on Higher Education (<http://www.msche.org/>).

Columbian College of Arts and Sciences

In Columbian College of Arts and Sciences (<http://columbian.gwu.edu/>), the bachelor and master of fine arts degree programs in interior architecture are accredited by the Council for Interior Design Accreditation (<http://accredit-id.org/>). The Department of Chemistry is on the approved list of the American Chemical Society. (<http://www.acs.org/>) The doctor of philosophy program in clinical psychology in the Department of Psychological and Brain Sciences and the doctor of professional psychology degree program in clinical psychology in the Department of Professional Psychology are accredited by the American Psychological Association (<http://www.apa.org/>). The master of arts degree program in speech-language pathology is accredited by the Education and Training Board of the Boards of Examiners in Speech-Language Pathology and Audiology (<http://www.ncsb.info/>). The master in public administration and the master of public policy degree programs are on the approved list of the National Association of Schools of Public Affairs and Administration (<http://www.naspaa.org/>). The master of forensic science degree programs in forensic chemistry and forensic molecular biology degree programs are accredited by the Forensic Science Education Programs Accreditation Commission (<http://www.fepac-edu.org/>). The art therapy program is accredited by the American Art Therapy Association (<http://arttherapy.org/>). The Corcoran School of the Arts and Design (<https://corcoran.gwu.edu/>) is accredited by the National Association of Schools of Art and Design. (<https://nasad.arts-accredit.org/>)

School of Business

The School of Business (<http://business.gwu.edu/>) is a member of The Association to Advance Collegiate Schools of Business (<http://www.aacsb.edu/>) (AACSB International). AACSB International accredits the school's undergraduate and graduate business administration and accountancy degree programs. The programs in accountancy satisfy the educational requirements for the certified public accountant and the certified management accountant professional examinations.

Graduate School of Education and Human Development

The Graduate School of Education and Human Development (<http://gsehd.gwu.edu/>) is a charter member of the American Association of Colleges for Teacher Education (<http://aacte.org/>) and is accredited under the Council for the Accreditation of Educator Preparation (<http://www.ncate.org/>) as a National Council for the Accreditation of Teacher Education legacy program and the District of Columbia State Education Agency, Office of the State Superintendent of Education (<http://osse.dc.gov/>), for its eligible undergraduate, master's, specialist, and doctoral degree programs. The master's programs in school counseling, clinical mental health counseling, and rehabilitation counseling and the doctoral program in counseling are accredited by the Council for Accreditation of Counseling and Related Educational Programs (<http://www.cacrep.org/>).

School of Engineering and Applied Science

In the School of Engineering and Applied Science (<http://www.seas.gwu.edu/>), the bachelor of science degree programs in civil, mechanical, biomedical, systems, electrical, and computer engineering are accredited by the Engineering Accreditation Commission of ABET, Inc (<http://www.abet.org/>). The bachelor of science in computer science degree program is accredited by the Computing Accreditation Commission of ABET, Inc (<http://www.abet.org/>).

Elliott School of International Affairs

The Elliott School of International Affairs (<http://elliott.gwu.edu/>) is a member of the Association of Professional Schools of International Affairs (<http://www.apsia.org/>).

Law School

The Law School (<http://www.law.gwu.edu/>) is a charter member of the Association of American Law Schools (<http://www.aals.org/>) and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association (https://www.americanbar.org/groups/legal_education/).

School of Medicine and Health Sciences

The School of Medicine and Health Sciences (<http://smhs.gwu.edu/>) has had continuous approval by its accrediting body, which is currently the Liaison Committee on Medical Education (<http://www.lcme.org/>), sponsored jointly by the American Medical Association (<http://www.ama-assn.org/>) and the Association of American Medical Colleges (<https://www.aamc.org/>). The bachelor of science in health sciences in the field of medical laboratory sciences, all post-baccalaureate certificates in medical laboratory sciences, and the master of science in health sciences in laboratory medicine are accredited by the National Accrediting Agency for Clinical Laboratory Science (<http://www.nacls.org/>). The master's degree program in physician assistant is accredited by the Accreditation Review Commission on Education for the

Physician Assistant (<http://www.arc-pa.org/about/>). The doctor of physical therapy program is accredited by the Commission on the Accreditation of Physical Therapist Education (<http://www.captconline.org/>) of the American Physical Therapy Association.

School of Nursing

In the School of Nursing (<https://nursing.gwu.edu/>), the bachelor of science and master of science in nursing and the doctor of nursing practice degree programs are accredited by the Commission on Collegiate Nursing Education (<http://www.aacn.nche.edu/ccne-accreditation/>). The bachelor of science in nursing is approved by the Virginia Board of Nursing (<http://www.dhp.virginia.gov/nursing/>). The master of science and the doctor of nursing practice degree programs are approved by the Washington, DC, Board of Nursing (<http://doh.dc.gov/service/board-nursing/>).

College of Professional Studies

The master of professional studies in sustainable urban planning degree program in the College of Professional Studies (<https://cps.gwu.edu/>) is accredited by the Planning Accreditation Board (<https://www.planningaccreditationboard.org/?id=30>).

Milken Institute School of Public Health

The public health programs of the Milken Institute School of Public Health (<https://publichealth.gwu.edu/>) (SPH) are fully accredited by the Council on Education for Public Health (<https://ceph.org/>). In 2016, the Milken Institute SPH was awarded a seven-year accreditation through July 1, 2023. The program in health administration is fully accredited by the Commission on Accreditation of Healthcare Management Education (<https://www.cahme.org/>). The Milken Institute SPH is a member of the Association of Schools and Programs of Public Health (<https://www.aspph.org/>).

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Board of Trustees

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School of Engineering and Applied Science—John Lach

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Law School—Dayna Bowen Matthew, Dean

School of Medicine and Health Sciences—Barbara L. Bass

School of Nursing—Pamela R. Jeffries

College of Professional Studies—Christopher J. Deering, Interim Dean

Milken Institute School of Public Health—Lynn R. Goldman

DEGREES OFFERED

Degrees offered by the George Washington University

Columbian College of Arts and Sciences: Bachelor of Arts (B.A.), Bachelor of Fine Arts (B.F.A.), Bachelor of Science

(B.S.), Master of Arts (M.A.), Master of Fine Arts (M.F.A.), Master of Forensic Sciences (M.F.S.), Master of Public Administration (M.P.A.), Master of Public Policy (M.P.P.), Master of Science (M.S.), Master of Philosophy (M.Phil.), Master of Psychology (M.Psy.), Doctor of Philosophy (Ph.D.), and Doctor of Psychology (Psy.D.)

School of Medicine and Health Sciences: Bachelor of Science in Health Sciences (B.S.H.S.), Master of Science in Health Sciences (M.S.H.S.), Doctor of Health Sciences (D.HSc.), Doctor of Medicine (M.D.), Doctor of Occupational Therapy (O.T.D.), Doctor of Philosophy (Ph.D.), and Doctor of Physical Therapy (D.P.T.)

Law School: Juris Doctor (J.D.), Master of Laws (LL.M.), Master of Studies in Law (M.S.L.), and Doctor of Juridical Science (S.J.D.)

School of Engineering and Applied Science: Bachelor of Science (B.S.), Bachelor of Arts (B.A.), Master of Science (M.S.), Master of Engineering (M.Eng.), Engineer (Engr.), Applied Scientist (App.Sc.), Doctor of Engineering (D.Eng.), and Doctor of Philosophy (Ph.D.)

Graduate School of Education and Human Development: Master of Arts in Education and Human Development (M.A.Ed.&H.D.), Master of Arts in Teaching (M.A.T.), Master of Education (M.Ed.), Education Specialist (Ed.S.), Doctor of Education (Ed.D.), and Doctor of Philosophy (Ph.D.)

School of Business: Bachelor of Science in Business (B.S.), Master of Accountancy (M.Accy.), Master of Business Administration (M.B.A.), Master of Human Resource Management (M.H.R.M.), Master of Interdisciplinary Business Studies (M.I.B.S.), Master of Tourism Administration (M.T.A.), and Doctor of Philosophy (Ph.D.)

Elliott School of International Affairs: Bachelor of Arts (B.A.), Bachelor of Science (B.S.), Master of Arts (M.A.), Master of International Policy and Practice (M.I.P.P.), and Master of International Studies (M.I.S.)

Milken Institute School of Public Health: Bachelor of Science (B.S.), Master of Science (M.S.), Master of Public Health (M.P.H.), Master of Health Administration (M.H.A.), Doctor of Public Health (Dr.P.H.), and Doctor of Philosophy (Ph.D.)

College of Professional Studies: Associate in Professional Studies (A.P.S.), Bachelor of Professional Studies (B.P.S.), and Master of Professional Studies (M.P.S.)

School of Nursing: Bachelor of Science in Nursing (B.S.N.), Master of Science in Nursing (M.S.N.), Doctor of Nursing Practice (D.N.P.)

UNIVERSITY REGULATIONS

Students enrolled in the University are required to conform to the following regulations and to comply with the requirements and regulations of the school in which they are registered. Students who withdraw or are suspended, or who, for any other reason, are not registered at the University for one semester or more, may reapply and, if readmitted, continue their program only under the regulations and requirements in force at the time of return.

If a student knowingly makes a false statement or conceals material information on an application for admission or any other University document, the student's registration may be canceled. If such falsification is discovered after the student has matriculated at the University, the student may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the faculty) for subsequent registration in the University.

Electronic Mail and Official University Communication

The University uses the GW e-mail address associated with your NetID to communicate academic, administrative, and emergency information to you. Other e-mail addresses cannot be used by the system that GW uses to send important notices to all users. If you do not intend to check your GW e-mail account frequently, be sure to log in to the GW e-mail system and set up e-mail forwarding to an account that you do check.

UNDERGRADUATE

Undergraduate Regulations

Registration

Information on registration procedures is stated on the Office of the Registrar's website (<http://registrar.gwu.edu/how-register/>) and in the Schedule of Classes (<http://my.gwu.edu/mod/pws/>), which is available in advance of each semester.

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing. Students may not register concurrently in this University and another institution without the prior permission of the advising office of the school in which they are registered in this University. With the exception of students enrolled in a joint degree program, registration in more than one school of the University requires the written permission of the student advising offices concerned, prior to registration. Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

Eligibility for Registration

Registration for the following categories of on-campus students is held on the days of registration indicated on the

Registrar's website (<https://registrar.gwu.edu/>). A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to non-degree students by the Office of Non-Degree Students (<https://nondegree.gwu.edu/>) when space is needed for degree candidates.

New Student—Upon receipt of a letter of admission and payment of any required deposit, new students are eligible for registration on the stated days of registration. Registration for new first-year students is typically conducted on stated days as part of the New Student Orientation program (<https://students.gwu.edu/new-student-orientation/>).

Readmitted Student—A student previously registered in the University who was not registered for courses or continuous enrollment, or on an approved leave of absence, during the preceding semester must apply for and be granted readmission by the appropriate admitting office before being eligible for registration.

Continuing Student—A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

Completion of Registration

Students who register for courses in any semester or session incur a financial obligation to the University. Registration is not complete until all financial obligations have been fulfilled. Tuition and fees are due and must be paid in full by the first day of the University's fall and spring semesters and summer sessions as indicated on the Academic Calendar (<http://bulletin.gwu.edu/academic-calendar/>). Students may be de-registered for non-payment, but failure to drop registration, or to attend classes, does not exempt students from their financial obligation.

Registration for Consortium Courses

Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area, Inc. (<https://www.consortium.org/>), should consult the program announcements of the other institutions. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught, whether they are eligible for the course, and whether there is space in the course. Consortium registration forms and detailed information concerning Consortium policy and procedures are available on the Office of the Registrar's website (<http://registrar.gwu.edu/consortium/>). Specific inquiries should be addressed to the Office of the Registrar.

Adding, Dropping, and Withdrawing from Courses

The following information pertains to courses taught on a traditional 15-week schedule in the fall and spring semesters.

Academic deadlines for fall and spring semester courses taught on a traditional schedule are available on the Office of the Registrar's website (<http://registrar.gwu.edu/>). Academic deadlines for fall and spring semester courses taught on a non-traditional schedule can be found at the respective school's advising office.

Adding and Dropping Courses

During the registration period and before the end of the second week of classes, students may add or drop courses using the GWeb Information System. (<http://my.gwu.edu/>)

During the third and fourth weeks of classes (after the second week and prior to the end of the fourth week), students may continue to drop courses using the GWeb Information System (<http://my.gwu.edu/>). Students who wish to add a course must complete a Registration Transaction Form-EZ (RTF-EZ (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/RTF-EZ.pdf>)) and submit it in person to the Student Services Hub (<https://studentserviceshub.gwu.edu/visit-student-services-hub/>). Adding a course after the second week of classes requires the signature of the instructor or other authorized member of the department. A course dropped during the first four weeks of classes will not appear on the student's transcript.

After the fourth week of classes, students who wish to add a course must complete a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) (RTF) and submit it to their advising office. Adding a course after the fourth week of classes continues to require the signature of the instructor or other authorized member of the department.

Withdrawing from Courses

Students may withdraw from courses after the fourth week of classes. A course from which a student successfully withdraws will be assigned a notation of *W* (Authorized Withdrawal).

For undergraduate students in the School of Medicine and Health Sciences and School of Nursing the deadline for withdrawing from a course is the end of the tenth week of classes in the fall or spring semester in which the student is enrolled in the course. After the fourth week of classes but before the end of the tenth week, a student who wishes to withdraw from any or all courses for which they are registered must submit a petition, along with substantial supporting documentation, to their advising office for consideration. Submission of a petition does not guarantee approval.

For undergraduate students in the College of Professional Studies (CPS), information on withdrawing from courses can be found in the CPS regulations (p. 1140) section of this Bulletin.

Undergraduate students in Columbian College of Arts and Sciences, Elliott School of International Affairs, GW School of Business, Milken Institute School of Public Health, and School of Engineering and Applied Science may withdraw from any or all undergraduate courses in those schools through the last day of classes in the fall or spring semester in which the student

is enrolled in the course. In order to withdraw from a course after the tenth week of classes, the student must submit a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) (RTF) to their advising office, but no supporting documentation is required. The advising office will process the RTF unless withdrawing from the course would result in the student taking fewer credits than they are required to take.

Failure to withdraw by the stated deadlines can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

All charges for courses from which a student withdraws are subject to the refund policy listed under Fees and Financial Regulations (p. 54) in this Bulletin.

Changes in Program of Study

Changes Within a School—A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the advising office of the school in which he or she is registered. Change from one major field to another within the same school may be made with the approval of the advising office.

Undergraduate Transfer Within the University—Students are admitted to a home school at the time of their admission to the University. Those who wish to change their home school must submit an internal transfer request (<https://registrar.gwu.edu/forms/>) to the Office of the Registrar. A university-wide graduation requirement is that students must be registered in the school in which their primary major is housed. Some schools may require that certain prerequisite courses have been taken and that minimum grades have been earned before the transfer is processed. Transfer into a school does not guarantee placement in a limited-enrollment major and students will be transferred into an undeclared major. Requests to transfer schools will not be accepted prior to the second semester of the student's enrollment at GW. Students should meet with an academic advisor in both their current school and the school into which they are requesting to transfer prior to submitting an internal transfer request. Additional information, including deadlines, limited-enrollment majors, and prerequisites for internal transfers, is available on the Office of the Registrar's website (<http://registrar.gwu.edu/undergraduate-internal-transfer/>).

Grades

Grades are made available to students through the GWeb Information System (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin/) after the close of each semester.

Undergraduate Grading System

The following grading system is used for undergraduate students: *A*, Excellent; *B*, Good; *C*, Satisfactory; *D*, Low Pass; *F*, Fail; other grades that may be assigned are *A–*, *B+*, *B–*, *C+*, *C–*, *D+*, and *D–*. Symbols that may appear include *AU*, Audit;

I, Incomplete; *IPG*, In Progress; *R*, Need to Repeat Course; *RP*, Repeated Under Academic Forgiveness Policy; *W*, Authorized Withdrawal; and *Z*, Unauthorized Withdrawal.

Repeating Courses for Credit—For courses that do not specifically state that repetition for credit is permitted, an undergraduate student may, with permission of the instructor teaching the course in question, repeat for credit a course in which a grade of B- (2.75) or below was received. The student must complete an RTF form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) to register. Credit for the repeated course will not count toward degree requirements; the grade earned in the repeated course will, however, be included in the student's cumulative grade-point average.

Students also may repeat a course under the Undergraduate Academic Forgiveness Policy, with the grade earned in the repeated course included in the student's cumulative grade-point average. See details of the policy, below.

Unauthorized Withdrawal—The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. The symbol of *Z* is not a grade but an administrative notation.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's inability to complete the required work of the course during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, the instructor may initiate a grade change to the symbol *I*. The work must be completed within the designated time period agreed upon by the instructor, student, and school, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other courses during this period, the student must register for continuous enrollment status.

When work for the course is completed, the instructor will complete a grade change form and submit it to the Office of the Registrar. The final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade is converted automatically to a grade of *F*,

Failure, 0 quality points, and the grade-point average and academic standing recalculated.

Grade-Point Average

The following credit values are used in computing the undergraduate grade-point average: A, 4.0; A-, 3.7; B+, 3.3; B, 3.0; B-, 2.7; C+, 2.3; C, 2.0; C-, 1.7; D+, 1.3; D, 1.0; D-, .7; F, 0. Quality points are computed based on the credit value for each credit taken. Quality points divided by the number of credits for which the student has registered as a degree-seeking student equals the GPA. Both quality points and credits used in this calculation are based on the student's record in this university.

Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and both the first grade and that received in the repeated course are included in calculating the grade-point average. Courses marked *AU*, *I*, *IPG*, *P*, *NP*, *R*, *W*, or *Z* are not considered in determining the GPA; however, once a final grade is recorded for a course originally marked *I* or *RP*, the grade will be considered in that determination. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Undergraduate Academic Forgiveness Policy

Undergraduate students are eligible to repeat for credit and grade forgiveness three undergraduate-level courses taken at GW in which they received a grade of *D+* (1.3) or below (except if the failing grade was due to a violation of GW's Code of Academic Integrity). With the approval of their academic advisor, a student may repeat a course under this policy at any time during their enrollment at GW; however, a course is not eligible for this policy if the student has taken a subsequent course for which the initial course is a prerequisite. The student's registration, including the repeated course, may not exceed 18 credits in the semester in which the course is repeated; students in the School of Engineering and Applied Science may not exceed 19 credits.

Under this policy, the original grade remains on the transcript until the student repeats the course. Once the course is repeated, a permanent notation of *RP* replaces the grade for the first attempt of the course in the semester in which it was taken. The grade earned in the repeated course appears on the transcript in the semester in which the course was repeated. Only the grade earned for the repeat enrollment is factored into the student's cumulative grade-point average. The grade for the repeat enrollment is the final grade for the course, regardless of whether it is above or below the original grade. In the case that a student wishes to repeat more than three courses for academic forgiveness, they must first receive

approval from the chair of the department under which the course is housed

Undergraduate Degree Requirements

To earn a bachelor's degree, students must complete 120 academic credits; meet the University General Education Requirement; school-specific requirements of their home school and requirements of at least one major within their home school; fulfill the residence requirement; and have a cumulative grade-point average of at least 2.0. Additional school-specific regulations may apply.

University General Education Requirement

Under the University General Education Requirement, undergraduate are required to take five Tier One courses (for a total of 15 to 16 credits) in a range of disciplines drawn from the social sciences, humanities, natural or physical sciences with a laboratory component, and mathematics or statistics. The general education curriculum engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that meaningfully enhance their analytical skills, develop communication competencies, and familiarize them with modes of inquiry. See Undergraduate Education at GW (p. 42) for more information.

Assignment of Credits

A total of 37.5 hours of work per semester is required for each credit earned. Work for 1 credit consists of 50 minutes of direct or guided interaction, or one laboratory period, or 1.5 hours of studio class, plus 100 minutes of independent learning per week during the course of a normal 15-week semester, which includes one week for examinations. Other combinations of time are possible, where appropriate (for example, as a higher proportion of instructional/interactional time for a laboratory or a lower proportion of instructional/interactional time for independent research). Class and study time may exceed these minimums to ensure that students meet course learning goals. See the full policy (https://provost.gwu.edu/files/downloads/Resources/Assignment-of-Credit-Hours_Final_Oct-2016.pdf) for additional information.

Residence Requirement

To earn a bachelor's degree, students must earn at least 60 credits at or through GW, which may include a University-authorized study abroad and study away program. At least 30 of the 60 credits earned at or through GW must be in upper-level courses (numbered 2000 or above); at least 12 credits in upper-level courses must be in the major field, and at least 6 credits in upper-level courses must be in the minor field, if sought.

Academic Workload and Student Status

For the purpose of defining student status, undergraduates taking 12 or more credits per semester are considered to be full-time, those taking 6 to 11 credits per semester are considered to be half-time, and all others are considered to be part-time. Generally, an undergraduate becomes a sophomore

upon completion of 30 credits, a junior upon completion of 60 credits, and a senior upon completion of 90 credits.

A full-time undergraduate student on academic probation may register for up to 13 credits.

Undergraduate students taking more than 18 credits per semester will be charged at the rate of 1 credit for each credit exceeding that limit, with the exception of students in the School of Engineering and Applied Science, who are not charged for a 19th credit if required by their program.

Unless otherwise indicated under the program, all programs of study are offered on both a full-time and part-time basis. International students in F-1 or J-1 immigration status may pursue only full-time programs of study, and such students must register for and complete a workload each semester as defined by federal regulations.

Academic Standing

Academic standing is determined at the end of each fall and spring semester. Undergraduate students are considered to be in good academic standing if at the end of any semester their grade-point average (GPA) for that semester and their cumulative GPA are 2.0 or above.

Academic probation: Undergraduate students are placed on academic probation if at the end of any semester their GPA for that semester or their cumulative GPA is below 2.0. Students on academic probation must fulfill all probation-related requirements of their home school in order to register for courses.

Suspension for poor scholarship: Undergraduate students who have attempted at least 24 credits at the University (to include all letter, I, NP, P, R, W, and Z grades) will be subject to suspension for poor scholarship if they meet any of the following criteria:

- The student's current semester GPA is below 1.0;
- The student has completed two successive semesters without achieving semester and cumulative GPAs of 2.0 or above; or
- The student has a semester or cumulative GPA below 2.0 in any three semesters at the University.

Readmission after suspension for poor scholarship: Students suspended for poor scholarship may apply for readmission after one semester following the term of suspension. To be considered for readmission, students must earn a minimum of 12 credits at an accredited institution of higher education and demonstrate a likelihood of future academic success at the University. Students are encouraged to meet with a GW academic advisor to discuss course options at the other institution that may strengthen their readmission application. Readmission is at the discretion of the school to which the student applies and is never guaranteed.

Credit will not be assigned for academic work completed while a student is suspended; however, readmitted students may petition their advising office to transfer credits from other colleges or universities in accordance with University regulations (see Earning Transfer Credit after Matriculation).

Students suspended twice for poor scholarship will not be readmitted to the University.

Dean's List

Undergraduate students who, in any one semester, earn 12 credits or more and attain a minimum semester grade point average of 3.75 in letter-graded coursework, pass all non-graded credit courses, and do not have any Unauthorized Withdrawals (Z) or Incompletes (I), are placed on the Dean's List for that semester.

Latin Honors

Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4–3.59; *magna cum laude*, 3.6–3.79; *summa cum laude*, 3.8–4.0. The grade-point average includes all coursework completed at GW. To be eligible for an honors designation, a student must complete at least 60 credits of coursework with letter grades (grades included in calculating the grade-point average) at GW.

The grade-point average is calculated, and the honors designation is entered on the transcript and diploma of those students who earn an honors designation. If Latin honors are entered in the commencement program, honors status will be determined on the basis of work completed by the term prior to the ceremony and entered only for those students who have completed seven-eighths of the credits required for the degree. Latin honors indicated on the diploma are calculated on the basis of all coursework completed. The diploma and transcript are the official indication that a degree was conferred and Latin honors awarded.

Special Honors

Special Honors may be awarded by the faculty to any undergraduate member of the graduating class for outstanding achievement in the student's major field on recommendation of the major department. The student must fulfill all of the following requirements: (1) Candidacy for Special Honors must be approved by the faculty member representing the major department or field no later than the beginning of the semester following that in which the student completes 90 credits; (2) such other conditions as may be set at the time the candidacy is approved must be met; (3) at least one-half of the courses required for the degree must have been completed at GW; and, (4) the specific minimum requirement of the school in which the student is registered must be fulfilled as follows: (a) Columbian College of Arts and Sciences—a minimum grade-point average of 3.0 on all coursework taken at GW; (b) the Elliott School of International Affairs—a minimum grade-point

average of 3.7 on all coursework taken at GW; (c) the Milken Institute School of Public Health—a minimum grade-point average of 3.25 on all coursework taken at GW. Special Honors awards appear on the transcript.

Double Majors

Undergraduates can declare no more than two majors; they can pursue no more than two minors in addition to the two majors if they wish, but generally are advised against pursuing too many specializations.

Students who graduate with the requisite credits for one degree, having fulfilled the major requirements in more than one department, program, and/or school, will receive one degree. They must select a primary degree and major, as only the primary degree will be noted on the transcript, along with the two majors.

Students who complete the major requirements in their home school and the major requirements in a second school will receive the degree in the major of their home school and a notation on the transcript that testifies to completion of requirements for a secondary major. It is understood that requirements of the secondary major do not include the general education requirements of the second school.

Students who complete the major requirements for a degree different from the one they will receive in their home school will receive the degree of the relevant major in their home school. For example, a SEAS student completing the degree requirements for a BS in computer science and the major requirements for a BA in fine arts will receive a BS in computer science with a secondary major in fine arts.

Students who complete two majors in the same school also receive one degree with two majors; if one major leads to a BA and one to a BS, the student must declare a primary major and will receive the degree associated with that major.

Students whose first major leads to a BS degree must complete the BS curriculum for a second major if the second major offers both a BA and BS curriculum. For example, students whose primary degree and major is a BS in finance who want a second major in economics, chemistry, biology, or computer science, must complete the BS curriculum for these majors.

Minors

Undergraduates can declare no more than two minors. Students may not declare a minor in the same subject in which they have declared a major. Students should address specific questions about this policy to the school's advising office.

Double Degrees

To earn two bachelor's degrees at the same time, students must be admitted to the school that offers the second degree; satisfy the general and major requirements for both degrees; complete at least 30 additional credits beyond the credits required to earn one degree or a total of 150 credits; and earn

90 credits in residence at GW. Students interested in pursuing this option must have a cumulative grade-point average of at least 3.3. Requests for consideration should be sent to the student's advising office.

Study Abroad and Other Forms of Study Away

The University distinguishes between study abroad and all other forms of study away from campus that may contribute to a GW degree. Study abroad programs are GW programs either run directly by the University or through agreements between GW and other schools or educational providers. These programs have rules for transferring credit that are different from other forms of study away from campus either in the United States or another country. Other forms of study away might include courses taken at universities within the United States or summer or winter break programs in other countries.

Study Abroad

Undergraduates who wish to study abroad during the academic year should contact the Office for Study Abroad (<https://studyabroad.gwu.edu/>) concerning eligibility, procedures, and requirements for participation. Semester and academic year participants are billed GW tuition and a study abroad program fee rather than the tuition and fees indicated by the visited school or program. To be eligible for the transfer of academic credit from study abroad, GW students must select a program from the University's authorized list of study abroad programs and enroll in a full-time equivalent workload while abroad. Students must have a 2.75 cumulative grade-point average at the time of application and must have completed 45 credits prior to departure. Students who have a significant disciplinary history or who are on academic or disciplinary probation at the time of their planned study abroad are not eligible to participate. Non-GW course credits earned in authorized programs with a minimum grade of C are transferable toward the appropriate degree at GW, provided there is no duplication of previous coursework and the designated faculty member determines a GW equivalent for each course. Participants agree to abide by all procedures and regulations for study abroad as indicated in the Study Abroad Handbook and Participation Agreement, which are included in the GW Passport application (<http://passport.gwu.edu/?FuseAction=programs.AdvancedSearch>). In addition to semester and academic year programs, study abroad is available at varying locations during the summer.

Other Forms of Study Away

Other forms of study away from GW that may contribute to a degree include summer or temporary study at a university within the United States; summer or temporary study in another country through direct student enrollment at a foreign university or with an educational provider; and all study in any location and of any duration that is not billed through GW and not shown on the student's individual account.

Students may earn a maximum of 9 credits (or 3 courses to a maximum of 12 credits) combined in all such study away

programs to be applied toward an undergraduate degree at GW.

For non-GW credit earned in a study away program to be applied toward a GW degree, domestic transfer credit must have been taken at a institutionally-accredited institution. International transfer credit must have been taken at an institution recognized by the country's Ministry of Education. Such credit also must be pre-approved by the relevant GW faculty member(s) and school-based advisors and the Office of the Registrar. Procedures for transferring credit from other universities can be found on the Office of the Registrar (<https://registrar.gwu.edu/transfer/>) website.

Graduate students who wish to study away should consult their program's advising office.

Continuous Enrollment Status

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses through GW or when registered for continuous enrollment and engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in which a grade of Incomplete or In Progress was received; or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the student break continuous enrollment at the University and not request and be granted a leave of absence (see below), they must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

Leave of Absence

A degree student who finds it necessary to interrupt active pursuit of the degree may petition their advising office for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to the use of University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that they have paid toward the expenses of that academic term. If the notification of the

call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in their courses with the privilege of returning to complete all required coursework at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of their activation to the Office of Student Accounts (<http://studentaccounts.gwu.edu/>) and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, the student may petition their advising office for a leave of absence for a specified period that may not exceed five years. Student advisors are encouraged to grant any request to extend the leave of absence beyond the customary one-year period if required by the duration of military service.

Eligibility for Graduation

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer session at the close of which the degree is to be conferred; all degree requirements must be completed by the last day of final examinations for that semester or summer session. Undergraduates who pursue a double major across two schools must complete the primary major in their home school in order to graduate. A second major may supplement the primary major but may not substitute for it.

The minimum cumulative grade-point average required for graduation is 2.0 for undergraduate students.

Participation in the Commencement Ceremony

Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. With the exception of doctoral candidates, all students, graduate or undergraduate, who need no more than 9 credits to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credit is firm and not subject to petition.

Complete Withdrawal from the University

Undergraduate degree-seeking students who wish to withdraw from all courses during a given semester must submit the Complete Withdrawal Form for Undergraduates (<https://registrar.gwu.edu/forms/>) to their advisor and contact the Office for Student Success (<https://studentsuccess.gwu.edu>)

for assistance in finalizing their withdrawal. The deadline for complete withdrawal from all courses is the end of the tenth week of classes. Complete withdrawal after the tenth week requires a petition to the student's advising office. Submission of a petition does not guarantee approval.

All charges for courses from which the student withdraws are subject to the refund policy (<https://registrar.gwu.edu/withdrawals-refunds/>) found on the website of the Office of the Registrar. Failure to complete the Complete Withdrawal Form (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/completewithdrawal.pdf>) can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

The University is authorized to award the degree of associate in general studies under designated circumstances. This degree may be awarded to students in good standing who must leave GW after completing 60 credits in residence in a degree-granting GW school. Students should consult their school's advising office for additional requirements for awarding of the associate in general studies.

Non-Degree Students

The Office of Non-Degree Students (<https://nondegree.gwu.edu/>) makes credit-bearing courses available to those who are not degree candidates at GW and to students who have been admitted to the University for a future semester. Non-degree students may enroll for a maximum of 18 credits per semester at the undergraduate level, except in special circumstances as approved by the Director of the Office of Non-Degree Students. Special program credit limits may vary. A limited number of credits taken as a non-degree student may be applied toward a GW degree program, subject to determination by the school or college that offers the program. Some medical and law courses are available to non-degree students. Contact the Law School (<https://www.law.gwu.edu/information-non-degree-students/>) or School of Medicine and Health Sciences (<https://smhs.gwu.edu/>) for more information.

Non-degree applicants must have appropriate academic preparation prior to enrollment. This includes course prerequisites, which are specified in course descriptions in this Bulletin. An applicant who previously attended this or another institution of higher education must be in good standing prior to enrolling as a non-degree student. The University determines, on a case-by-case basis, whether an applicant who has been suspended or dismissed from any educational institution is eligible to enroll as a non-degree student. An applicant who has been denied admission to any school or college of this university is not eligible to enroll as a non-degree student for the same semester for which the application was denied. The University reserves the right, at its sole discretion, to deny admission to any applicant if the University determines that admission is not in the best interest of either the applicant or the University. Application and registration information is available on the Office of Non-Degree Students (<https://nondegree.gwu.edu/>) website. Non-

degree students are subject to enrollment, withdrawal, and refund policies stated on the Office of the Registrar (<https://registrar.gwu.edu/non-degree-students/>) website.

University Policies and Definitions

Right to Change Rules and Programs

The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The University reserves the right to make changes in programs without notice whenever circumstances warrant such changes.

University Policy on Equal Opportunity

The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the University, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to the University's Office of Equal Employment Opportunity and Affirmative Action (<http://hr.gwu.edu/equal-employment-opportunity/>) at (202) 994-9656. Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission, or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to the University's Title IX Coordinator, the Vice Provost for Diversity, Equity, and Community Engagement at (<http://diversity.gwu.edu/>) (202) 994-7440.

Questions regarding the protections against discrimination on the basis of disability may be directed to the University's Disability Services Coordinators (<https://disabilitysupport.gwu.edu/our-team/>). Students may contact the Associate Dean of Students, Administrative Services, Office of the Dean of Students at (202) 994-6710; and other members of the University community may contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9633.

To request disability accommodations, students should contact the Office of Disability Support Services at (202) 994-8250 or dss@gwu.edu. Employees and other members of the University community should contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9656 or eeo@gwu.edu.

Academic Integrity

The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for conducting research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels. The University Code of Academic Integrity can be found at the Office of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>).

Patent and Copyright Policies

Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of University resources are subject to the University's patent and copyright policies. See The Office of the Vice President for Research (<https://research.gwu.edu/>).

Human Research Requirements

Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) (<https://humanresearch.gwu.edu/>) approval before collecting any data. For more information see The Office of the Vice President for Research (<http://research.gwu.edu/>).

English for Academic Purposes

Undergraduate international students whose TOEFL, IELTS, or PTE scores fall below established cut-off points are required to take one or more courses in the English for Academic Purposes (EAP) program. Undergraduate students receive credit for EAP courses. For detailed information concerning this requirement consult the English for Academic Purposes Program website (<http://eap.columbian.gwu.edu/placement-eap-courses/>).

Name of Record

A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

Attendance

Students may attend only those courses for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all

absences must be excused by the instructor before provision is made to make up the work missed.

Credit

A credit may be defined as one 50-minute class period, one laboratory period, or 1.5 hours of studio class a week for one semester. Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

Auditing

An individual who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a course (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. Tuition is charged at the prevailing rate. A student may not change from audit to credit status or vice versa after the end of the eighth week of classes.

Earning Transfer Credit after Matriculation

All students who plan to attend another institution while enrolled at GW and apply credits earned at that institution toward GW degree requirements must complete an Undergraduate Transfer Credit Approval Form (https://registrar.gwu.edu/sites/g/files/zaxdzs2171/f/Transfer_Credit_Approval_Form2018.pdf) and secure the written approval of the GW department that offers a comparable course and from the student's advising office. With the exception of credits earned from GW study abroad and GW domestic study away programs, no more than 9 credits (or 3 courses to a maximum of 12 credits total) may be transferred from colleges or universities after matriculation.

Transcripts of Record

Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to their unofficial student record through the GWeb Information System (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin/).

Student Conduct

All students, upon enrolling and while attending this University, are subject to the provisions of the *Guide to Student Rights and Responsibilities*, which outlines student freedoms and responsibilities of conduct, including the Code of Student Conduct (<http://studentconduct.gwu.edu/code-student-conduct/>), and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Division of Student Affairs (<http://students.gwu.edu/>) or from advising

offices. Sanctions for violation of these regulations may include permanent expulsion from the University. Regulations or requirements applicable only to a particular program, facility, or class of students may not be published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

Right to Dismiss Students

The University reserves the right to dismiss or exclude any student from the University, or from any course or courses, whenever, in the interest of the student or the University, the University Administration deems it advisable.

University Policy on the Release of Student Information

The Family Educational Rights and Privacy Act (FERPA) (<http://registrar.gwu.edu/university-policies/#ferpa>) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credits earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height, weight, and age of members of athletic teams, as well as likenesses used in University publications. Date of birth will be considered directory information only for the purpose of complying with applicable laws. A student who does not wish such directory information released must file written notice to this effect in the Office of the Registrar (<http://registrar.gwu.edu/>).

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Student Affairs or the offices of the academic deans. The full statement also appears on the Office of the Registrar's website.

Student Identification Number/Social Security Number

The University has converted from use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar (<https://registrar.gwu.edu/transfer/>).

Property Responsibility

The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the University Police Department. (<https://safety.gwu.edu/police/>)

GRADUATE

Graduate Regulations

Registration

Information on registration procedures is stated on the Office of the Registrar's website (<http://registrar.gwu.edu/how-register/>) and in the Schedule of Classes (<http://my.gwu.edu/mod/pws/>), which is available in advance of each semester.

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing. Students may not register concurrently in this University and another institution without the prior permission of the advising office of the school in which they are registered in this University. With the exception of students enrolled in a joint degree program, registration in more than one school of the University requires the written permission of the student advising offices concerned, prior to registration. Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

Eligibility for Registration

Registration for the following categories of on-campus students is held on the days of registration indicated in the Schedule of Classes (<http://my.gwu.edu/mod/pws/>). A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to non-degree students by the Office of Non-Degree Students (<https://nondegree.gwu.edu/>) when space is needed for degree candidates.

New Student—Upon receipt of a letter of admission and payment of any required deposit, new students are eligible for registration on the stated days of registration.

Readmitted Student—A student previously registered in the University who was not registered during the preceding semester must apply for and be granted readmission by the appropriate admitting office before being eligible for registration.

Continuing Student—A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

Completion of Registration

Students who register for courses in any semester or session incur a financial obligation to the University. Registration is not complete until all financial obligations have been fulfilled. Tuition and fees are due and must be paid in full by the first day of the University's fall and spring semesters and summer sessions as indicated on the Academic Calendar (<http://bulletin.gwu.edu/academic-calendar/>). Students may be de-registered for non-payment, but failure to drop registration, or to attend classes, does not exempt students from their financial obligation.

Registration for Consortium Courses

Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area (<https://www.consortium.org/>) should consult the program announcements of the other institutions. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught whether they are eligible for the course and whether there is space in the course. Consortium registration forms and detailed information concerning Consortium policy and procedures are available on the Office of the Registrar's website (<http://registrar.gwu.edu/consortium/>). Specific inquiries should be addressed to the Office of the Registrar.

Adding, Dropping, and Withdrawing from Courses

The following information pertains to courses taught on a traditional 15-week schedule in the fall and spring semesters. Academic deadlines for fall and spring semester courses taught on a traditional schedule are available on the Office of the Registrar's website (<http://registrar.gwu.edu/>). Academic deadlines for fall and spring semester courses taught on a non-traditional schedule can be found at the respective school's advising office.

Dropping and Adding Courses

During the registration period and before the end of the second week of classes, students may add or drop courses using the GWeb Information System. (<http://my.gwu.edu/>)

During the third and fourth weeks of classes (after the second week and prior to the end of the fourth week), students may continue to drop courses using the GWeb Information System (<http://my.gwu.edu/>). Students who wish to add a course must complete a Registration Transaction Form-EZ (RTF-EZ (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/RTF-EZ.pdf>)) and submit it in person to the Student Services Hub (<https://studentserviceshub.gwu.edu/visit-student-services-hub/>). Adding a course after the second week of classes requires the signature of the instructor or other authorized member of the department. A course dropped during the first four weeks of classes will not appear on the student's transcript.

After the fourth week of classes, students who wish to add a course must complete a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) (RTF) and submit it to their advising office. Adding a course after the fourth week of classes continues to require the signature of the instructor or other authorized member of the department.

Withdrawing from Courses

A course from which a student withdraws after the fourth week but before the end of the tenth week will be assigned a notation of *W* (Authorized Withdrawal). The deadline for withdrawing from a course is the end of the tenth week of classes in the fall and spring semesters.

After the end of the tenth week of classes, graduate students who wish to withdraw from any or all of their courses must submit a petition, along with substantial supporting documentation, to their advising office for consideration. Submission of a petition does not guarantee approval. Appropriate withdrawal forms are available online (<http://registrar.gwu.edu/forms/>). Failure to withdraw by the stated deadlines can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

All charges for courses from which a student withdraws are subject to the refund policy listed under Fees and Financial Regulations (<http://bulletin.gwu.edu/fees-financial-regulations/>) in this Bulletin.

Changes in Program of Study

Changes Within a School—A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the advising office of the school in which they are registered. Change from one major field to another within the same school may be made with the approval of the advising office.

Graduate Transfer Within the University—Application for transfer to another school must be made to the appropriate admitting office on the form provided by the office concerned.

Grades

Grades are made available to students through the GWeb Information System (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin/) after the close of each semester.

Graduate Student Grading System

The following grading system is used for graduate students: *A*, Excellent; *B*, Good; *C*, Satisfactory; *F*, Fail; other grades that may be assigned are *A–*, *B+*, *B–*, *C+*, *C–*. Symbols that may appear include *AU*, Audit; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal; *CR*, Credit; *NC*, No Credit.

Unauthorized Withdrawal—The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. The symbol of *Z* is not a grade but an administrative notation.

Except for courses that specifically state that repetition for credit is permitted, a candidate for a degree at this University may not repeat a course in which a grade of *C–* or above was received, unless required to do so by the department concerned. A written statement, indicating that the student is required to repeat the course, must be submitted to the student's advising office by the appropriate department chair.

Assignment of Credits

A total of 37.5 hours of work per semester is required for each credit earned. Work for 1 credit consists of 50 minutes of direct or guided interaction, or one laboratory period, or 1.5 hours of studio class, plus 100 minutes of independent learning per week during the course of a normal 15-week semester, which includes one week for examinations. Other combinations of time are possible, where appropriate (for example, as a higher proportion of instructional/interactional time for a laboratory or a lower proportion of instructional/interactional time for independent research). Class and study time may exceed these minimums to ensure that students meet course learning goals. See the full policy (https://provost.gwu.edu/files/downloads/Resources/Assignment-of-Credit-Hours_Final_Oct-2016.pdf) for additional information.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's inability to complete the required work of the course during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change, which in all cases will include the symbol *I*. The work must be completed within the designated time period agreed upon by the instructor, student, and school, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other courses during this period, the student must register for continuous enrollment status.

When work for the course is completed, the instructor will complete a grade change form and turn it in to the Office of the Registrar. Beginning with courses taken in the fall 2014 semester, the final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade will be converted automatically to a grade of *F*, Failure, 0 quality points, and the grade-point average and academic standing recalculated.

The Grade-Point Average

The following credit values are used in computing the graduate grade-point average: A, 4.0; A–, 3.7; B+, 3.3; B, 3.0; B–, 2.7; C+, 2.3; C, 2.0; C–, 1.7; and F, 0. Quality points are computed based on the credit value for each credit taken. Quality points divided by the number of credits for which the student has registered as a degree-seeking student equals the GPA. Both quality points and credits used in this calculation are based on the student's record in this university.

Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and is included in the grade-point average. Courses marked *AU*, *CR/NC*, *I*, *IPG*, *W*, or *Z* are not considered in determining the average; however, once a final grade is recorded for a course originally marked *I*, the grade will be considered in that determination. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

Eligibility for Graduation

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer at the close of which the degree is to be conferred, and all degree requirements must be completed by the last day of final examinations for that semester or summer session.

The minimum cumulative grade-point average required for graduation is 3.0 for graduate students.

Columbian College of Arts and Sciences (CCAS) graduate students—For the purpose of graduation from the University, CCAS graduate students must maintain a minimum cumulative grade-point average of 3.0 in coursework counting toward the degree program.

Participation in the Commencement Ceremony

Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall

semester or summer session. With the exception of doctoral candidates, all graduate students who need no more than 9 credit to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credits is firm and not subject to petition.

Graduate Thesis or Dissertation

Graduate students whose program includes a thesis or dissertation must meet published Electronic Theses and Dissertations (ETD) deadlines (<https://library.gwu.edu/etd/>) for graduation in a given semester or summer session.

Doctoral candidates who have not successfully defended their dissertation and met the ETD deadline may not participate in either the May commencement or hooding ceremony.

Students who apply after the published deadlines are not guaranteed commencement materials. Summer graduates who elect to attend the preceding May ceremony must apply for graduation no later than February 1.

Graduate Thesis or Dissertation—A thesis or dissertation submitted in partial fulfillment of requirements for a degree must be presented in its final form by the deadline set by the school concerned. Accepted theses and dissertations, with accompanying files, become the property of the University. Accepted theses and dissertations are submitted electronically; the student pays a processing fee directly to Proquest. See the appropriate school in this Bulletin for regulations governing theses and dissertations.

Academic Workload

Graduate students should consult with their program's advising office to determine an academic workload that meets the requirements for their degree program.

Study Abroad

Graduate students who wish to study abroad should consult their program's advising office.

Continuous Enrollment Status

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses through GW or when registered for continuous enrollment and engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in which a grade of Incomplete or In Progress was received; or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the

student break continuous enrollment at the University and not request and be granted a leave of absence (see below), they must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

Leave of Absence

A degree student who finds it necessary to interrupt active pursuit of the degree may petition their advising office for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to use of University facilities is suspended while the leave is in effect.

Policy Regarding Students Called to Active Military Duty

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that they have paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in their courses with the privilege of returning to complete all required coursework at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of their activation to the Office of Student Accounts (<http://studentaccounts.gwu.edu/>) and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, the student may petition their advising office for a leave of absence for a specified period that may not exceed five years. Student advisors are encouraged to grant any request to extend the leave of absence beyond the customary one-year period if required by the duration of military service.

Complete Withdrawal from the University

Graduate degree-seeking students who wish to withdraw from all courses during a given semester must submit the Complete Withdrawal Form for Graduate students (<https://registrar.gwu.edu/forms/>) to the Office of the Registrar (<https://registrar.gwu.edu>) before the end of the tenth week of classes. The deadline for complete withdrawal from all courses is the end of the tenth week of classes. Complete withdrawal after the tenth week requires a petition to the student's advising office. Submission of a petition does not guarantee approval.

All charges for courses from which the student withdraws are subject to the refund policy (<https://registrar.gwu.edu/withdrawals-refunds/>) found on the website of the Office of

the Registrar. Failure to complete the Complete Withdrawal Form (<https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/completewithdrawal.pdf>) can result in an extended financial obligation and the recording of grades of F (Failure) or notations of Z (Unauthorized Withdrawal).

Non-Degree Students

The Office of Non-Degree Students (<https://nondegree.gwu.edu/>) makes credit-bearing courses available to those who are not degree candidates at GW and to students who have been admitted to the University for a future semester. Non-degree students may enroll for a maximum of 12 credits per semester at the graduate level, except in special circumstances as approved by the Director of the Office of Non-Degree Students. Special program credit limits may vary. A limited number of credits taken as a non-degree student may be applied toward a GW degree program, subject to determination by the school or college that offers the program. Some medical and law courses are available to non-degree students. Contact the Law School (<https://www.law.gwu.edu/information-non-degree-students/>) or School of Medicine and Health Sciences (<https://smhs.gwu.edu/>) for more information.

Non-degree applicants must have appropriate academic preparation prior to enrollment. This includes course prerequisites, which are specified in course descriptions in this Bulletin. An applicant who previously attended this or another institution of higher education must be in good standing prior to enrolling as a non-degree student. The University determines, on a case-by-case basis, whether an applicant who has been suspended or dismissed from any educational institution is eligible to enroll as a non-degree student. An applicant who has been denied admission to any school or college of this university is not eligible to enroll as a non-degree student for the same semester for which the application was denied. The University reserves the right, at its sole discretion, to deny admission to any applicant if the University determines that admission is not in the best interest of either the applicant or the University. Application and registration information is available on the Office of Non-Degree Students (<https://nondegree.gwu.edu/>) website. Non-degree students are subject to enrollment, withdrawal, and refund policies stated on the Office of the Registrar (<https://registrar.gwu.edu/non-degree-students/>) website.

University Policies and Definitions

Right to Change Rules and Programs

The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The University reserves the right to make changes in programs without notice whenever circumstances warrant such changes.

University Policy on Equal Opportunity

The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color,

religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the University, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to the University's Office of Equal Employment Opportunity and Affirmative Action (<http://hr.gwu.edu/equal-employment-opportunity/>) at (202) 994-9656. Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission, or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to the University's Title IX Coordinator, the Vice Provost for Diversity, Equity, and Community Engagement at (<http://diversity.gwu.edu/>) (202) 994-7440.

Questions regarding the protections against discrimination on the basis of disability may be directed to the University's Disability Services Coordinators (<https://disabilitysupport.gwu.edu/our-team/>). Students may contact the Associate Dean of Students, Administrative Services, Office of the Dean of Students at (202) 994-6710; and other members of the University community may contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9633.

To request disability accommodations, students should contact the Office of Disability Support Services at (202) 994-8250 or dss@gwu.edu. Employees and other members of the University community should contact the Office of Equal Employment Opportunity and Affirmative Action at (202) 994-9656 or eeo@gwu.edu.

Academic Integrity

The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for conducting research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels. The University Code of Academic Integrity can be found at the Office of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>).

Patent and Copyright Policies

Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of University resources are subject to the University's patent and copyright policies. See The Office of the Vice President for Research (<https://research.gwu.edu/>).

Human Research Requirements

Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) (<https://humanresearch.gwu.edu/>) approval before collecting any data. For more information see The Office of the Vice President for Research (<http://research.gwu.edu/>).

English for Academic Purposes

Graduate international students whose TOEFL, IELTS, or PTE scores fall below established cut-off points are required to take one or more courses in the English for Academic Purposes (EAP) program. Graduate students do not receive credit for EAP courses. For detailed information concerning this requirement consult the English for Academic Purposes Program website (<http://eap.columbian.gwu.edu/placement-eap-courses/>).

Name of Record

A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

Attendance

Students may attend only those courses for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Credit

A credit may be defined as one 50-minute class period, one laboratory period, or 1.5 hours of studio class a week for one semester. Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

Auditing

An individual who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a course (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. Tuition is

charged at the prevailing rate. A student may not change from audit to credit status or vice versa after the end of the eighth week of classes.

Earning Transfer Credit after Matriculation

Graduate students who wish to attend another institution while enrolled at GW and apply credits earned at that institution toward GW degree requirements should confer with their school or college regarding restrictions, limitations, and process for approval.

Transcripts of Record

Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to their unofficial student record through the GWeb Information System (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin/).

Student Conduct

All students, upon enrolling and while attending this University, are subject to the provisions of the *Guide to Student Rights and Responsibilities*, which outlines student freedoms and responsibilities of conduct, including the Code of Student Conduct (<http://studentconduct.gwu.edu/code-student-conduct/>), and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Division of Student Affairs (<http://students.gwu.edu/>) or from advising offices. Sanctions for violation of these regulations may include permanent expulsion from the University. Regulations or requirements applicable only to a particular program, facility, or class of students may not be published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

Right to Dismiss Students

The University reserves the right to dismiss or exclude any student from the University, or from any course or courses, whenever, in the interest of the student or the University, the University Administration deems it advisable.

University Policy on the Release of Student Information

The Family Educational Rights and Privacy Act (FERPA) (<http://registrar.gwu.edu/university-policies/#ferpa>) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credits earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height,

weight, and age of members of athletic teams, as well as likenesses used in University publications. Date of birth will be considered directory information only for the purpose of complying with applicable laws. A student who does not wish such directory information released must file written notice to this effect in the Office of the Registrar (<http://registrar.gwu.edu/>).

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Student Affairs or the offices of the academic deans. The full statement also appears on the Office of the Registrar's website.

Student Identification Number/Social Security Number

The University has converted from use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar (<http://registrar.gwu.edu/>).

Property Responsibility

The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the University Police Department (<http://police.gwu.edu/>).

UNDERGRADUATE EDUCATION AT GW

An undergraduate education at GW provides students with a wide range of opportunities to pursue both professional and liberal arts degrees. These degrees ensure that students leave the University with a body of knowledge that shows a depth of understanding in at least one field. In addition, the General Education Requirement that is common to the education of students in all schools of the University, ensure that students develop key analytical abilities that transcend disciplinary boundaries. These analytical abilities provide students with cornerstones for their personal development, civic consciousness, and successful careers.

To earn an undergraduate degree, students must:

- Complete at least 120 credits,
- Fulfill the University General Education Requirement (Tier One),
- Fulfill school-specific general education and distribution requirements (Tier Two), and
- Fulfill the requirements of at least one major in their home school (Tier Three).

Tier One: General Education Requirements

All undergraduate students at GW are required to fulfill Tier One of the University's General Education Requirement. The General Education curriculum trains students to engage in active intellectual inquiry across a variety of disciplines by developing a range of analytical skills, including critical thinking, quantitative reasoning, and scientific reasoning.

- **Critical thinking in the social sciences and in the humanities** refers to the analysis and evaluation of complex information (systems of theory or thought) as well as the formulation of logical arguments based on that analysis.
- **Quantitative reasoning** refers to the process of modeling problems of the real world within a formal abstract system, solving those problems using systematic numerical methods of analysis, and interpreting the results.
- **Scientific reasoning** refers to consistent, logical thought patterns that are employed during the process of scientific inquiry that enables individuals to propose relationships between observed phenomena, design experiments to assess the validity of these relationships, and evaluate the results of these experiments, all using the tools, skills, and techniques of quantitative reasoning.

In addition to these elements of inquiry, students are trained to communicate effectively in both written and oral formats, not only in their general education course sequence, but in their majors.

- The **written communication** requirement trains students in the effective use of language to express critical thinking that evaluates rhetorical situations, identifies significant lines of

inquiry, investigates and analyzes available knowledge, and develops rigorous arguments appropriate to the intended audience.

- The **oral communication** requirement trains students in the effective interpretation, composition, and presentation of information, ideas, and values to a specific audience.

Only those courses that are designed specifically to meet the objectives outlined above, and that are assessed for their outcomes in these areas, count for general education credit. See the CCAS Academic Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>) for lists of courses.

While students learn these analytical and communicative skills in a range of disciplines, not all courses in each discipline are designed to teach these skills. Many courses are focused more on content or on other intellectual goals. It is expected that students will not only learn these skills in their general education courses, but also will employ them in their pursuit of their majors and, when they leave the University, their pursuit of their professions and participation in the world around them.

All students are required to take five Tier One courses (for a total of 15 to 16 credits) in a range of disciplines drawn from the social sciences, humanities, natural or physical sciences with a laboratory component, and mathematics or statistics.

- In some cases, these courses may be used to satisfy school-specific requirements and/or major requirements. Students should check with their schools and/or departments to determine which courses may be double counted.
- Students who are contemplating transferring from one school to another should carefully consult the Tier One requirements for the school of origin and the school of transfer to ensure that the general education courses selected for one school also count for the other school.

For their writing requirement, all students are required to take three courses: UW 1020 University Writing and two Writing in the Disciplines (WID) courses. WID courses are designated with a 'W' appended to the course number. WID courses may also fulfill general education, distribution, school-specific, or major requirements, if the courses are designated for that purpose. Students should check with their schools and/or departments to determine which courses may be double counted.

Tier Two: School-Specific General Education and Distribution Requirements

In each school, students must fulfill additional general education or distribution requirements. These Tier Two requirements differ by school. Columbian College of Arts and Sciences (CCAS) provides a liberal arts education, and as such, requires additional general education courses that lead students to deepen the skills developed in Tier One courses. GW School of Business (GWSB), the Elliott School of International Affairs (ESIA), and School of Engineering and Applied Science (SEAS) are professional schools. As such,

they require different courses in Tier Two from those of a general liberal arts education, focusing their requirements on courses appropriate to the professional development of their students as outlined in Tier Three. The Milken Institute School of Public Health (GWSPH) is a hybrid school, offering both liberal arts and professional majors. As a result, GWSPH has limited Tier Two courses and, instead, differentiates additional requirements at the major-level (Tier Three).

CCAS requires additional general education courses at the Tier-Two level. Students continue to develop their skills in critical thinking as well as quantitative and scientific reasoning. They also continue to develop skills in written communication and incorporate global and cross-cultural perspectives as well as civic engagement into some of their learning. Students take approximately 9 to 18 credits to satisfy remaining General Education Requirement in a variety of disciplines and with respect to global perspectives, civic engagement, and oral communication. The courses that satisfy this requirement can be found here (<https://advising.columbian.gwu.edu/general-education-courses/>).

GWSB requires that all students complete the Four Year Development Program, which consists of taking BADM 1001 First-Year Development Course I, BADM 1002 First-Year Development Course II, BADM 3001 Career Management Strategy, and BADM 4001 Leadership and Career Launch.

ESIA requires a minimum of 19 credits at the Tier-Two level. These credits are included within the school's introduction to the major requirement. These courses, which are required for students in all five of ESIA's undergraduate programs, ensure that students are provided with foundational training in disciplines central to international affairs, including economics, history, political science, and anthropology or geography. Introduction to the major requirements also include the Elliott School's signature course, IAFF 1001 First-Year Experience.

ESIA also requires all students to fulfill 25 to 26 credits in the school's supporting courses in the liberal arts requirement. Many course options that fulfill these credits can be applied simultaneously to University-wide Tier One requirements, but technically are unique requirements within ESIA.

Specific information regarding introduction to the major and supporting courses in the liberal arts requirement can be found here (p. 853). Students should consult their program's major requirements page here (p. 833) for information about program-specific foreign language requirements

SEAS requires the course SEAS 1001 (Engineering Orientation) as well as three additional social science and humanities courses at the Tier-Two level to provide intellectual breadth for students. The courses that satisfy this distribution requirement can be found here (p. 680). Students are also required to take two additional mathematics courses and two additional science courses to provide adequate grounding for their engineering and computer science training. Depending on the major,

bachelor of science (BS) students have additional requirements in mathematics and science.

GWSPH requires all students to take PUBH 1101 Introduction to Public Health and Health Services.

Tier Three: Major Requirements for the Degree

Each school requires students to take the required courses for a major.

CCAS: Students are required to select a major and to successfully complete the courses needed to fulfill degree requirements for that major. BS and BA requirements vary by major. Information about program-specific Tier Three requirements can be found by visiting individual program major requirements pages here (p. 83).

GWSB: Students are required to select a major and to successfully complete courses needed to fulfill degree requirements for that major. Information about program-specific Tier Three requirements can be found by visiting individual program major requirements pages here (<http://bulletin.gwu.edu/business/#undergraduatetext>).

ESIA: All ESIA students must demonstrate third-year proficiency in a foreign language and to take school-specific regional foundations courses to develop an understanding of diverse international cultures. The specific means of fulfilling language and regional foundations requirements differ across regional and non-regional programs (e.g., BA and BS in International Affairs students need to fulfill ESIA advanced fundamentals requirements while others do not). All students are required to select a major and to successfully complete the courses needed to fulfill degree requirements for that major. The Elliott School's BS degree, as opposed to its BA degrees, generally requires completion of an additional 18 credits in approved upper-level (2000-level or above) STEM coursework. Information about program-specific Tier Three requirements can be found by visiting individual program major requirements pages here (p. 840).

SEAS: Students are required to select a major and to successfully complete courses needed to fulfill degree requirement for that major. All students are required to complete a capstone project. Information about program-specific Tier Three requirements and recommended program of study for each major can be found by visiting individual program major requirements pages here (p. 688).

GWSPH: Students are required to select a major and to successfully complete the courses needed to fulfill degree requirements for that major. Exercise science students also have the option to select a concentration. Requirements differ across majors and concentrations. In addition, students may have non-GWSPH prerequisites attached to courses required

for their major or concentration. Information about program-specific Tier Three requirements can be found on individual program major requirements pages here (p. 1183).

UNDERGRADUATE ADMISSIONS

The goal of GW's Office of Undergraduate Admissions (<http://undergraduate.admissions.gwu.edu/>) is to create a community of students who pursue academic excellence, thrive in a dynamic environment, and make lasting contributions to GW and the world. In order to identify these students, the admissions review process is holistic and thoughtful, taking many factors into consideration. GW receives applications from every state and nearly 100 countries, allowing us to enroll a bright, talented, and diverse student body.

The Office of Undergraduate Admissions recruits students for Columbian College of Arts and Sciences (including Corcoran School of the Arts and Design and School of Media and Public Affairs), Elliott School of International Affairs, School of Business, School of Engineering and Applied Science, and the Milken Institute School of Public Health. Other schools/colleges at GW have their own admissions offices and policies.

First-Year Students—Early Decision

The University offers two Early Decision options for students who have chosen GW as their first choice school. The deadline for submission of all required documents is November 1 for Early Decision I and January 5 for Early Decision II. Both Early Decision options are binding; if admitted, students agree to attend GW, submit a nonrefundable enrollment deposit by the deadline detailed in their acceptance packet, and withdraw all applications submitted to other colleges.

First-Year Students—Regular Decision

The Regular Decision application deadline is January 5. A complete application file, including the Common Application and writing supplement, official secondary school transcript/academic record, counselor recommendation, teacher recommendation, and application fee must be submitted by that date. The secondary school transcript must be submitted to GW directly from the school in order to be considered official. Incoming first-year students must have their secondary school submit a final transcript that shows all final grades and certification of graduation before enrolling at GW in the fall semester. Failure to submit an official final high school transcript to the Undergraduate Admissions Office could impact a student's ability to move into on-campus housing.

Portfolio Requirement

Applicants for admission to bachelor of fine arts (BFA) programs in the Corcoran School of the Arts and Design (<http://corcoran.gwu.edu/>) (except for the BFA in interior architecture) are required to submit a portfolio of 10 to 15 completed works of art as part of the application process. Once a student indicates an interest in a BFA program at the Corcoran School on their Common Application, they are directed to a third-party website, SlideRoom, to submit their portfolio. The Undergraduate Admissions Office reviews

portfolios only for students who are applying to a BFA program.

Entrance Examinations

As a test-optional institution, GW allows most applicants to decide whether to submit scores on either the College Board Scholastic Assessment Test (https://sat.collegeboard.org/SAT/next-steps-toward-college/?s_kwcid=AL%214330%213%2170927704644%21b%21%21g%21%21collegeboard&ef_id=VYB-rgAABKpqtRg9:20150831144404:s) (SAT) or on the American College Testing (<http://www.act.org/>) (ACT) to be included in their application.

This test-optional policy does not apply to the following groups of applicants:

- Applicants to the accelerated seven-year BA/MD program; such students also are required to submit SAT Subject Tests in mathematics and science.
- Applicants who are homeschooled.
- Applicants from secondary schools that provide only narrative evaluations rather than grades based on some form of grading scale.
- Recruited NCAA Division I athletes.

Students who choose to submit scores must have them sent by the testing agency directly to the Office of Undergraduate Admissions. All entering students who have scores are asked to submit these scores to GW prior to enrolling for their first year at GW.

International Students

In addition to the Common Application and the supporting credentials listed above, international students must submit the following documents in order to be considered for admission:

Required Records

International students must have all previously attended educational institutions send copies of official certificates and records listing subjects studied, examinations taken, grades received, and degrees received directly to the Office of Undergraduate Admissions. Certified copies of diplomas and certificates from all secondary schools, colleges, and universities attended as well as records of state examinations and certificates are also required. These records become the property of the University and cannot be returned. In addition, documents must be in the language in which the institution keeps its official records. If they are in a language other than English, the copies sent must be accompanied by a certified English translation. Documents must be submitted for the years of 9th through 12th grades or the equivalent in countries other than the United States.

Language Tests

Applicants who indicate on their Common Application that their first language is not English are required to submit scores

from the Test of English as a Foreign Language (TOEFL), the International English Language Testing System (IELTS), or the PTE Academic, regardless of citizenship or country of residence. The minimum required scores are 90 on the Internet-based TOEFL and 6.5 on the IELTS; however, strong applicants to GW typically score much higher than the required minimums, and scores of at least 100 on the TOEFL and 7.0 on the IELTS are recommended. The TOEFL/IELTS/PTE Academic requirement may be waived for applicants who score 650 or above on the Critical Reading section of the SAT or a 29 or above on the Reading section of the ACT. The Office of Undergraduate Admissions may, at its discretion, require additional English language proficiency results for students who have taken ESL/ELL courses in their high school.

Students should plan to take the test in question well in advance of the application deadline in order for scores to be available in time and should request to have the scores sent to the GW Office of Undergraduate Admissions directly from the testing agency. TOEFL scores more than two years old are not be considered valid.

GW's application review process is holistic, paying close attention to the strength of the student's high school curriculum and achievement in the classroom over time. The University reserves the right to make exceptions to the stated English proficiency standards, or to waive submission of required official test results, when considering a student's candidacy for admission.

If a student's application suggests that they might benefit from additional English language support, they may be required to take additional English language courses at GW through the University's English for Academic Purposes (EAP) Program (<http://eap.columbian.gwu.edu/>).

Financial Certification

All international students planning to study on either a student (F) visa or exchange visitor (J) visa must complete and submit a George Washington University financial certificate. The completed and signed financial certificate and a bank letter are required for the issuance of Form I-20 or DS-2019, one of which is needed to apply for the F or J visas.

Transfer Students

GW considers for transfer admission any student who has completed at least one college course since secondary school graduation. Transfer applicants must submit the Common Application and supporting credentials (including official college transcripts, the Transfer College Report for each institution attended, and a faculty recommendation) by April 15 for fall admission and October 15 for spring admission.

Transfer applicants must be in good standing in terms of academic record and conduct at all post-secondary institutions previously attended. Applicants who have attended one or more institutions of higher education must submit official transcripts from each institution even if credit was not sought

or earned or if advanced standing is not desired. In addition, applicants must submit an official secondary school transcript if they have earned fewer than 30 credits at the time of application. Prior to enrolling at GW, incoming transfer students must submit final official transcripts with grades for all courses pursued from any college or university previously attended.

All international transcripts must be evaluated by a professional evaluation agency and include an English translation if the transcript is in a language other than English. It is the sole responsibility of the student to obtain and cover the cost of this service. GW's Office of Undergraduate Admissions accepts evaluations from any company recognized by the National Association of Credential Evaluation Services (NACES) (www.naces.org) but recommends the World Education Services (www.wes.org) and Educational Credential Evaluators (www.ece.org).

Assignment of Credit for Transfer Students

Note: Separate policies (p. 52) apply to undergraduate programs in the School of Nursing, School of Medicine and Health Sciences, and College of Professional Studies.

Provided there is no duplication involved through coursework or examination, domestic transfer credit may be granted for coursework successfully completed at other regionally accredited institutions of higher learning. International transfer credit may be granted for coursework successfully completed at an institution of higher learning recognized by the relevant country's ministry of education or equivalent body. Transfer credit is not awarded for the Joint Services Transcript (JST) to undergraduate students admitted to these schools.

Assignment of transfer credit depends on the grade earned, the appropriateness of the coursework, the standing of the institution at which the coursework was completed, and the regulations of the school or college to which the student is transferring. Coursework completed at another institution must have received a minimum grade of C- to be accepted for transfer credit.

While there is no limit to the number of credits that can be transferred to the University, GW's residence requirement limits the number of transfer credits that can be applied toward a degree. Students must complete at least 60 credits of the total credits required for their degree at or through the University. Credits earned through GW study abroad, GW satellite campuses, GW distance education, and the Consortium of Universities of the Washington Metropolitan Area are treated as in residence.

Transfer credit must satisfy the requirements for the degree sought as stated in this Bulletin. The University reserves the right to determine course equivalency and degree applicability. Transfer credit is not assigned for coursework completed in vocational/technical programs (e.g., secretarial studies) or

sub-freshman level remedial work. Each GW school or college reserves the right to refuse credit for transfer in whole or in part. If a grade earned in a course is below the minimum to be accepted for transfer credit, the course may satisfy a curriculum requirement.

Transfer credit that is accepted and applied to a student's GW academic record counts toward the number of credits completed only. The grades from these courses are not used in calculating a student's GW grade-point average.

See separate policies (p. 52) applicable to undergraduate programs in the School of Nursing, School of Medicine and Health Sciences, and College of Professional Studies.

Advanced Standing and Advanced Placement

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded upon admission to the University for any combination of Advanced Placement (AP) and International Baccalaureate (IB) examinations. An incoming student also may be granted advanced placement in a sequence of courses or waiver of a course requirement based on additional college-level coursework taken in secondary school or before matriculation; however, this does not affect the number of credits needed for the degree.

College Board Advanced Placement (<https://apstudent.collegeboard.org/home/>) (AP) Tests
Credit may be awarded for Advanced Placement tests with certain score results, typically 4s and 5s. (Refer to the GW Undergraduate Admissions website for the AP credit assignment chart (<https://undergraduate.admissions.gwu.edu/bring-credits-gw/>).) Students must have AP score reports sent directly from the College Board to the Office of Undergraduate Admissions.

International Baccalaureate (<http://www.ibo.org/>) (IB)
GW typically awards 6 to 8 credits for scores of 6 or 7 on the higher-level examinations. (Refer to the GW Undergraduate Admissions website for the IB credit assignment chart (<https://undergraduate.admissions.gwu.edu/bring-credits-gw/>).) Students must have IB score reports sent directly from International Baccalaureate to the Office of Undergraduate Admissions.

Enrollment Deposit

After notification of admission, all new undergraduate students are required to submit a nonrefundable enrollment deposit. This deposit is due May 1 for first-year students. For transfer students and full-time readmitted students, the deposit usually is due two to three weeks after notification of admission.

Readmission

This policy is in effect for students previously enrolled in and wishing to return to Columbian College of Arts and Sciences (including Corcoran School of the Arts and Design and School

of Media and Public Affairs), Elliott School of International Affairs, School of Business, School of Engineering and Applied Science, and the Milken Institute School of Public Health. A student wishing to enroll in another GW school or college should refer to that school/college's readmission policy. Students who previously were registered at GW who wish to resume studies at the University after discontinuing enrollment for one or more semesters (summer sessions and leaves of absence excluded) must apply for readmission. Deadlines for applications for readmission from students in good academic standing are March 15 for the fall semester and October 31 for the spring semester. Students seeking readmission must have official transcripts sent to the Office of Undergraduate Admissions from all other institutions of higher education they attended in the interim. Students seeking readmission as degree candidates after previous enrollment in non-degree status at GW must submit the Common Application and all required credentials that were not submitted previously or required for non-degree admission.

Applicants for readmission are subject to the University regulations in effect at the time of readmission. The application fee is waived for students applying for readmission after previous enrollment as a degree candidate.

ADVANCED PLACEMENT EQUIVALENTS

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded on the basis of work completed while enrolled in high school through examinations such as AP, IB, and A-Levels.

Credit through Examination

In order to receive credit for College Board Advanced Placement (AP) examinations, students must have official score results forwarded directly to GW Office of Undergraduate Admission from the College Board. GW's College Board code is 5246.

Be aware that credit earned by examination at other colleges or universities or examinations taken after having taken the appropriate college-level course will not transfer credit to GW.

Please refer to the following charts for GW's course equivalents:

Advanced Placement Equivalents

Advanced Placement (AP) Examination	Score	Credits Awarded	GW Course Equivalent
Arts			
AP Art History	4 or 5	6	AH 1031 and AH 1032

AP Music Theory	4 or 5	3	MUS 1101
AP Studio Art: 2-D Design	4 or 5	3	FA 1099*
AP Studio Art: 3-D Design	4 or 5	3	FA 1099*
AP Studio Art: Drawing	4 or 5	3	CSA 1301
English			
AP English Language and Composition	4 or 5	3	UW 1099*
AP English Literature and Composition	4 or 5	3	ENGL 1050
History and Social Science			
AP Comparative Government and Politics	4 or 5	3	PSC 1001
AP European History	4 or 5	3	HIST 1120
AP Human Geography	4 or 5	3	GEOG 1001
AP Microeconomic	4 or 5	3	ECON 1011
AP Macroeconomics	4 or 5	3	ECON 1012
AP Psychology	4 or 5	3	PSYC 1001
AP United States Government and Politics	4 or 5	3	PSC 1002
AP United States History	4 or 5	6	HIST 1310 and HIST 1311
AP World History	4 or 5	3	HIST 1011
Math and Computer Science			
AP Calculus AB (or AB subscore of the BC exam)	4 or 5	3	MATH 1231
AP Calculus BC	4 or 5	6	MATH 1231 and MATH 1232
AP Computer Science A	4 or 5	3	CSCI 1111
AP Computer Science Principles	4 or 5	3	CSCI 1021

AP Statistics	4 or 5	3	STAT 1051
Sciences			
AP Biology	4 or 5	8	BISC 1111 and BISC 1112
AP Chemistry	4 or 5	8	CHEM 1111 and CHEM 1112
AP Environmental Science	4 or 5	3	GEOL 1099*
AP Physics 1: Algebra-Based	4 or 5	4	PHYS 1011
AP Physics 2: Algebra-Based	4 or 5	4	PHYS 1012
AP Physics C: Mechanics	4 or 5	4	PHYS 1021
AP Physics C: Electricity and Magnetism	4 or 5	4	PHYS 1022
World Languages and Cultures			
AP Chinese Language and Culture	4	4	CHIN 2003
	5	8	CHIN 2003 and CHIN 2004
AP French Language and Culture	5	6	FREN 1004 and FREN 2005
AP German Language and Culture	4	3	GER 1099*
	5	6	GER 2009 and GER 2010
AP Italian Language and Culture	5	6	ITAL 1004 and ITAL 2005
AP Japanese Language and Culture	4	4	JAPN 2003
	5	8	JAPN 2003 and JAPN 2004
AP Latin	4	3	LATN 2001
	5	3	LATN 2002
AP Spanish Language and Culture	5	6	SPAN 1014 and SPAN 2005

AP Spanish Literature and Culture	4 or 5	3	SPAN 2006
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*If there is no direct GW course equivalent, credits are transferred in using course number 1099 under the appropriate departmental designation.

The University reserves the right to change its policy regarding advanced placement credit without advance notice.

A-LEVEL EQUIVALENTS

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded based on work completed while enrolled in high school through examinations such as AP/IB/A-Levels.

Credit through Examination

In order to receive credit for Advanced-Level (A-Level) examinations, students must have their final (not provisional), official exam results sent directly from the exam board or their secondary school to the GW Office of the Registrar as soon as they are available.

Be aware that credit earned by examination at other colleges or universities or examinations taken after having taken the appropriate college-level course does not transfer credit to GW.

Please refer to the following chart for GW's course equivalents:

A-Level Equivalents

A-Level	Score	Credits Awarded	GW Course Equivalent
Accounting	A*, A, B, C	8	ACCY 1099
Afrikaans	A*, A, B, C	6	IDIS 1099
Arabic	A*, A, B, C	6	ARAB 1099
Art and Design	A*, A, B, C	6	CSA 1099
Biology	A*, A, B, C	8	BISC 1111 and BISC 1112
Business	A*, A, B, C	6	BADM 1099
Chemistry	A*, A, B, C	8	CHEM 1099
Chinese	A*, A, B, C	6	CHIN 1099
Classical Studies	A*, A, B, C	6	CLAS 1099
Computer Science	A*, A, B, C	8	CSCI 1099
Design and Technology	A*, A, B, C	6	IDIS 1099
Design & Textiles	A*, A, B, C	6	IDIS 1099
Digital Media and Design	A*, A, B, C	6	CGD 1099
Divinity	A*, A, B, C	6	REL 1099

Economics	A*, A, B, C	6	ECON 1011 and ECON 1012
English - Language	A*, A, B, C	6	UW 1099
English - Literature	A*, A, B, C	6	ENGL 1099
Food Studies	A*, A, B, C	6	IDIS 1099
French	A*, A, B, C	6	FREN 1099
Geography	A*, A, B, C	6	GEOG 1099
German	A*, A, B, C	6	GER 1099
Global Perspectives and Research	A*, A, B, C	6	IDIS 1099
Hindi	A*, A, B, C	6	IDIS 1099
Hinduism	A*, A, B, C	6	REL 1099
History	A*, A, B, C	6	HIST 1099
Information Technology	A*, A, B, C	6	CSCI 1099
Islamic Studies	A*, A, B, C	6	REL 1099
Law	A*, A, B, C	6	IDIS 1099
Marathi	A*, A, B, C	6	IDIS 1099
Marine Science	A*, A, B, C	6	GEOL 1099
Mathematics	A*, A, B, C	8	MATH 1099
Mathematics - Further	A*, A, B, C	8	MATH 1099
Media Studies	A*, A, B, C	6	SMPA 1099
Music	A*, A, B, C	6	MUS 1099
Physics	A*, A, B, C	8	PHYS 1099
Portuguese	A*, A, B, C	6	PORT 1099
Psychology	A*, A, B, C	6	PSYC 1099
Religious Studies	A*, A, B, C	6	REL 1099 and PHIL 1099
Sociology	A*, A, B, C	6	SOC 1099
Spanish	A*, A, B, C	6	SPAN 1099
Tamil	A*, A, B, C	6	IDIS 1099
Thinking Skills	A*, A, B, C	6	IDIS 1099
Travel and Tourism	A*, A, B, C	6	TSTD 1099
Urdu	A*, A, B, C	6	IDIS 1099

INTERNATIONAL BACCALAUREATE EQUIVALENTS

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded based on work completed while enrolled in high school through examinations such as AP/IB/A-Levels.

Credit through Examination

In order to receive credit for International Baccalaureate (IB) examinations, students must have their official score results sent to GW Office of Undergraduate Admissions as soon as they are available. Official International Baccalaureate (IB) results should be sent as soon as they are available.

Be aware that credit earned by examination at other colleges or universities or examinations taken after having taken the appropriate college-level course does not transfer credit to GW.

Please refer to the following charts for GW's course equivalents:

International Baccalaureate Equivalents

IB examination	Score	Credits awarded	GW course equivalent
Studies in Language and Literature			
Arabic A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	ARAB 1099*
Chinese A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	CHIN 2003 and CHIN 2004
English A1 - Higher Level	6 or 7	3	ENGL 1340
French A1 (Literature; Literature and Language) - Higher Level	6 or 7	6	FREN 2005 and FREN 2006
	5	6	FREN 1004 and FREN 2005
French A1 (Literature; Language and Literature) - Standard Level	7	6	FREN 1004 and FREN 2005
German A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	GER 1099*

Greek (Literature; Language and Literature) - Higher Level	6 or 7	3	GREK 1099*
Indonesian A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	Interdisciplinary Studies 1099*
Italian A1 (Literature; Language and Literature) - Higher Level	6 or 7	6	ITAL 2005 and ITAL 2006
	5	6	ITAL 1004 and ITAL 2005
Italian A1 (Literature; Language and Literature) - Standard Level	7	6	ITAL 1004 and ITAL 2005
Japanese A1 (Literature; Language and Literature) - Higher Level	6 or 7	8	JAPN 2003 and JAPN 2004
Korean A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	KOR 1099*
Latin (Literature; Language and Literature) - Higher Level	6 or 7	3	LATN 1099*
Persian A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	Interdisciplinary Studies 1099*
Portuguese A1 (Literature; Language and Literature) - Higher Level	6 or 7	6	PORT 1003 and PORT 1004
Russian A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	SLAV 1099*

Spanish A1 (Literature; Language and Literature) - Higher Level	6 or 7	6	SPAN 2005 and SPAN 2006
	5	6	SPAN 1014 and SPAN 2005
Spanish A1 (Literature; Language and Literature) - Standard Level	7	6	SPAN 1014 and SPAN 2005
Turkish A1 (Literature; Language and Literature) - Higher Level	6 or 7	3	Interdisciplinary Studies 1099*
Language Acquisition			
Arabic B - Higher Level	6 or 7	6	ARAB 1099*
Chinese B - Higher Level	6 or 7	8	CHIN 1099*
English B		None	None
French B - Higher Level	7	6	FREN 2005 and FREN 2006
	6	6	FREN 1004 and FREN 2005
German B - Higher Level	6 or 7	6	GER 1099*
Italian B - Higher Level	7	6	ITAL 2005 and ITAL 2006
	6	6	ITAL 1004 and ITAL 2005
Japanese B - Higher Level	6 or 7	8	JAPN 1099*
Korean B - Higher Level	6 or 7	8	KOR 1099*
Portuguese B - Higher Level	6 or 7	6	PORT 1099*
Spanish B - Higher Level	7	6	SPAN 2005 and SPAN 2006
	6	6	SPAN 1014 and SPAN 2005
Individuals and Societies			

Business Management - Higher Level	6 or 7	3	BADM 1099*
Economics - Higher Level	6 or 7	6	ECON 1011 and ECON 1012
Geography - Higher Level	6 or 7	6	GEOG 1001 and GEOG 1099*
Global Politics - Higher Level	6 or 7	3	PSC 1099*
History - Higher Level	6 or 7	6	HIST 1099*
History of Africa - Higher Level	6 or 7	6	HIST 1099*
History of the Americas - Higher Level	6 or 7	6	HIST 1099*
History of East and Southeast Asia - Higher Level	6 or 7	6	HIST 1099*
History of Europe - Higher Level	6 or 7	6	HIST 1099*
History of the Islamic World - Higher Level	6 or 7	6	HIST 1099*
History of West and South Asia - Higher Level	6 or 7	6	HIST 1099*
Information Technology in a Global Society - Higher Level	6 or 7	6	Interdisciplinary Studies 1099*
Philosophy - Higher Level	6 or 7	6	PHIL 1099*
Psychology - Higher Level	6 or 7	6	PSYC 1099*
Social and Cultural Anthropology - Higher Level	6 or 7	3	ANTH 1002
Sciences			
Biology - Higher Level	6 or 7	8	BISC 1111 and BISC 1112
Chemistry - Higher Level	6 or 7	8	CHEM 1099*
Computer Science - Higher Level	6 or 7	6	CSCI 1099*

Design Technology - Higher Level	6 or 7	6	Interdisciplinary Studies 1099*
Physics - Higher Level	6 or 7	8	PHYS 1099*
Sports, Exercise, and Health Science - Higher Level	6 or 7	3	EXNS 1099*
Mathematics			
Mathematics - Higher Level	6 or 7	6	MATH 1099*
The Arts			
Art/Design - Higher Level	6 or 7	6	FA 1099*
Film - Higher Level	6 or 7	6	FILM 1099*
Music - Higher Level	6 or 7	6	MUS 1099*
Theatre Arts - Higher Level	6 or 7	6	TRDA 1099*
Visual Arts - Higher Level	6 or 7	6	FA 1099*

*If there is no direct GW course equivalent, credits are transferred in using course number 1099 under the appropriate departmental designation.

The University reserves the right to change its International Baccalaureate Equivalents policy without advance notice.

ASSIGNMENT OF CREDITS FOR TRANSFER STUDENTS

The University has different policies for transfer credit depending on the school or college to which the student is transferring.

Columbian College of Arts and Sciences, Elliott School of International Affairs, GW School of Business, Milken Institute School of Public Health, and School of Engineering and Applied Sciences admit both incoming freshmen and students who have attended a post-secondary institution after completing a high school diploma. These schools share the same transfer policy for undergraduate students (see below).

The School of Nursing (SON), School of Medicine and Health Sciences (SMHS), and College of Professional of Professional Studies (CPS) admit only students who have attended an institution of higher learning after earning a high school diploma. Each of these schools applies its own transfer policy for undergraduate students (see below).

For the Following GW Schools:

- Columbian College of Arts and Sciences (CCAS)
- Elliott School of International Affairs (ESIA)
- GW School of Business (GWSB)
- Milken Institute School of Public Health (GWSPH)
- School of Engineering and Applied Science (SEAS)

Provided there is no duplication involved through coursework or examination, domestic transfer credit may be granted for coursework successfully completed at other regionally accredited institutions of higher learning. International transfer credit may be granted for coursework successfully completed at an institution of higher learning recognized by the relevant country's ministry of education or equivalent body. Transfer credit is not awarded for the Joint Services Transcript (JST) to undergraduate students admitted to these schools. Students admitted to other GW schools (School of Medicine and Health Sciences, School of Nursing, and College of Professional Students) should contact the respective school's admissions office to inquire about JST credit.

Assignment of transfer credit depends on the grade earned, the appropriateness of the coursework, the standing of the institution at which the coursework was completed, and the regulations of the school or college to which the student is transferring. For CCAS, ESIA, GWSB, GWSPH, and SEAS, coursework completed at another institution must have received a grade of C- or above to be accepted for transfer credit.

While there is no limit to the number of credits that can be transferred to the University, GW's residence requirement limits the number of transfer credits that can be applied toward a degree. Students must complete at least 60 credits of the total credits required for their degree at or through the University. Credits earned through GW Study Abroad, GW satellite campuses, GW distance education, and the Consortium of Universities of the Washington Metropolitan Area are treated as in residence.

Transfer credit must satisfy the requirements for the degree sought as stated in this Bulletin. The University reserves the right to determine course equivalency and degree applicability. Transfer credit is not assigned for coursework completed in vocational/technical programs (e.g., internships and practicums) or pre-college level remedial work. Each GW school or college reserves the right to refuse credit for transfer in whole or in part. If a grade earned in a course is eligible to be accepted for transfer credit, the course may satisfy a curriculum requirement and counts toward the number of credits completed. The grades from these courses are not used in calculating a student's GW grade-point average.

Pre-Matriculation Credit for Incoming Freshmen

Assuming there is no duplication of coursework, a maximum of 24 credits may be awarded based on coursework completed while enrolled in high school through examinations such as Advanced Placement (AP), International Baccalaureate (IB), and Advanced Level (A Level). While there is no limit to the number of pre-matriculation credits a high school student may transfer to GW from a post-secondary institution, students must complete at least 60 credits of the total credits required for their degree at or through the University. Coursework taken at another institution must have received a grade of C- or above to be accepted for transfer credit.

School of Medicine and Health Sciences

Transfer credit may be awarded for coursework completed at other accredited institutions provided minimum grade requirements have been met and the coursework is appropriate to the degree. Coursework completed at another institution must have received a grade of C or above to be accepted for transfer credit. Transfer credit also may be considered from Advanced Placement (AP) and International Baccalaureate (IB) examinations. Please refer to GW undergraduate admissions for information on maximum credits, minimum scores, and GW course equivalents for AP and IB credits. Advanced standing also may be awarded for non-traditional classroom or clinical experience as determined by each individual program. The School of Medicine and Health Sciences reserves the right to determine course equivalency and degree applicability.

Health sciences degree programs vary in the number of advanced standing credits they will award. For bachelor's programs, no more than 66 credits will be accepted as advanced standing from a two-year institution. Degree candidates who currently are enrolled at GW and wish to take courses at other regionally accredited institutions for transfer credit must first obtain program approval.

Transfer credit that is accepted and applied to a student's GW academic record counts toward the number of credits completed only. The grades from these courses are not used in calculating a student's GW grade-point average.

School of Nursing

Transfer credit may be awarded for coursework completed at other accredited institutions provided minimum grade requirements have been met and the coursework is appropriate to the degree. Coursework completed at another institution must have received a grade of C or above to be accepted for transfer credit. Students must complete at least 60 credits of the total credits required for their degree at GW. The School of Nursing reserves the right to determine course equivalency and degree applicability.

Transfer credit that is accepted and applied to a student's GW academic record counts toward the number of credits

completed only. The grades from these courses are not used in calculating a student's GW grade-point average.

College of Professional Studies

Subject to individual program requirements, transfer credit may be awarded for coursework completed at other accredited institutions provided minimum grade requirements have been met and the coursework is appropriate to the degree. No more than 60 credits from a regionally accredited institution may be accepted for transfer. Coursework completed at another institution must have received a grade of C or above to be accepted for transfer credit.

The College of Professional Studies reserves the right to determine course equivalency and degree applicability. Once enrolled, CPS students are not permitted to transfer credit from coursework taken outside the University, except under extraordinary circumstances and with the advance permission of the Dean.

Transfer credit that is accepted and applied to a student's GW academic record counts toward the number of credits completed only. The grades from these courses are not used in calculating a student's GW grade-point average.

FEES AND FINANCIAL REGULATIONS

The following fees and financial regulations were adopted for the academic year 2020-21. Information on tuition and fees for the 2020 summer sessions is available on the Summer and Special Programs website (<http://summer.gwu.edu/>).

Tuition and Fees

Tuition

For undergraduates entering GW in academic year 2020-21, tuition for full-time* undergraduate study for students entering Columbian College of Arts and Sciences, GW School of Business, Elliott School of International Affairs, Milken Institute School of Public Health, and School of Engineering and Applied Science is \$58,550.

The fixed-rate tuition remains in effect as previously stated for undergraduates in the schools listed above for those who entered GW in 2019-20 (\$56,845), 2018-19 (\$55,140); 2017-18 (\$53,435); and 2016-17 (\$51,875).

Half-time and part-time undergraduate students are charged \$1,675 per credit. Non-degree students are charged \$1,750.

Tuition stated here excludes undergraduate programs in professional studies, nursing, and health sciences. Applicable rates for the College of Professional Studies, School of Nursing, and health sciences programs in the School of Medicine and Health Sciences are available on the Student Accounts Office website (<https://studentaccounts.gwu.edu/undergraduate-tuition/>).

Tuition for students admitted to the BA/MD program are indicated in the letter of admission.

The schedule of tuition and fees adopted for graduate programs for the academic year 2020-21 appears on the Student Accounts Office website (<https://studentaccounts.gwu.edu/graduate-tuition/>).

* A full-time program is defined as 12 to 18 credits per semester. Undergraduates taking more than 18 credits per semester are charged at the rate of 1 credit for each credit exceeding that limit, with the exception of students in the School of Engineering and Applied Science, who are not charged for the 19th credit if required by their program.

Student Association Fee

Undergraduate students entering in the fall 2020 semester and all graduate students are assessed a nonrefundable student association fee of \$3.00 per credit to a maximum of \$45.00 per semester. Returning undergraduate students are assessed the fee as follows: for those who entered GW

in 2019-20—\$3.00 per credit to a maximum of \$45.00 per semester; 2018-19—\$3.00 per credit to a maximum of \$45.00 per semester; 2017-18—\$2.75 per credit to a maximum of \$41.25 per semester; 2016-17—\$2.50 per credit to a maximum of \$37.50 per semester.

Housing and Dining

The fee structures for University housing and dining plans can be found at Campus Living and Residential Education (<https://living.gwu.edu/>) and GW Campus Dining (<http://gwcampusdining.com/>) websites.

Continuing Research

All master's and doctoral students who have completed their required number of credits (including coursework and thesis or dissertation research) must register each subsequent fall and spring semester for 1 credit of Continuing Research as specified by the regulations of the school concerned.

Payment of tuition for thesis or dissertation research entitles the candidate, during the period of registration, to the advice and direction of the member of the faculty under whom the thesis or dissertation is to be written. Accepted dissertations and theses are submitted electronically; the student pays a processing fee directly to Proquest.

Additional Course Fees

Some courses carry additional fees, such as a laboratory or material fee, which are charged by semester. The amount appears in the Schedule of Classes (<http://my.gwu.edu/mod/pws/>).

Special Fees and Deposits (nonrefundable)

Application fee	\$80
Advance deposit, charged each entering or readmitted full-time undergraduate student	\$800
Matriculation fee, charged each entering full-time undergraduate (matriculation and enrollment fees for graduate students are provided on the Student Accounts Office website)	\$350
International student fee, charged each fall and spring semester to students on F-1 or J-1 visas entering in or after 2016-17	\$45
Registration for off-campus and online programs	\$35
Late payment fees (see Past Due Accounts, below)	\$150
Late authorization fee for third-party payment (see Third-Party Payment, below)	\$100
Returned payment fee, charged a student whose payment is improperly drafted, incomplete, or returned by the bank for any reason	\$35
Electronic transcript fee	\$8
Mailed transcript fee (additional fees may apply for mail services)	\$11
In person pickup transcript fee	\$15

Replacement of lost or stolen picture identification \$25 card

Replacement of diploma \$50

Study Abroad Fees for Academic Year 2020-21*

Tier 1 Programs GW Tuition + \$850 program fee

Tier 2 Programs GW Tuition + \$1,850 program fee

Tier 3 Programs GW Tuition + \$5,735 program fee

Tier 4 Programs GW Tuition + \$6,260 program fee

Tier 5 Programs GW Tuition + \$6,785 program fee

Tier 6 Programs GW Tuition + \$7,310 program fee

Tier 7 Programs GW Tuition + \$8,150 program fee

Withdrawal Fee \$575**

* The fees listed above are for the 2020-21 academic year. Fees for the 2021-22 academic year are subject to change.

** See Office of Study Abroad withdrawal policy (<http://studyabroad.gwu.edu/withdrawal-policy/>) for more details.

Postdoctoral Study

Those who have graduated from George Washington University with a PhD, EdD, DSc, or DEng may continue studies in the University without payment of tuition (contingent upon the availability of space) and may enjoy all University library privileges. Such graduates pay the prevailing charge for 1 credit in order to establish their active membership in the University. The graduate pays for the use of laboratory or special library material. Special arrangements for such privileges must be made with the dean two months in advance of the semester in which the graduate wishes to register. Postdoctoral work taken under this privilege may not be taken for credit.

Payment of Tuition and Fees

Students who register for courses in any semester incur a financial obligation to the University. Tuition and fees are due and must be paid in full by the first day of the University semester as indicated on the Academic Calendar (<http://bulletin.gwu.edu/academic-calendar/>); students on the monthly payment plan are exempt from this regulation. The University reserves the right to revoke the registration, effective to the beginning of the semester, of any student who fails to make full payment; however, failure to attend classes does not exempt students from their financial obligation. Students whose registration privileges have been disallowed for failure

to make timely payments are not permitted to attend classes and may not occupy University housing.

Department of Veteran Affairs Payments

GW students who are eligible to receive benefits from the Department of Veteran Affairs (VA) under Chapter 31 Vocational Rehabilitation and Services (VR&E) and/or Chapter 33 Post 9/11 GI Bill must submit a request for certification for each semester or summer session in which they elect to receive funding. Once the certification is approved, GW will not impose any penalty upon students unable to meet their financial obligations to the University due to delayed tuition and fees payment and/or delayed disbursement funding from the VA. This includes, but is not limited to, assessing late fees, denying access to classes, libraries or other institutional facilities, or requiring any covered students to borrow additional funds to cover past due balances caused by delays in VA funding.

Monthly Payment Plan

This payment plan is open to all students and is available on a semester basis, with four-month plans for the fall and spring semesters and a three-month plan for the summer session. To participate in the plan, students must be registered for classes and enroll in the plan before the start of the applicable semester. Upon enrollment in the plan, students pay a non-refundable payment plan set up fee. The monthly payment plan for the fall semester begins in July and ends in October, the spring semester plan begins in December and ends in March, and the summer session plan begins in April and ends in June. Under the plan, all payments are due on the 10th of each month; if payments are received by that date, no interest or late fees will be incurred. Students who enroll in the plan after the first month of scheduled payments must make up all payments retroactive to the first month of scheduled payments as a down payment on the plan. No additional fees will be charged while the student is actively participating in the plan; missed payments will result in the deactivation of a student's plan and the accrual of interest and late fees. After the first day of the semester, all plans will be updated to reflect the student's actual remaining balance, less pending financial aid. Any balance remaining at the conclusion of the payment plan are subject to interest and late fees. For more information, see the monthly payment plan (<http://studentaccounts.gwu.edu/monthly-payment-plan/>) page.

Third-Party Payment

The University accepts employer vouchers or purchase orders that are not contingent upon receipt of grades. Under all circumstances, the charges for tuition and fees remain the responsibility of the student. Authorization from a sponsor to be billed for a student's charges must be received in the Student Accounts Office by the end of the first week of the fall or spring semester. A late authorization fee may be incurred for responses received after the deadline. Bills are mailed to sponsors in October for the fall semester and in February for the spring semester. Should a sponsor fail to remit payment to the University, the University will contact the student for

payment. Students whose employers or sponsors reimburse them for tuition and fees after receipt of grades must pay in full before the first day of the semester or at the time of registration to avoid interest, late fees, holds, and/or cancellation of registration. Students whose tuition and fees are paid in full or in part by a third party must pay any remaining balance by the stated due date to avoid interest, late fees, holds, and/or cancellation of registration.

Past Due Accounts

Accounts that are past due are encumbered by the University. A student whose account is encumbered (balance greater than \$1,000 while registered or any balance amount remaining without a future registration) may not register for future semesters, or access grades, housing assignments, diplomas, transcripts, or other University services. Late payment fees and interest also may be assessed each month that the account has an overdue outstanding balance or if payment plan payments are missed. See the University’s Tuition Payment Disclosure Statement (<http://studentaccounts.gwu.edu/disclosures/>) for more information regarding these fees and billing practices. Accounts that are more than 90 days past due are eligible for collections activity, including referral to a collection agency and/or attorney. Students whose registration privileges have been disallowed for failure to make timely payments are not permitted to attend classes and may not occupy University housing.

Disputes must be submitted to the Student Accounts office within 60 days of the charge being applied. If the University deems the disputed amounts to be correct, the student is liable for any interest and late fees accrued during the review period.

Dishonored/Returned Payments

A student whose payment is returned unpaid by the bank for any reason will be charged a returned payment fee and will be responsible for any associated costs and/or attorney’s fees incurred by the University should a civil lawsuit or other collection effort be instituted to collect on such dishonored payment. This fee will also be charged to students who initiate a successful chargeback, in addition to the processing fee. An account hold will be in place for 10 days after subsequent payment is made. If multiple payments are returned, the University may require all future payments to be made with certified funds. In any case where the University has reason to believe that a student presented a dishonored payment in bad faith, the University may, in addition to any collection efforts, refer the matter to the proper authorities for criminal prosecution.

Withdrawals and Refunds

Applications for withdrawal from the University or from a course after the registration period must be made in accordance with procedures outlined under University Regulations (<http://bulletin.gwu.edu/university-regulations/>) in the sections Complete Withdrawal from the University and Adding, Dropping, and Withdrawing from Courses, respectively.

Financial aid recipients must notify the Office of Student Financial Assistance (<https://financialaid.gwu.edu/>) in writing. The tuition deposit required of entering students will not be refunded.

In the case of authorized withdrawals and changes in registration schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule for the fall and spring semesters:

1. Complete withdrawal from all courses (on-campus students):

Withdrawal dated on or before the end of the first week of the semester	90%
Withdrawal dated on or before the end of the second week of the semester	60%
Withdrawal dated on or before the end of the third week of the semester	40%
Withdrawal dated on or before the end of the fourth week of the semester	25%
Withdrawal dated after the fourth week of the semester	None

2. Partial withdrawal: If the change in workload results in a lower tuition charge, the refund schedule above applies to the difference.

3. Regulations governing student withdrawals as they relate to University housing and dining services charges are contained in the specific lease arrangements.

4. Summer sessions: In cases of authorized withdrawals from courses, refunds of 85% of tuition and fees will be made for on-campus courses dropped within the first seven calendar days of the start of a session. No refund will be made for courses dropped thereafter.

Certain programs or courses or those with non-traditional semesters may have special refund schedules. Students are encouraged to consult with their program office to determine if a special schedule applies.

Federal regulations require that financial aid recipients use refunds to repay financial aid received for that semester’s attendance. This policy applies to institutional aid as well.

If a recipient of federal financial aid withdraws from the University or reduces their workload, federal regulations require that the University reevaluate the student’s eligibility to determine the amount of aid the student is allowed to retain. If there is a credit balance on the student’s account after the federal funds have been adjusted, institutional funds will be recovered from that amount.

See the University’s complete Return of Title IV funds policy (<http://go.gwu.edu/returntitleivpolicy/>).

In no case will tuition be reduced or refunded because of the student’s absence from classes. Authorization to withdraw and

certification for work done will not be provided to a student whose account is not in good standing.

FINANCIAL AID

Office of Student Financial Assistance

Location: 800 21st Street NW, Colonial Central, Marvin Center/
Ground Floor, Washington, DC 20052. Email: finaid@gwu.edu.
Phone: 202-994-6620. Online (<https://financialaid.gwu.edu/>).

The George Washington University offers financial assistance to all eligible students from a variety of resources. In addition to GW assistance, the University participates in federal student aid programs from the U.S. Department of Education and student financial assistance programs from other U.S. government agencies such as the U.S. Department of Veterans Affairs and the U.S. Department of Defense. Some states offer student financial assistance for undergraduate enrollment at GW.

In general, consideration for student financial assistance is restricted to students in good academic standing at the University who meet minimum grade-point average and satisfactory academic progress requirements for specific awards and not financially encumbered by any other University office. Failure to meet and maintain satisfactory academic progress requirements may result in rescinding of awards.

GW reserves the right to request documentation to determine aid eligibility. Documents submitted as part of the aid application become the property of the University and cannot be returned. Such documents are protected under the Family Educational Rights and Privacy Act (FERPA), as amended. Federal regulation requires the University to report cases of suspected fraud or misrepresentation to appropriate federal, state, and local authorities.

Gift aid, such as grants, scholarships, fellowships, is student financial assistance not required to be repaid. Gift aid is taxable under federal regulation to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies, or is dedicated to other costs such as room and board. Federal grants may be taxable if, together with other gift aid, they exceed allowable costs. For complete information on IRS rules regarding educational costs, see IRS Publication 970, *Tax Benefits for Education*.

Self-help aid is aid that students undertake on their own behalf, either in the form of earnings via the Federal Work-Study program or through borrowing. Loans must be repaid.

Eligibility for student aid is processed under cost of attendance budgets for various categories of students, per federal statutory requirements. Refer to the policy on cost of attendance budgets (<http://financialaid.gwu.edu/cost-of-attendance/>) for details. A complete student aid package cannot exceed a student's cost of attendance budget. GW will review and potentially adjust awards for students receiving student financial assistance from more than one source. Receipt of student financial assistance from multiple sources cannot

exceed tuition charges. If institutional aid is involved, adjustments will be made.

Non-degree and certificate programs that are approved for federal student aid programs must provide "gainful employment" disclosures under federal regulation. Such disclosures are found on the respective academic programs' website. Continued Title IV certification for these programs are reviewed annually.

For complete information on student financial assistance at GW, visit the Office of Student Financial Assistance website (<http://financialaid.gwu.edu/>).

Information in this section of the Bulletin is accurate as of the date of its publication and is subject to change based on changes in federal and/or state statute, regulation, policies and procedures (which may, in turn, necessitate changes to application procedures and policies). The University reserves the right to change student financial assistance policies.

UNDERGRADUATE

Undergraduate Financial Aid

All freshmen automatically are considered for a merit-based scholarship, which is awarded to the most competitive applicants in the applicant pool. Complete information on merit-based awards (awards based on academic criteria) are available on the website of the Office of Undergraduate Admissions (<http://undergraduate.admissions.gwu.edu/scholarships/>).

The Office of Student Financial Assistance (<http://financialaid.gwu.edu/>) (OSFA) awards various need-based GW institutional financial aid funds: The largest fund awarded is the University and Alumni Award (<http://financialaid.gwu.edu/university-and-alumni-award/>). In addition, the Office awards University Scholarships (see the section below) and the One-Year Award (<http://financialaid.gwu.edu/one-year-award/>).

The following scholarships programs are also available:

The J.B. and Maurice C. Shapiro Scholarship to the University of Oxford is awarded each spring to a graduating senior or recent graduate through a competitive process upon the nominee's acceptance to Oxford. To be eligible, applicants must have applied for the Rhodes or British Marshall Scholarships. All of these competitions require high academic standing, evidence of leadership, and dedication to the larger society through community service. The Shapiro Scholarship provides for up to two years of study at Oxford, equivalent to the Rhodes Scholarship. The J.B. and Maurice C. Shapiro Endowment funds two scholarships per year—one new and one renewal.

The Pembroke/CW Program. GW has a special relationship with Pembroke College in Oxford, whereby up to six GW juniors are placed at the College for one year and enrolled as fully matriculated students of the University of Oxford. These

placements are determined in an annual competition that takes place at GW in the fall. The committee evaluating candidates forwards the finalists' applications to Pembroke College, and Pembroke makes the final decision on placements. Many GW students have spent a year at Oxford in this program.

Need-Based Financial Aid

All freshman and transfer students are required to file both the College Scholarship Service PROFILE (<https://student.collegeboard.org/css-financial-aid-profile/>)—which is not an application for funds, but provides a need analysis that many schools use to awards its own funds—and the Free Application for Federal Student Aid (<https://fafsa.ed.gov/>) (FAFSA), which is the application for federal student aid programs (and which many states use as application for their own funds). Applicants must designate GW as recipient of their need analysis data. All applicants must also provide to GW directly copies of their signed federal income tax returns and W-2 Forms for the current tax year for the student and the student's parents (if a dependent student). Non-custodial parents are also required to provide disclosures. See policies on Parental Contribution for Dependent Students (<http://financialaid.gwu.edu/policy-parental-contribution-dependent-students/>).

Complete application information is available on the OSFA website (<http://financialaid.gwu.edu/>) under the section titled "Getting Assistance."

Application deadlines depend on whether a new undergraduate or continuing undergraduate student. See the OSFA website (<http://financialaid.gwu.edu/>) for complete details on respective application deadlines (<https://financialaid.gwu.edu/deadlines/>).

Students must reapply for any need-based aid, including need-based scholarships, and must meet/maintain satisfactory academic progress requirements per specific student aid program requirements.

Federal Student Aid Programs

The following federal student aid programs are available to eligible students at GW: Federal Pell Grants (<http://financialaid.gwu.edu/federal-pell-grant/>), Federal Supplemental Educational Opportunity Grants (<http://financialaid.gwu.edu/federal-supplemental-educational-opportunity-grant/>) (FSEOG), Federal Work-Study (<http://financialaid.gwu.edu/work-study/>) (FWS), Federal Direct Stafford Loans (<http://financialaid.gwu.edu/federal-direct-loans/>), Federal Direct PLUS Loans (<http://financialaid.gwu.edu/federal-direct-parent-plus-loan/>), and TEACH Grants (<https://gsehd.gwu.edu/admissions/#tuition-and-scholarships>). The U.S. Department of Education's Federal Student Aid (<https://studentaid.ed.gov/sa/>) website includes complete program details. We especially recommend that you download, review and retain the various student loan publications from the U.S. Department of Education, which are available on

the Federal Student Aid Resources (<https://studentaid.ed.gov/sa/resources/>) website.

Federal Direct Stafford Loans

Federal Direct Stafford Loans are student loans from the U.S. Department of Education in which the student is the borrower. Annual loan limits are as follows:

Dependent undergraduates (most students under the age of 24):

- \$5,500 as freshmen (No more than \$3,500 of this amount may be in subsidized loans)
- \$6,500 as sophomores (No more than \$4,500 of this amount may be in subsidized loans)
- \$7,500 as junior and seniors (No more than \$5,500 of this amount may be in subsidized loans)

Independent undergraduates (students 24 years or age and older) and dependent students whose parents are unable to borrow under the Federal Direct PLUS Loan program:

- \$9,500 as freshmen (No more than \$3,500 of this amount may be in subsidized loans)
- \$10,500 as sophomores No more than \$4,500 of this amount may be in subsidized loans)
- \$12,500 as juniors and seniors (No more than \$5,500 of this amount may be in subsidized loans)

Federal student loan programs also have aggregate (lifetime) loan limits (<https://studentaid.ed.gov/sa/types/loans/subsidized-unsubsidized/>).

- For **dependent students** (except student whose parents are unable to borrow under the Federal Direct PLUS Loan program), the subsidized and unsubsidized aggregate loan limit is \$31,000, with no more than \$23,000 of this amount being subsidized loans.
- **Independent students** (and dependent undergraduate students whose parents are unable to obtain PLUS Loans) - the undergraduate aggregate loan limit is \$57,500, and no more than \$23,000 of this amount may be in subsidized loans.

For students who receive subsidized Stafford loans as part of their need-based financial aid award, the government pays the interest while they are enrolled in school at least half time and for six months after they leave school. Students ineligible, or only partly eligible, for subsidized funds may apply for an unsubsidized Stafford Loan up to the same limits to cover their family contribution. Terms and conditions are the same, except that the student borrower is responsible for all interest that accrues on the unsubsidized loan from the date it is disbursed; deferments are available. Independent students (and students whose parents are denied a PLUS loan) are eligible to borrow additional unsubsidized Stafford funds of \$4,000 as freshmen and sophomores and \$5,000 as juniors and seniors.

There are fees associated with both subsidized and unsubsidized Stafford loans. Interest rates and fees are set on an annual basis by federal statute, usually by June 1 and taking effect on July 1 through the following June 30. See the U.S. Department of Education's Federal Student Aid (<https://studentaid.ed.gov/sa/types/loans/interest-rates/>) website for up-to-date information on interest rates and associated loan fees.

Federal Direct PLUS Loans

The Federal Direct PLUS Loan is a government-sponsored, credit-based, fixed-rate loan that can be used to supplement the student's Federal Direct Stafford Loan or to help with their family contribution. The U.S. Department of Education is the lender. Each academic year, parents without an adverse credit history may apply for a Federal Direct PLUS loan up to the cost of education, minus financial aid, for each dependent child attending college at least half-time. Loan repayment begins within 60 days of the last disbursement and the maximum repayment term is ten years.

Origination fees are deducted from loan proceeds prior to disbursement. Families who intend to use loan funds for payment of University charges at time of registration should submit a loan application and all supporting documents to OSFA no later than May 1 for the fall semester, October 1 for the spring semester, and March 1 for summer sessions. See the OSFA website (<http://financialaid.gwu.edu/federal-direct-parent-plus-loan/>) for details and application procedures. See also The U.S. Department of Education's information on Federal Direct PLUS Loans (<https://studentaid.ed.gov/sa/types/loans/plus/>).

Private Education Loans

Private lenders provide additional loan options to qualified students. These loans offer varying interest rates and repayment options. Such loans allow the student to borrow up to 100% of GW's annual undergraduate cost of attendance less any current financial assistance. They typically have variable rates, rates within rate tiers according to credit worthiness, and application fees.

Private education loans must be reported to OSFA to be considered as a resource against federal student aid eligibility, per federal regulation.

Students are strongly advised to consider federal student loans before alternative loans due to the former's generally more favorable interest rates, fees, and repayment options. Consider reviewing the OSFA Private Student Loan Counseling Checklist (<http://financialaid.gwu.edu/private-student-loan-counseling-checklist/>).

Other Loan Funds

GW has several emergency loan funds for degree students with short-term needs. These funds include:

- Jessie B. Martin Loan Fund
- Barney Plotnick, M.D., Student Loan Fund
- University Student Emergency Loan Fund
- Peter and Doris Firsht Loan Fund

For more information and how to apply for emergency loans see the OSFA website (<https://financialaid.gwu.edu/emergency-funding/>).

Student Employment

The University participates in the Federal Work-Study Program (<http://financialaid.gwu.edu/work-study/>). Students should address questions concerning eligibility to OSFA. GW's Center for Career Services (<http://careerservices.gwu.edu/>) handles Federal Work-Study placement and also maintains a registry of both full- and part-time positions available in the DC Metropolitan Area.

International Students

International students are eligible to receive merit scholarship consideration from the Office of Admissions and are automatically considered during the admissions process. Non-U.S. students should check with their home country for potential national and/or local student aid options for enrollment in the United States. Visit the U.S. Department of State's Education USA web-site (<https://educationusa.state.gov/>) for a database of potential resources. Private education loans for international students are usually only available with a credit-worthy U.S. co-signer. The Office of Student Financial Assistance uses cost of attendance budgets for the processing of international student financial assistance. Details are available on the OSFA website (<http://financialaid.gwu.edu/>).

Military Education Financing

Veterans Education Benefits

GW's Office of Military and Veteran Student Services processes applications for entitlement payments under the various classes of veterans' educational benefits from the U.S. Department of Veterans Affairs. For more information consult the Office of Military and Veteran Student Services website (<https://services.military.gwu.edu/>).

Tuition Assistance Program

Funds from the various branches of the armed services under the Tuition Assistance Program are processed by the GW Student Accounts Office (<https://studentaccounts.gwu.edu/>).

ROTC Scholarships

Navy ROTC (<http://nrotc.gwu.edu/scholarships/>) is available at GW. Army and Air Force ROTC is available at Georgetown University and Howard University, respectively. All ROTC programs are handled by the GW Student Accounts Office (<https://studentaccounts.gwu.edu/>). Further details are available on the Office of Student Financial Aid website (<http://financialaid.gwu.edu/military-educational-benefits/>) and from the Office of the Registrar (<http://registrar.gwu.edu/rotc/>).

Required Disclosures and Notices

University Policy on Equal Opportunity

The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the university, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to the university's Office of Equal Employment Opportunity and Affirmative Action, 2121 Eye Street, NW, Washington, DC 20052, 202-994-9656, eeo@gwu.edu. Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission, or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to the university's Title IX Coordinator, the Vice Provost for Diversity and Inclusion, 813 Rice Hall, 2121 Eye Street, NW, Washington, DC 20052, 202-994-7440.

Questions regarding the protections against discrimination on the basis of disability may be directed to the university's Disability Services Coordinators. Students may contact the Associate Dean of Students, Administrative Services, Office of the Dean of Students, 401 Rice Hall, 2121 Eye Street, NW, Washington, DC 20052, 202-994-6710, and other members of the university community may contact the Executive Director of Equal Employment Opportunity and Affirmative Action, 2121 Eye Street, NW, Washington, DC 20052, 202-994-9633.

To request disability accommodations, students should contact the Office of Disability Support Services at 202-994-8250 or dss@gwu.edu. Employees and other members of the university community should contact the Office of Equal Employment Opportunity and Affirmative Action at 202-994-9656 or eeo@gwu.edu.

Availability of U.S. Department of Education Loan Publications

Students pursuing federal student loans are advised to review, download, and retain the loan publications from the U.S. Department of Education which are available on the Federal Student Aid resources page (<https://studentaid.ed.gov/sa/resources/>).

GW Policy on Student Loans and Code of Conduct

GW does not maintain a preferred lender list and will certify loan presented that requires certification. Refer to GW's HEA-compliant code of conduct for student loans (<http://financialaid.gwu.edu/policy-student-loan-code-conduct/>).

Role of the National Student Loan Data System (NSLDS)

Data on federal student loans and Federal Pell Grants are reported to the National Student Loan Data System (NSLDS), which is accessible by GW and U.S. Department of Education personnel and servicers of federal student loans. Students can access their data on the NSLDS website (https://nslds.ed.gov/nslds/nslds_SA/).

Title IV Eligibility and Drug Convictions

Under federal law a recipient of Title IV student financial assistance who is convicted for possession and/or sale of illegal drugs while enrolled as a student at GW will be ineligible for further Title IV funds for a fixed period of time. Refer to the University's complete policy on the Impact of Drug Conviction on Title IV eligibility (<http://financialaid.gwu.edu/policy-impact-drug-conviction-title-iv-eligibility/>).

Return of Title IV Funds Policy

The University is required by the HEA to recalculate the eligibility for federal Title IV student financial assistance for students who withdraw, drop out, are dismissed, or take a leave of absence, prior to completing 60% of a semester. Title IV funds include Federal Pell Grants, Federal Supplemental Educational Opportunity Grants, Federal Work-Study, Federal Perkins* Loans, Federal Direct Subsidized Stafford Loans, Federal Direct Unsubsidized Stafford Loans, and Federal Direct PLUS Loans.

The required sequence for return of Title IV funds, as specifically published in Federal Student Aid program regulations, is:

1. Unsubsidized Federal Stafford Loans (no longer active since June 30, 2010)
2. Subsidized Federal Stafford Loans (no longer active since June 30, 2010)
3. Unsubsidized Direct Stafford Loans (other than PLUS Loans)
4. Subsidized Direct Stafford Loans
5. Federal Perkins* Loans
6. Federal PLUS Loans (no longer active since June 30, 2010)
7. Direct PLUS Loans
8. Federal Pell Grants for which a return of funds is required
9. Academic Competitiveness Grants for which a return of funds is required (program no longer active since June 30, 2011)
10. National SMART Grants for which a return of funds is required (program no longer active June 30, 2011)
11. Federal Supplemental Educational Opportunity Grants (FSEOG) for which a return of funds is required
12. TEACH Grants for which a return of funds is required; and
13. Iraq-Afghanistan Service Grant for which a return is required.

See the Student Accounts website (<https://studentaccounts.gwu.edu/>) for the complete policy statement on Return of Title IV funds (<http://go.gwu.edu/>)

returntitleivfunds/). This applies only to federal student aid and does not pertain to the University's refund policy, as noted in the Fees and Financial Regulations section of this Bulletin.

(Note: while no longer available, Federal Perkins Loans are listed in this sequence as it is still noted in the federal regulations).

Title IV Credit Balances

Students have the right to exercise authorizations to hold or release a hold pertaining to Title IV credit balances. Similarly, parents have the right to do so pertaining to Federal Direct PLUS Loans. See the pertinent Title IV credit balance authorization form:

Student Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_StudentNEWLOGO.pdf)

Parent Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_ParentNEWLOGO.pdf)

HEA Disclosures Portal

Visit the University's Consumer Information (<https://financialaid.gwu.edu/consumer-information/>) portal for complete disclosures information.

GRADUATE

Graduate Financial Aid

The George Washington University offers a variety of financial support for graduate students that includes assistantships, fellowships, traineeships, graduate school scholarships, research appointments, and part-time employment, in addition to eligibility for Federal student aid programs.

Several forms of aid not based on financial need are available. Graduate assistantships are fully taxable, and gift aid (scholarships, grants, fellowships, assistantships, tuition awards, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. For complete information on IRS rules regarding educational costs, see IRS Publication 970, *Tax Benefits for Education*.

Eligibility for student aid is processed under cost of attendance budgets for various categories of students, per requirements of federal statute. See the Office of Student Financial Assistance (OSFA) policy on cost of attendance budgets (<http://financialaid.gwu.edu/cost-of-attendance/>) for details. A complete student aid package cannot exceed a student's cost of attendance budget. GW will review and potentially adjust awards for students receiving student financial assistance from more than one source. Receipt of student financial

assistance from multiple source cannot exceed tuition charges. If institutional aid is involved, adjustments will be made.

Application and correspondence concerning assistantships, fellowships, traineeships, or graduate scholarships should be sent directly to the GW school or college. Unless otherwise specified, applications and supporting credentials should be submitted no later than the February 1 prior to the academic year for which the award is made. Application for admission to graduate study is a prerequisite for consideration.

Office of Graduate Student Assistantships and Fellowships

The Office of Graduate Student Assistantships and Fellowships (<http://www.gwu.edu/~fellows/>) (OGSAF) provides services to entering and enrolled graduate students; detailed information on awards that may be used in support of graduate study is available on the office's website. Such awards generally are sponsored by foundations, professional and learned societies, industries, and other organizations. Services are provided to entering and enrolled graduate students.

Assistantships

Available to students in master's and doctoral programs in most academic departments, graduate assistantships provide financial compensation for a designated unit of service to the assistant's major department of instruction. All new graduate assistants must attend an orientation program and are enrolled in an online course.

International students applying for graduate teaching assistantships must have minimum TOEFL scores of 600 (paper-based) or 100 (Internet-based) or an overall band score of 7.0 on the Academic International English Language Testing System (IELTS) with no individual band score below 6.0. International students may be appointed to graduate assistantships. Those found to have difficulties with English are referred to the Speech and Hearing Center's speech enhancement program; such students are assigned nonteaching duties in place of classroom instruction and are re-evaluated each semester. If a student is not designated as qualified to give classroom instruction by the end of one academic year, the assistantship is not renewed.

Graduate Research Assistantships

Available to students in masters and doctoral programs in some GW academic departments. A graduate research assistant receives compensation for research assistance provided to a professor.

Resident Assistantships

Resident assistantships are available to graduate students in any field of study who are interested in working in University residence halls. Specific duties vary with the position, but basically consist of counseling, advising student groups, and administrative duties. Remuneration includes salary and a furnished room for the academic year. All positions are part

time, and staff members are required to enroll as full-time students in degree programs. For further information, see the Campus Living and Residential Education website (<https://living.gwu.edu/staffing-opportunities/>).

Fellowships and Other Funding Opportunities

Available to graduate students in master's and doctoral programs in most GW academic departments, fellowships are based on scholarship and each fellow may receive a stipend and/or tuition allowance. OGSAF (<http://www.gwu.edu/~fellows/>), provides a database of internal GW fellowships as well as external national fellowships and study abroad opportunities.

Federal Loans

Federal Direct Stafford Loans

Graduate students enrolled at least half time may apply for Federal Direct Stafford Loan funds each academic year. Unsubsidized loans require the student borrower to pay all interest that accrues on loan during the in-school period. Deferments are available. Students must file the Free Application for Federal Student Aid (<https://fafsa.ed.gov/>) (FAFSA) to determine their eligibility.

Federal Direct PLUS Loans

Graduate and professional students may apply for funds under the Federal Direct PLUS Loan Program. Eligible students may borrow up to the full cost of attendance, including tuition, fees, books, and living and transportation expenses, less any financial assistance received (which includes all student loans). Students must first apply for the Federal Direct Stafford Loan and the amount of the Stafford Loan eligibility must be included in the calculation to determine the amount of the Graduate PLUS loan.

Annual and Aggregate Loan Limits

Graduate and professional students can borrow up to \$20,500 in unsubsidized Federal Direct Stafford Loan funds on an annual basis. Some academic programs may have additional loan eligibility; see the list on the OSFA website of Graduate Programs eligible for Higher Loan Limits (<https://financialaid.gwu.edu/graduate-federal-direct-loan-limits/>).

Graduate and professional students have maximum aggregate (lifetime) loan limits of \$138,500, with \$65,500 maximum subsidized limit within the total aggregate limit. Health professions students have a maximum aggregate (lifetime) limit of \$224,000, with \$65,500 maximum subsidized limit within the total aggregate limit.

Loan Fees

Both Federal Direct Stafford Loans and Federal Direct PLUS Loans carry loan fees. Current rates are available on the U.S. Department of Education's Federal Student Aid website for interest rates for federal student loans (<https://studentaid.ed.gov/sa/types/loans/interest-rates/>).

Private Education Loans

Private lenders provide additional loan options to qualified students. These loans offer varying interest rates and repayment options. Such loans allow the student to borrow up to 100% of GW's annual cost of attendance less any current financial assistance. They typically have variable rates, rates within rate tiers according to credit worthiness, and application fees.

Private education loans must be reported to OSFA to be considered as a resource against federal student aid eligibility, per federal regulation.

Students are strongly advised to consider federal student loans before alternative loans due to generally more favorable interest rates, fees, and repayment options. Consider reviewing the OSFA Private Student Loan Counseling Checklist (<http://financialaid.gwu.edu/private-student-loan-counseling-checklist/>).

Other Loan Funds

GW has several emergency loan funds for degree students with short-term needs. These funds include the Jessie B. Martin Loan Fund; the Barney Plotnick, M.D., Student Loan Fund; the University Student Emergency Loan Fund; and the Peter and Doris Firsh Loane Fund. For more information and how to apply see the section of OSFA's website on emergency loans (<https://financialaid.gwu.edu/emergency-funding/>).

Student Employment

The University participates in the Federal Work-Study Program (<https://financialaid.gwu.edu/work-study/>). Students should address questions concerning eligibility to OSFA. GW's Center for Career Services (<https://careerservices.gwu.edu/>) handles Federal Work-Study placement and maintains a registry of both full- and part-time positions available in the DC Metropolitan Area.

TEACH Grants

The Teacher Education Assistance for College and Higher Education (TEACH) program provides grants to students who become teachers in high-need fields and low-income areas in an elementary school, secondary school or an educational service agency. More information on TEACH Grants (<https://gsehd.gwu.edu/admissions/#tuition-and-scholarships>) is available from the Graduate School of Education and Human Development (GSEHD).

International Students

International students are advised to download and reference The Office of Graduate Scholarships and Fellowships brochure, Funding for International Students (<https://graduate.seas.gwu.edu/sites/g/files/zaxdzs1526/f/downloads/International%20Funding%20Brochure.pdf>), a guide for international students on potential education funding. Non-U.S. students should check with their home country for potential national and/or local student aid options for enrollment in

the United States. Private education loans for international students are usually only available with a credit-worthy U.S. co-signer. The Office of Student Financial Assistance uses cost of attendance budgets (<http://financialaid.gwu.edu/cost-of-attendance/>) for the processing of international student financial assistance.

Deadlines

Graduate students applying for federal student aid must have respective application materials submitted by specific dates per academic term. See OSFA's website (<https://financialaid.gwu.edu/deadlines/>) for complete details on application deadlines.

Military Education Financing

Veterans Education Benefits

GW's Office of Military and Veteran Student Services (<http://services.military.gwu.edu/>) processes applications for entitlement payments under the various classes of veterans' educational benefits from the U.S. Department of Veterans Affairs.

Tuition Assistance Program

Funds from the various branches of the armed services under the Tuition Assistance Program are processed by the GW Office of Student Accounts (<https://studentaccounts.gwu.edu/>).

ROTC Scholarships

Navy ROTC (<http://nrotc.gwu.edu/scholarships/>) is available at GW. Army and Air Force ROTC is available at Georgetown University and Howard University, respectively. All ROTC programs are handled by the GW Student Accounts Office (<https://studentaccounts.gwu.edu/>). Further details are available here (<http://financialaid.gwu.edu/military-educational-benefits/>) and from the Office of the Registrar (<http://registrar.gwu.edu/rotc/>).

Required Disclosures and Notices

University Policy on Equal Opportunity

The George Washington University does not unlawfully discriminate against any person on any basis prohibited by federal law, the District of Columbia Human Rights Act, or other applicable law, including without limitation, race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the university, including admission to education programs and employment.

Inquiries concerning this policy and federal and local laws and regulations concerning discrimination in education and employment programs and activities may be directed to the university's Office of Equal Employment Opportunity and Affirmative Action, 2121 Eye Street, NW, Washington, DC 20052, 202-994-9656, eeo@gwu.edu. Inquiries may also be directed to the U.S. Department of Education Office for Civil Rights, the U.S. Equal Employment Opportunity Commission,

or the applicable state or local agency (for example, the District of Columbia Office of Human Rights).

Questions regarding protections against discrimination on the basis of sex may be directed to the university's Title IX Coordinator, the Vice Provost for Diversity and Inclusion, 813 Rice Hall, 2121 Eye Street, NW, Washington, DC 20052, 202-994-7440.

Questions regarding the protections against discrimination on the basis of disability may be directed to the university's Disability Services Coordinators. Students may contact the Associate Dean of Students, Administrative Services, Office of the Dean of Students, 401 Rice Hall, 2121 Eye Street, NW, Washington, DC 20052, 202-994-6710, and other members of the university community may contact the Executive Director of Equal Employment Opportunity and Affirmative Action, 2121 Eye Street, NW, Washington, DC 20052, 202-994-9633.

To request disability accommodations, students should contact the Office of Disability Support Services at 202-994-8250 or dss@gwu.edu. Employees and other members of the university community should contact the Office of Equal Employment Opportunity and Affirmative Action at 202-994-9656 or eeo@gwu.edu.

Availability of State Grant Assistance for Undergraduate Education

Before they pursue loan options undergraduate students are advised to pursue the potential for state grant assistance in their home state to help finance their GW education. The U.S. Department of Education (ED) maintains a website listing state agencies (<http://www2.ed.gov/about/contacts/state/>) and respective contact information. The Brookings Institution has an Inventory of State Grants (<https://www.brookings.edu/research/beyond-need-and-merit-strengthening-state-grant-programs/>) as well.

Satisfactory Academic Progress for Student Financial Assistance

Federal student aid programs require satisfactory academic progress. See OSFA's complete Title IV satisfactory academic progress policy (<http://financialaid.gwu.edu/policy-satisfactory-academic-progress/>).

Availability of U.S. Department of Education Loan Publications

Students pursuing federal student loans are advised to review, download, and retain the loan publications from the U.S. Department of Education, which are available on the Federal Student Aid resources page (<https://studentaid.ed.gov/sa/resources/>).

GW Policy on Student Loans and Code of Conduct

GW does not maintain a preferred lender list and will certify loan presented that requires certification. Refer to GW's HEA-compliant code of conduct for student loans (<http://financialaid.gwu.edu/policy-student-loan-code-conduct/>).

Role of the National Student Loan Data System (NSLDS)

Data on federal student loans and Federal Pell Grants are reported to the National Student Loan Data System (NSLDS), which is accessible by GW and U.S. ED personnel and servicers of federal student loans. Students can access their data on the NSLDS website (https://nsls.ed.gov/nsls/nsls_SA/).

Title IV Eligibility and Drug Convictions

Under federal law a recipient of Title IV student financial assistance who is convicted for possession and/or sale of illegal drugs while enrolled as a student at GW is ineligible for further Title IV funds for a fixed period of time. Refer to the University's complete policy on the Impact of Drug Conviction on Title IV eligibility (<http://financialaid.gwu.edu/policy-impact-drug-conviction-title-iv-eligibility/>).

Return of Title IV Funds Policy

The University is required by the HEA to recalculate the eligibility for federal Title IV student financial assistance for students who withdraw, drop out, are dismissed, or take a leave of absence, prior to completing 60% of a semester. Title IV funds include Federal Pell Grants, Federal Supplemental Educational Opportunity Grants (SEOG), Federal Work-Study, Federal Perkins Loans*, Federal Direct Subsidized Stafford Loans, Federal Direct Unsubsidized Stafford Loans, and Federal Direct PLUS Loans. The priority sequence for return of Title IV funds is as follows:

1. Unsubsidized Federal Stafford Loans
2. Subsidized Federal Stafford Loans
3. Unsubsidized Direct Stafford Loans (other than PLUS Loans)
4. Subsidized Direct Stafford Loans
5. Federal Perkins Loans*
6. Federal PLUS Loans
7. Direct PLUS Loans
8. Federal Pell Grants for which a return of funds is required
9. Federal Supplemental Educational Opportunity Grants (FSEOG) for which a return of funds is required
10. TEACH Grants for which a return of funds is required
11. Iraq-Afghanistan Service Grant for which a return is required

For the complete policy statement on Return of Title IV funds, see the Student Accounts Office website (<https://studentaccounts.gwu.edu/>). This applies only to federal student aid and does not pertain to the University's refund policy, as noted in the Fees and Financial Regulations section of this Bulletin.

(Note: while no longer available, Federal Perkins Loans are listed in this sequence as it is still noted in the federal regulations).

Title IV Credit Balances

Students have the right to exercise authorizations to hold or release a hold pertaining to Title IV credit balances, using the Student Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_StudentNEWLOGO.pdf).

Similarly, parents have the right to do so pertaining to Federal Direct PLUS Loans, using the Parent Title IV credit balance authorization form (https://studentaccounts.gwu.edu/sites/studentaccounts.gwu.edu/files/downloads/Title_IV_Credit_Auth_ParentNEWLOGO.pdf).

HEA Disclosures Portal

See the University's Consumer Information portal (<https://financialaid.gwu.edu/consumer-information/>) for complete disclosures information.

INTERDISCIPLINARY AND SPECIAL PROGRAMS

While GW offers many interdisciplinary programs within and across its schools and departments, those listed here are independent of any other academic unit at GW.

- Digital Technology (<http://bulletin.gwu.edu/interdisciplinary-special-programs/digital-technology-certificate/>)
- GWTeach and the STEM Teaching Minor (p. 66)
- Linguistics (p. 68)
- Naval Science (p. 69)
- Sustainability (p. 69)
- University Honors Program (p. 73)
- Women's Leadership Program (p. 76)

GWTEACH PROGRAM AND MINOR IN STEM TEACHING

The GWTeach program is designed for undergraduate science, technology, engineering, and mathematics (STEM) majors interested in exploring careers in teaching. GWTeach, which is based on the nationally recognized UTeach (<http://www.uteach-institute.org/>) program, integrates secondary school teacher preparation into the student's major studies.

GW undergraduate students can complete one of two pathways toward the minor in STEM teaching through the GWTeach program. Through the first pathway, GW students with a STEM major complete all requirements for their major as well as 25 to 28 credits in required GWTeach coursework. Upon graduation, students who have completed all GWTeach requirements are eligible for licensure by the District of Columbia as middle or high school teachers. A second pathway allows students to complete 18 credits of GWTeach coursework to earn a minor in STEM teaching without the eligibility for teacher licensure.

The first two courses in the program, GTCH 1001 and GTCH 1002, are open to all undergraduate students at GW. In these 1 to 2 credit courses, students are introduced to the basics of teaching and experience teaching firsthand in local classrooms. Alternatively, students may choose to start the program sequence with GTCH 2003, which combines the coursework of GTCH 1001 and 1002 into one 3-credit course. Students who wish to complete the GWTeach program work with their departmental advisor and the GWTeach advisor to integrate the remaining GWTeach courses into their major program of study. Science, technology, engineering, and math majors (including pre-med students) are eligible for the teacher licensure pathway, with exceptions made for some additional majors that are heavy in STEM coursework.

Students are encouraged to begin the GWTeach program during their freshman or sophomore year. Visit the GWTeach

Program (<http://gwteach.gwu.edu/>) website for additional information and to schedule a meeting with a GWTeach advisor to discuss program options.

STEM Teaching Minor Pathways

There are two pathways to earn a STEM teaching minor:

1. GW students with a STEM major complete all requirements for their major as well as 25 or 28 credits in required GWTeach coursework to earn a minor in STEM teaching. Upon graduation, students who have completed all GWTeach requirements are eligible for licensure by the District of Columbia as a middle or high school teacher.
2. Any GW student can complete 18 credits of GWTeach coursework to earn a minor in STEM teaching without the eligibility for teacher licensure. The 18-credit pathway comprises core courses and a choice of elective courses.

MINOR REQUIREMENTS

Minor in STEM Teaching

The following requirements must be fulfilled: 18 credits in required and elective courses for the minor in STEM teaching; 25 credits in required courses for the minor in STEM teaching with science teacher licensure eligibility; or 28 credits in required courses for the minor in STEM teaching with math teacher licensure eligibility.

Code	Title	Credits
Minor in STEM teaching: 18 credits		
Required		
GTCH 1001 & GTCH 1002	GWTeach Step 1: Inquiry Approaches to Teaching and GWTeach Step 2: Inquiry-based Lesson Design	
or GTCH 2003	Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design	
GTCH 3101	Knowing and Learning in Mathematics and Science	
GTCH 3102	Classroom Interactions	
GTCH 3103	Project-Based Learning	
Electives		
6 credits in elective courses selected from the following:		
GTCH 3201W	Perspectives on Mathematics and Science	
GTCH 3202	Research Methods in Mathematics and Science	
GTCH 3203	Functions and Modeling	

GTCH 3500	Topics in STEM Teaching
GTCH 3600	Pedagogy for Learning Assistants
GTCH 4000	Apprentice Teaching

Minor in STEM teaching (with science teacher licensure eligibility): 25 credits

Required

GTCH 1001 & GTCH 1002	GWTeach Step 1: Inquiry Approaches to Teaching and GWTeach Step 2: Inquiry-based Lesson Design
or GTCH 2003	Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design

GTCH 3101	Knowing and Learning in Mathematics and Science
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GTCH 3102	Classroom Interactions
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GTCH 3103	Project-Based Learning
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GTCH 3201W	Perspectives on Mathematics and Science
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GTCH 3202	Research Methods in Mathematics and Science
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GTCH 4000	Apprentice Teaching
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Minor in STEM teaching (with math teacher licensure eligibility): 28 credits

Required

GTCH 1001 & GTCH 1002	GWTeach Step 1: Inquiry Approaches to Teaching and GWTeach Step 2: Inquiry-based Lesson Design
or GTCH 2003	Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design

GTCH 3101	Knowing and Learning in Mathematics and Science
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GTCH 3102	Classroom Interactions
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GTCH 3103	Project-Based Learning
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GTCH 3201W	Perspectives on Mathematics and Science
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GTCH 3202	Research Methods in Mathematics and Science
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GTCH 3203	Functions and Modeling
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GTCH 4000	Apprentice Teaching
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FACULTY

Courses in the GWTeach program are taught by a blend of faculty, with experts from the Graduate School of Education and Human Development and the Columbian College of Arts and Sciences (CCAS).

Directors G. Feldman, M. Feuer, J. Grooms, L. Medsker
Master Teachers A. Bitler, S. Choi, M. Hollibaugh Baker
CCAS Faculty G. Feldman, M. Friend, L. McClary, L. Medsker
GSEHD Faculty J. Grooms, C. Pyke, T. Sikorski

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GTCH 1001. GWTeach Step 1: Inquiry Approaches to Teaching. 1 Credit.

First experiential course in the GWTeach program. Introduces the basics of teaching, with a focus on using inquiry to teach lessons. Includes teaching experiences in a local elementary school.

GTCH 1002. GWTeach Step 2: Inquiry-based Lesson Design. 2 Credits.

Builds on the basics of teaching learned in GTCH 1002, with a focus on inquiry-based lesson design, teaching with technology, classroom management, and analyzing student performance data. Includes teaching experiences in a local middle school. Prerequisites: GTCH 1001.

GTCH 2003. Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design. 3 Credits.

Combination of GTCH 1001 and GTCH 1002, with emphasis on inquiry lesson design, teaching with technology, classroom management, and analyzing student performance. Includes teaching experiences in a local middle school.

GTCH 3101. Knowing and Learning in Mathematics and Science. 3 Credits.

Introduction to models of knowing and learning for classroom practice. Focus on secondary mathematics and science.

GTCH 3102. Classroom Interactions. 3 Credits.

Use of curriculum and technology in the classroom. Interplay between teachers, students, content, and the world beyond schools. Design, implement, and evaluate outcomes of instructional activities. Includes local high school teaching experiences. Prerequisites: GTCH 1001 and GTCH 1002; or GTCH 2003.

GTCH 3103. Project-Based Learning. 3 Credits.

Design of full units of connected lessons. Integration of mathematics and science content. Intensive field-based high school teaching experiences in a local school are embedded into the course. Restricted to Students in the GWTeach program with junior or senior standing or with permission of the instructor. Prerequisites: GTCH 3102. Recommended background: This is a service learning course, for more information email gwteach@gwu.edu.

GTCH 3201. Perspectives on Math and Science. 3 Credits.

Topics and episodes in the history of science and math. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Same As: PHIL 3201.

GTCH 3201W. Perspectives on Mathematics and Science. 3 Credits.

Topics and episodes in the history of mathematics and science. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Prerequisites: GTCH 1001 or permission of the instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GTCH 3202. Research Methods in Mathematics and Science. 3 Credits.

Designing experiments to answer scientific questions and reduce systematic and random errors; using statistics to interpret experimental results. Application and implementation of science and math research in K-12 classrooms. Restricted to students in the GWTeach program with sophomore or higher standing and others with permission of the instructor. Prerequisites: GTCH 1001 and 1002; or GTCH 2003.

GTCH 3203. Functions and Modeling. 3 Credits.

Designed to strengthen and expand knowledge of secondary mathematics topics and address the unique needs of future math teachers. Explores models using linear, exponential, polynomial, and trigonometric functions. Euclidean geometry. Prerequisites: GTCH 1001 and MATH 1231 or permission of the instructor.

GTCH 3500. Topics in STEM Teaching. 1 Credit.

Issues in STEM research and education. Topics vary by semester. May be repeated for credit if topic differs. Consult the Schedule of Classes for more details. Restricted to GWTeach and minor in STEM teaching students with permission of the GWTeach Associate Director.

GTCH 3600. Pedagogy for Learning Assistants. 2 Credits.

For learning assistants in large undergraduate science courses. Integrating educational theory, pedagogy, and practice to facilitate productive classroom interactions. Credit cannot be earned for this course and CPED 6100.

GTCH 4000. Apprentice Teaching. 7 Credits.

Culminating experience for teacher certification. Twenty-five hours per week of field experience in a local school teaching in content certification area are required. Students attend a weekly seminar to discuss topics related to the profession of teaching. Restricted to GWTeach apprentice teachers with junior or senior standing. Prerequisites: GTCH 3101 and GTCH 3102; or GTCH 3103.

MINOR IN LINGUISTICS

The linguistics minor at GW is designed to provide students with training in the analysis of both the formal structures and social functions of language. Through critical analysis of key readings and approaches in linguistics, students learn how to interpret linguistic data, and apply these analyses to theoretical debates and practical issues in both linguistics and related fields.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses (6 credits in each of two groups of elective options).

Code	Title	Credits
Required		
ANTH 1004	Language in Culture and Society	
SPHR 1071	Foundations of Human Communication	
Elective options		
Language, form, and cognition group		
6 credits (two courses) from the following:		
CSCI 3907	Special Topics (Natural Language Processing))	
PHIL 1153	The Meaning of Mind	
SPHR 2101	Research Methods	
SPHR 2130	Phonetics and Phonological Development	
SPHR 2131	Language Acquisition and Development	
SPHR 2133	Autism	

or LING 3691	Special Topics in Linguistic Anthropology
or ANTH 3691	Special Topics in Linguistic Anthropology
SPHR 2135	Language: Structure, Meaning, and Use
SPHR 2136	
SPHR 3116	Brain and Language
Social and cultural contexts of language group	
6 credits (two courses) from the following:	
ANTH 3601	Language, Culture, and Cognition
ANTH 3602	Ethnographic Analysis of Speech
ANTH 3603	Psycholinguistics
ANTH 3691	Special Topics in Linguistic Anthropology (Language and Media)
ANTH 3691	Special Topics in Linguistic Anthropology (Language and Religion)
ANTH 6104	Proseminar in Linguistic Anthropology
ENGL 3860	Topics in the History of the English Language

NAVAL SCIENCE

Naval Reserve Officers Training Corps Program

The Naval Reserve Officers Training Corps (NROTC) offers young men and women the opportunity to qualify for a full scholarship and a commission in the US Navy or Marine Corps. NROTC midshipmen are required to complete the Naval Science courses and attend weekly professional seminars and physical training sessions. During the summer, NROTC midshipmen participate in active duty at sea or shore-based training cruises for approximately four weeks. Upon receiving their baccalaureate degrees and completing the NROTC program, qualified midshipmen are commissioned as Ensigns in the US Navy or Second Lieutenants in the Marine Corps. Commissioned naval officers go on to training in various warfare specialties and serve as surface or submarine officers, naval aviators, or SEALs. Restricted line positions (intelligence, law, medicine, supply) are not normally offered through NROTC. Marine Corps officers attend The Basic School in Quantico, Virginia, and serve in fields such as infantry, artillery, logistics, intelligence, and aviation.

Information concerning enrollment (<https://nrotc.gwu.edu/enrollment/>), scholarships (<https://nrotc.gwu.edu/scholarships/>), and academic requirements (<https://nrotc.gwu.edu/academic-requirements/>) is available on the Naval Reserve Officer Training Corps website.

Enrollment in NROTC is not a requirement for taking Naval Science (p. 1705) (NSC) courses. Any GW student may take such courses with the approval of the Professor of Naval Science.

Visit the GW NROTC Program website (<https://nrotc.gwu.edu/>) for additional information.

SUSTAINABILITY

Students at GW come from around the world to connect to diverse ideas, cultures, and ways of life. The 18-credit minor in sustainability offers students a rigorous platform to examine critical sustainability issues and solutions. The program begins with Introduction to Sustainability, a team-taught course that equips students with a strong foundation in global sustainability principles and paradigms. Students build on this foundation by further investigating sustainability through the lenses of ecosystems, economies, communities, and practices. The capstone experience provides students with a structure for applying what they've learned through a semester-long research, service, and/or internship project. Students are empowered to consider the competing perspectives of stakeholders, the unintended consequences of decisions, and how interventions at different levels and scales affect systems and their component parts. Ultimately, students gain the tools necessary for creating healthy and thriving resource systems.

Minor program requirements

All students in the minor program are required to take SUST 1001 Introduction to Sustainability, at least one course in each of the four pillars (below), and at least 3 credits in experiential learning. At least 9 credits have to be unique to the minor (i.e. SUST 1001 Introduction to Sustainability, SUST 3096 Research in Sustainability or SUST 3097 Culminating Experience in Sustainability, and one pillar course). This means that 9 credits cannot be double-counted to fulfill the requirements of another major and/or minor program. At least 6 credits must be at the 2000-level or above (i.e. SUST 3096 or SUST 3097 and one pillar course).

The four pillars of the sustainability minor are:

- Pillar I: Sustainable Ecosystems—Earth Sciences and Public Health
- Pillar II: Sustainable Economies—Business, Markets, Technology, and Trade
- Pillar III: Sustainable Communities—Culture, Politics, and Society
- Pillar IV: Sustainable Practices—Leadership, Values, Norms, and Behaviors

The experiential learning experience is required as a capstone for the minor. Students may fulfill this requirement in their junior or senior year through directed research, fieldwork, an internship (paid or unpaid), or community service. Students may enroll in either SUST 3096 or SUST 3097 to fulfill the

requirement. Successful completion of SUST 1001 and approval of the Program Director are required prior to enrollment in SUST 3096 or SUST 3097.

Each semester, GW departments and programs offer special topics courses that may fulfill the pillar requirement. Topics relevant to the concentration must be approved by the Program Director prior to enrollment. Consult the Schedule of Classes (<https://my.gwu.edu/mod/pws/>) for topics offered.

With prior approval of the Program Director, courses taken in study abroad programs may be used to fulfill one of the pillar requirements.

MINOR

Minor

- Minor in sustainability (p. 70)

FACULTY

Lead sustainability faculty: L. Benton-Short, K. Merrigan, R. Orttung, L. Paddock, D. Rain, M. Svoboda

In addition there are over 300 faculty involved in teaching sustainability related courses. Courses with sustainability content can be found by using the course attribute SUST in course search.

COURSES

The GW Sustainability Collaborative offers interdisciplinary team-taught courses on subjects related to sustainability. In addition there are over 350 courses at GW with sustainability related content. The "SUST" attribute has been applied to related courses from all of GW's colleges and schools and most departments and programs. These courses can be found by searching for the course attribute "SUST."

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SUST 1001. Introduction to Sustainability. 3 Credits.

The concept of sustainability is both broad and specific as it is applied to areas ranging from social systems to law, engineering, public health, and natural systems. The course considers goals, principles, and practical applications, with a multidisciplinary perspective on major environmental and social issues growing out of these concerns.

SUST 1099. Variable Topics. 1-36 Credits.

SUST 2002. The Sustainable City. 3 Credits.

This course explores the connection between cities and sustainability. We consider sustainability from a variety of theoretical and practical perspectives and examine some of the most pressing and critical issues that must be addressed in order to create a sustainable city.

SUST 3003. World on a Plate. 3 Credits.

How dietary choices affect not just health, but the environment and those involved in the production of food as well; interdisciplinary perspective on the impact of food on the future of the environment, the economy, and society. Recommended background: Prior completion of SUST 1001.

SUST 3096. Research in Sustainability. 1-3 Credits.

Directed research under faculty supervision. The faculty member directing the research assigns work, such as papers and assigned reading, as appropriate. Prerequisites: SUST 1001.

SUST 3097. Culminating Experience in Sustainability. 3 Credits.

A paid or unpaid internship, fieldwork, directed research, or community service with an organization engaged in two or more of the three major goals of sustainability: economic development, social equality, or environmental protection. Students complete a series of reflection essays, career preparations, and other assignments throughout the semester. Some study abroad programs and some research or service courses at GW can be used to fulfill the outside work requirement for SUST 3097, but students may still be asked to register for 1 credit of SUST 3097 to complete the reflective essays, career preparations, and/or outreach assignments. These special arrangements must be approved in advance by the director of the minor. Prerequisites: SUST 1001.

SUST 5099. Variable Topics. 1-99 Credits.

MINOR IN SUSTAINABILITY

Students at GW come from around the world to connect to diverse ideas, cultures, and ways of life. The 18-credit minor in sustainability offers students a rigorous platform to examine critical sustainability issues and solutions. The program begins with Introduction to Sustainability, a team-taught course that equips students with a strong foundation in global sustainability principles and paradigms. Students build on this foundation by further investigating sustainability through the lenses of ecosystems, economies, communities, and practices. The capstone experience provides students with a structure for applying what they've learned through a semester-long research, service, and/or internship project. Students are empowered to consider the competing perspectives of stakeholders, the unintended consequences of decisions, and how interventions at different levels and scales affect systems and their component parts. Ultimately, students gain the tools necessary for creating healthy and thriving resource systems.

Students in the minor program are required to take SUST 1001 Introduction to Sustainability, at least one course in each of the four pillars (below), and at least 3 credits in experiential learning. At least 6 credits must be at the 2000 level or above, e.g., SUST 3096 Research in Sustainability or SUST 3097 Culminating Experience in Sustainability and one pillar course. At least 9 credits, e.g., SUST 1001, and SUST 3096 or SUST 3097, and one pillar course, must be unique to the minor and cannot be double-counted to fulfill the requirements of another major and/or minor program. The unique course requirement does not apply to SEAS students, who are governed by their school's policy regarding unique/double-counting course requirements with the minor program.

Pillars

- Pillar I: Sustainable Ecosystems – Earth Sciences and Public Health
- Pillar II: Sustainable Economies – Business, Markets, Technology, and Trade
- Pillar III: Sustainable Communities – Culture, Politics, and Society
- Pillar IV: Sustainable Practices – Leadership, Values, Norms, and Behaviors

The experiential learning experience is required as a capstone for the minor. Students may fulfill this requirement in their junior or senior year through directed research, fieldwork, an internship (paid or unpaid), or community service. Students may enroll in either SUST 3096 or SUST 3097 to fulfill the requirement. Successful completion of SUST 1001 (<http://bulletin.gwu.edu/search/?P=SUST%201001>) and approval of the Program Director are required prior to enrollment in SUST 3096 and SUST 3097.

Each semester, GW departments and programs offer special topics courses that may fulfill the pillar requirement. Topics relevant to the concentration must be approved by the Program Director prior to enrollment. Consult the Schedule of Classes (<https://my.gwu.edu/mod/pws/>) for topics offered.

With prior approval of the Program Director, courses taken in study abroad programs may be used to fulfill one of the pillar requirements.

PILLAR I

Sustainable Ecosystems: Earth Sciences and Public Health Pillar

Required

One 3-credit course from this pillar must be selected as part of the minor program.

The following list of course options for this pillar does not include special topics courses, which also may count toward the minor with the prior approval of the Program Director. Topics relevant to the concentration must be approved by the

Program Director prior to enrollment. Visit the sustainability minor [website \(http://sustainability.gwu.edu/sustainability-minor/\)](http://sustainability.gwu.edu/sustainability-minor/) for current course offerings.

Code	Title	Credits
Columbian College of Arts and Sciences		
BISC 1005	The Biology of Nutrition and Health	3
BISC 1006	The Ecology and Evolution of Organisms	3
BISC 1007	Food, Nutrition, and Service	3
BISC 1008	Understanding Organisms through Service Learning	3
BISC 2454	General Ecology	3
CHEM 2085	Environmental Chemistry	3
CHEM 3140	Geochemistry	3
GEOG 1002	Introduction to Physical Geography	4
GEOG 2134	Energy Resources	3
GEOG 2136	Water Resources	3
GEOG 2137	Environmental Hazards	3
GEOL 1001	Physical Geology	3
GEOL 1005	Environmental Geology	3
GEOL 2106	Oceanography	3
GEOL 3131	Global Climate Change	3
GEOL 3138	Hydrogeology	3
GEOL 3191	Geology of Energy Resources	3
SUST 3003	World on a Plate	3
School of Engineering and Applied Science		
CE 1020	Introduction to a Sustainable World	1
CE 2510	Environmental Sustainability	3
CE 3520	Environmental Engineering I: Water Resources and Water Quality	3
CE 3521	Environmental Engineering Laboratory	1
CE 4530	Environmental Engineering II: Water Supply and Pollution Control	3
CE 4620	Hydrology and Hydraulic Design	3
School of Public Health and Health Services		

PUBH 3132	Health and Environment	3
PUBH 3133	Global Health and Development	3
PUBH 3150	Sustainable Energy and Environmental Health	3
Total Credits		78

PILLAR II

Sustainable Economies: Business, Markets, Technology, and Trade Required

One 3-credit course from this pillar must be selected as part of the minor program.

The following list of course options for this pillar does not include special topics courses, which also may count toward the minor with the prior approval of the Program Director. Topics relevant to the concentration must be approved by the Program Director prior to enrollment. Visit the sustainability minor [website \(http://sustainability.gwu.edu/sustainability-minor/\)](http://sustainability.gwu.edu/sustainability-minor/) for current course offerings.

Code	Title	Credits
Columbian College of Arts and Sciences		
ECON 2151	Economic Development	
ECON 2136	Environmental and Natural Resource Economics	
ECON 2180	Survey of International Economics	
GEOG 2148	Economic Geography	
PSC 2439	International Political Economy	
SUST 3003	World on a Plate	
School of Business		
BADM 2001	Markets and Politics	
or BADM 2001W	Markets and Politics	
IBUS 4401	Managing the Multinational Enterprise	
IBUS 4402	Managing in Developing Countries	

PILLAR III

Sustainable Communities: Culture, Politics, and Society Pillar Required

One 3-credit course from this pillar must be selected as part of the minor program.

The following list of course options for this pillar does not include special topics courses, which also may count toward the minor with the prior approval of the Program Director. Topics relevant to the concentration must be approved by the Program Director prior to enrollment. Visit the sustainability minor [website \(http://sustainability.gwu.edu/sustainability-minor/\)](http://sustainability.gwu.edu/sustainability-minor/) for current course offerings.

Code	Title	Credits
Columbian College of Arts and Sciences		
AMST 2440	The American City	
AMST 3810	Planning Cities	
ANTH 3501	Anthropology of Development	
ANTH 3502	Cultural Ecology	
ANTH 3513	Anthropology of Human Rights	
ANTH 3804	Origins of the State and Urban Society	
GEOG 2127	Population Geography	
GEOG 2141	Cities in the Developing World	
GEOG 3143	Urban Sustainability	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2134	Philosophy of Human Rights	
PHIL 2281	Philosophy of the Environment	
PPPA 2701	Sustainability and Environmental Policy	
PSC 2240	Poverty, Welfare, and Work	
PSC 2367	Human Rights	
SOC 2169	Urban Sociology	
SUST 2002	The Sustainable City	
School of Public Health and Health Services		
EXNS 1114	Community Nutrition	
PUBH 2114	Environment, Health, and Development	
School of Engineering and Applied Science		
CSCI 1030	Technology and Society	
or CSCI 1030W	Technology and Society	

PILLAR IV

Sustainable Practices: Leadership, Values, Norms, and Behaviors

Required

One 3-credit course from this pillar must be selected as part of the minor program.

The following list of course options for this pillar does not include special topics courses, which also may count toward the minor with the prior approval of the Program Director. Topics relevant to the concentration must be approved by the Program Director prior to enrollment. Visit the sustainability minor website (<http://sustainability.gwu.edu/sustainability-minor/>) for current course offerings.

Code	Title	Credits
Columbian College of Arts and Sciences		
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior	
GEOG 3132	Environmental Quality and Management	
HSSJ 1100	Introduction to Human Services and Social Justice	
HSSJ 2200	Principles of Ethical Leadership	
PSC 2220	Public Opinion	
School of Engineering and Applied Science		
CSCI 4532	Information Policy	
School of Business		
MGT 3305	Human Capital Sustainability	
ORSC 2116	Leading Change	
ORSC 2123	Negotiation and Conflict Resolution	
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
School of Public Health		
HLWL 1104	Outdoor and Environmental Education	
PUBH 3151	Current Issues in Bioethics	

UNIVERSITY HONORS PROGRAM

The University Honors Program (<https://honorsprogram.gwu.edu/about-university-honors-program/>) offers exceptional entering students the opportunity to engage in a distinctive, participatory program of study

designed to prepare them—whatever their gifts and interests might be—to meet the challenges of the 21st century. The program invites students to develop a humane perspective on the world while honing their analytical and expressive powers and deepening their understanding of complex issues and questions. Built upon an interdisciplinary curriculum, the program is fully integrated into and reinforcing of the highest academic aspirations of University schools and departments. Components of the program include:

- Small seminar-style classes, capped at 15 to 20 students, provide an opportunity to probe a variety of evolving issues and eternal questions.
- Students enroll in a series of unique courses in the humanities, natural sciences, and social sciences that address both cross-cultural and cross-disciplinary questions and issues. In their senior year, students participate in an Honors capstone experience that provides an opportunity to apply and reflect on what they have learned as undergraduates.
- The Honors experience is enriched by distinctive co-curricular programming, including off-campus activities with faculty members and discussions in the program's Club Room. Events may include student-faculty dinners, hikes, visits to local museums, day trips throughout the region, theater performances, film screenings, guest speakers and debates, and career information sessions. Students may also have an opportunity for summer study abroad.
- The program offers all Honors students the option of living in an Honors residential community.
- Designated Honors academic advisors assist students with academic, career, and personal planning.
- Honors program members have early course registration privileges during their second, third, and fourth semesters.
- Membership in the Honors program is indicated on the student's transcript.

REQUIREMENTS

The University Honors Program (<https://honorsprogram.gwu.edu/>) serves approximately 500 selected students, or five percent of the undergraduate student body. Incoming students may apply to the Honors Program at the time they apply to the University; a small group of rising sophomores may also apply.

The program is characterized by small, seminar-style classes with enrollments capped at 15 to 20 students; faculty who serve as mentors, models, and guides in the learning process; classroom approaches that call upon students to initiate inquiry, work collaboratively, and drive the exploration and learning process; interdisciplinary tools and modes of inquiry; and global or cross-cultural perspectives and course content.

Code	Title	Credits
In their first year, along with other courses, Honors Program students take:		
HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	
HONR 1016	Honors Seminar: Origins and Evolution of Modern Thought	
HONR 1033	Honors Seminar: Scientific Reasoning and Discovery	
HONR 1034	Honors Seminar: Scientific Reasoning and Discovery	

****** In place of HONR 1033 and HONR 1034, students may take an approved alternative science course.

Students who join the Honors Program in spring of their freshman year take HONR 2016 Enlightenment East and West in place of the first year seminars.

In their second, third, and fourth years they take:

Two Self and Society courses taken as follows: two offerings of HONR 2047 or two offerings of HONR 2048 or one offering each of HONR 2047 and HONR 2048. Topics may not be repeated.

and

Two Arts and Humanities courses taken as follows: two offerings of HONR 2053 or two offerings of HONR 2054 or one offering each of HONR 2053 and HONR 2054. Topics may not be repeated.

In addition, they pursue coursework in their majors, including special or departmental honors and/or independent or mentored research. All Honors Program students participate in HONR 4199 (<http://bulletin.gwu.edu/search/?P=HONR%204199>) Honors Capstone Experience, and complete a departmental or Honors senior thesis or project. The Honors proseminars meet certain general curriculum and elective requirements of the respective undergraduate schools. HONR 1015 (<http://bulletin.gwu.edu/search/?P=HONR%201015>) Honors Proseminar: UW 1020: Origins and Evolution of Modern Thought is the required University Writing course for Honors students.

In order to remain in good standing, Honors Program students must enroll in at least academic 12 credits each semester and, except for the first year, maintain a cumulative GPA that ensures it is mathematically possible to graduate with 3.0 or above. First-year students must achieve a minimum cumulative GPA of 3.0. Successful participation in the program is recognized and recorded on a student's official transcript.

FACULTY

Director I. Creppell

Associate Professors T. Christov, B. Kung, M. Ralkowski, E.M. Restrepo

Assistant Professors E. Aviv, L. Hammond, J. Trullinger, W. Winstead

University Honors Advisory Committee T. Wallace (Chair), E. Anker, E. Arnesen, G. de los Reyes, A. Helm, C. Jordan, B. Narahari, M. Modaro, J. Teitlebaum

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HONR 1015. Honors Seminar: UW 1020: Origins and Evolution of Modern Thought. 4 Credits.

Exploration of significant exemplars, milestones, and developments of human thought. Foundational and representative thinkers and texts from Western and Eastern traditions provide an indication of the diversity and complexity of attempts to articulate responses to universal questions, problems, and aspirations. Credit cannot be earned for this course and UW 1020.

HONR 1016. Honors Seminar: Origins and Evolution of Modern Thought. 3 Credits.

Continuation of HONR 1015. Key developments and trajectories in human thought and inquiry into modern times.

HONR 1033. Honors Seminar: Scientific Reasoning and Discovery. 4 Credits.

Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1034. Honors Seminar: Scientific Reasoning and Discovery. 4 Credits.

Continuation of HONR 1033. Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1099. Variable Topics. 1-36 Credits.

HONR 1120. Introduction to Biomolecular Research. 2 Credits.

Research methods in the studies of proteins and DNA; exploration of faculty research to help prepare students for conducting their own research. Prerequisite or concurrent registration: BISC 1115 and BISC 1125. Permission of the instructor is required. Laboratory fee.

HONR 2016. Enlightenment East and West. 4 Credits.

This course replaces HONR 1016 for students who enter the Honors Program as sophomores.

HONR 2043. Honors Microeconomics. 3 Credits.

An introductory microeconomics course that considers both the philosophical basis of economics as well as its methods and applications. Same as ECON 1011.

HONR 2044. Honors Macroeconomics. 3 Credits.

An accelerated introductory macroeconomics course that includes the study of special topics. (Same as ECON 1012).

HONR 2047. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. May be repeated for credits provided the topic differs. See program for more details. Same As: HONR 2047W.

HONR 2047W. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. May be repeated for credits provided the topic differs. See program for more details. Same As: HONR 2047.

HONR 2048. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena through the use of social and behavioral sciences tools and modes of inquiry; relationships between individuals and among collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. May be repeated for credit provided the topic differs. See program for more details.

HONR 2048W. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena through the use of social and behavioral sciences tools and modes of inquiry; relationships between individuals and among collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. May be repeated for credit provided the topic differs. See program for more details. Same As: HONR 2048.

HONR 2053. Arts and Humanities Seminar. 3 Credits.

Inter- or multi-disciplinary approaches to topics in the arts and humanities. Exploration of the relationship between literature, religion, art, film, photography, philosophy, or other humanistic fields of study. Topics vary by semester. May be repeated for credits provided the topic differs. See program for more details. Same As: HONR 2053W.

HONR 2053W. Arts and Humanities Seminar. 3 Credits.

Inter- or multi-disciplinary approaches to topics in the arts and humanities. Exploration of the relationship between literature, religion, art, film, photography, philosophy, or other humanistic fields of study. Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HONR 2053.

HONR 2054. Arts and Humanities Seminar. 3 Credits.

In-depth exposure to an area of literature, art, film, philosophy, or other humanistic field of study, often placing the subject matter in cultural and historic contexts. Topics vary by semester. May be repeated for credits provided the topic differs. See program for more details. Credit cannot be earned for this course and HONR 2054W.

HONR 2054W. Arts and Humanities Seminar. 3 Credits.

In-depth exposure to an area of literature, art, film, philosophy, or other humanistic field of study, often placing the subject matter in cultural and historic contexts. Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HONR 2054.

HONR 2175. Honors Special Topics. 6 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

HONR 2182. Honors Internship. 4 Credits.

The Honors Program allows credit to Honors students for academic work that puts an internship in a broader scholastic context. Each student must have a GW faculty member oversee his or her project. The Honors internship faculty member determines the student's grade. May be repeated for credit.

HONR 2184. Honors Undergraduate Research. 4 Credits.

Independent or faculty-mentored research resulting in a significant written or other product. May be repeated for credit.

HONR 2185. Honors Research Assistantship. 4 Credits.

Students provide substantive assistance to a faculty member engaged in scholarly or scientific research. May be repeated for credit.

HONR 4198. Honors Senior Thesis. 3-4 Credits.

One- or two-semester thesis under faculty guidance. May be repeated for credit.

HONR 4199. Honors Capstone Experience. 1 Credit.

Students re-engage with core questions and issues related to the Honors Program curriculum, reflecting on their learning in relation to enduring questions and challenges of our world.

WOMEN'S LEADERSHIP PROGRAM

The Women's Leadership Program (WLP) (<http://wlp.gwu.edu/>) is a selective, year-long, living and learning program for freshmen women of any GW school. Offered at the Mount Vernon Campus, WLP commemorates and preserves the vision of the founder of Mount Vernon College and Seminary, Elizabeth J. Somers. WLP students have the benefit of small classes, close contact with faculty and women in leadership roles, and strong community ties within the program.

The dynamic curriculum emphasizes exploration and development of women's leadership through academic courses and weekly symposia. WLP symposia offer special lectures, workshops, and experiential learning that draw on the unique resources of Washington, DC, to bring students together with women of achievement in leadership roles from many professional fields. Membership in the WLP program is indicated on the student's transcript.

FACULTY

Director M. Buckley, Associate Professor

Associate Professor J. Donovan

Assistant Professors M. Allendoerfer, E. Hovander, C. Jordan, S. Salchak

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WLP 1020. Writing, Literature, and Society. 3 Credits.

Critical reading skills, concepts of disciplinarity, and processes of producing and legitimating knowledge. Writing intensive. Texts and emphasis vary according to cohort. Restricted to students in the women's leadership program with the permission of the instructor.

WLP 1110. Women and Leadership Symposium (I). 1 Credit.

A weekly symposium that includes a wide variety of leadership-building workshops, cultural events of cross-disciplinary interest, and guest speakers.

WLP 1111. Women and Leadership Symposium (II). 1 Credit.

A weekly symposium that includes a wide variety of leadership-building workshops, cultural events of cross-disciplinary interest, and guest speakers.

WLP 4198. WLP Independent Study. 3 Credits.

COLUMBIAN COLLEGE OF ARTS AND SCIENCES

Dean P. Wahlbeck

Vice Deans K. Gross, J. Philbeck

Associate Deans E. Downie, C. Heap, R. Riedner

Since its founding in 1821, Columbian College, the original college of liberal arts and sciences of The George Washington University, has been the cornerstone of the campus community. The University awarded its first Doctor of Philosophy degree in 1888, one of the first institutions in the United States to do so. Columbian College of Arts and Sciences today houses all undergraduate and graduate programs in the arts and sciences, offering associate's, bachelor's, master's, and doctoral degrees and graduate certificates.

The rich and diverse arts and sciences curriculum is designed to strengthen the student's ability to analyze the social, cultural, and physical environment and to communicate findings in an articulate fashion. These purposes are accomplished by means of the study of various disciplines within the humanities, social sciences, and mathematical and natural sciences.

Students may elect one of more than 50 departmental or interdisciplinary majors; they may also elect double majors or individualized degree programs. The College offers its undergraduates opportunities for pre-professional education in many fields and for internships in a stimulating urban environment. Graduate students are offered more than 40 master's programs, 20 doctoral programs, and 15 certificate programs.

REGULATIONS

Undergraduate Programs

Columbian College of Arts and Sciences offers undergraduate programs leading to the degrees of associate of arts, bachelor of arts, bachelor of science, and bachelor of fine arts. In cooperation with the School of Medicine and Health Sciences, Columbian College offers a seven-year integrated bachelor of arts/doctor of medicine.

One hundred and twenty hours of academic coursework must be passed with a cumulative grade-point average of at least 2.0. Note that some courses outside Columbian College do not count toward the 120-credit requirement. General education, major, and other requirements described below must be met.

Each student must declare a major during the sophomore year, no later than the registration period during the fourth full-time semester or the semester following completion of 45 credits, whichever comes first. A student may change the major with the consent of the Dean and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved.

General Education Curriculum Requirement

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC (<http://bulletin.gwu.edu/university-regulations/general-education/>). Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one course in university writing and two writing-in-the-disciplines (WID) courses.
- Humanities—one approved humanities course that involves critical thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for G-PAC is distributed as follows:

- Arts—one approved arts course that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Oral Communication—one approved course in oral communication.
- Natural or Physical Science—one additional approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Humanities—one additional approved humanities course that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC requirements may also be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington

University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

Lists of approved courses in the above categories are included on each undergraduate major's Bulletin page.

Majors

Each student must declare a major during the sophomore year, no later than the registration period during the fourth full-time semester or the semester following completion of 45 credits, whichever comes first. Students must complete the major requirements in effect at the time of declaration. Students may change their major with the consent of the College and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved. Students may pursue at most two majors per degree.

Scholarship Performance in the Major

Major fields are defined by a set of required courses. The required curricula for majors are outlined under each department's heading in this Bulletin. A minimum grade of C– must be attained in all courses numbered 2000 or above that are required for the major. If a student receives a grade of D+, D, or D– the student may either repeat the course until a satisfactory grade (C– or above) is attained, or with the permission of the department, substitute another course numbered 2000 or above.

Minors

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major. Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the applicable department. Columbian College students may pursue minors in other schools of the University, as well as those in naval science and in sustainability. Students interested in a minor should consult a faculty mentor in the applicable department and declare through the Office of Undergraduate Studies. Students may pursue at most two minors per degree.

Scholarship Performance in the Minor

Courses numbered 2000 or above passed with a grade below C– may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credits required for the minor.

Advising

Students entering Columbian College are assigned an advising team, or "POD," that advises them from first arrival on campus through graduation. Students engage with advisors to successfully navigate their academic experience, through conversations about understanding University and College requirements, exploring major options, overcoming academic

challenges, and setting goals. Students are empowered to take ownership of, and responsibility for, their educational experiences. Specialized advising is provided to students interested in health professions or law.

Students who have not declared a major should consult with their advising POD before registering for classes. Once students declare their major, they also are advised by a faculty mentor in their major department.

Students need to build a support system that ensures academic success. Professors, faculty mentors, professional advisors, tutors, and/or counselors should be part of that support system. Assistance is available through the Division of Student Affairs (<http://students.gwu.edu/>), Mental Health Services (<http://counselingcenter.gwu.edu/>), Multicultural Student Services Center (<https://mssc.gwu.edu/>), International Services Office (<http://internationalservices.gwu.edu/>), and Writing Center (<http://www.gwu.edu/%7Egwriter/>).

Preparation for Medical/Dental School

Students who plan to apply to medical school fulfill both the University General Education Requirement and the Columbian College general education curriculum. They may select any major at GW. Advice about academic preparation for medical school is provided by the health professions advisors in the Pre-Health Advising Office (<https://prehealth.gwu.edu/>). For admission to most medical schools, students must earn a bachelor's degree that includes the following coursework:

- Biology—8 credits of introductory biology, including laboratory. Students who receive credit for AP biology must complete 8 credits of upper-level biology coursework, including laboratory.
- Chemistry—8 credits of general inorganic chemistry, including laboratory.
- Organic Chemistry—8 credits, including laboratory.
- Biochemistry—3 credits.
- Physics—8 credits, including laboratory.
- English—6 credits in introductory English composition courses (fulfilled by the University Writing Program (<https://writingprogram.gwu.edu/>)).
- Social Sciences—6 credits (courses in psychology and sociology are highly recommended).

Many medical schools have additional entrance requirements, which might include courses in genetics, statistics, and mathematics; even when such courses are not required, they are strongly recommended. Beyond the specified requirements, applicants are urged to follow their personal interests in developing their course of study.

Students interested in applying to another health program should refer to the Pre-health Advising (<https://prehealth.gwu.edu/>) and Undergraduate Admissions (<https://undergraduate.admissions.gwu.edu/>) websites for required and recommended courses for their program of interest.

Preparation for Law School

A broad liberal arts education is the best undergraduate preparation for law school. Advice about academic preparation for law school is provided by Pre-Law Advising (<https://prelaw.gwu.edu/>).

Seven-Year Integrated Bachelor of Arts/Doctor of Medicine

The BA/MD program is a seven-year integrated program for students of high ability and maturity who have decided, prior to applying to college, that they wish to become physicians and want to accomplish that goal in a shorter time period. Students who are accepted into this program are expected to fully participate in the undergraduate life of the University during their first three years in the program. Students in an undergraduate program in Columbian College must complete all G-PAC requirements. Regardless of the chosen major field, students in this program also must complete the School of Medicine requirement of 8 credits, including 2 credits in a lab, in each of the following areas:

- General Chemistry: CHEM 1111 and CHEM 1112. Students who have received AP credit for the general chemistry sequence are required to take organic chemistry at GW
- Organic Chemistry: CHEM 2151, CHEM 2152, CHEM 2153, and CHEM 2154
- General Biology: BISC 1111 and BISC 1112. Students who have received AP credit for a general biology sequence are required to take two upper-level courses in biology, one of which must have a laboratory component.
- General Physics: PHYS 1011 and PHYS 1012; or PHYS 1021 and PHYS 1022; or PHYS 1025 and PHYS 1026. Students who received AP credit for physics are not required to further their knowledge in this area.
- Biochemistry: BIOC 3261, or BISC 3261, or CHEM 3165.
- Social/Behavioral Science: two to three courses.

Students planning to register for science courses during the summer and/or at other institutions must receive advance permission to be accepted for transfer and for the program.

Students are permitted to transfer in AP credits to apply towards their degree requirements as permitted by CCAS with no cap on the number of credits that they may transfer. Students must declare a major in one of the arts and sciences disciplines and work towards completion of the major. A three-year course plan must be presented to the associate dean of admissions in the School of Medicine during the first semester of the freshman year. All major requirements must be determined by the department. Minors are permitted, but must be completed in full if they are to appear on a transcript.

Students in this full-time program must maintain a 3.6 cumulative GPA and may not earn a grade below B- in any science course. Students have the option of participating in the University Honors Program. Students in the program are required to become involved in community service and

health-care related experiences each academic year. Before matriculation in the MD portion of the program, all students must have recent patient-related experiences. Students are required to graduate with an undergraduate degree at the end of the third year of the seven-year program. All requirements must be completed for the BA or BS degree, including those for the major field as well as the University General Education Requirement. Students interested in enhancing their academics with a study abroad program may do so, but it is not required. As a part of this program, students are required to complete a practice MCAT (<https://smhs.gwu.edu/academics/md-program/admissions/dual-programs/bamd/>) and receive a satisfactory score as determined by the program.

Students must understand that any warnings of disciplinary or institutional actions, or convictions of a legal violation must be reported immediately to the associate dean of admissions in the School of Medicine. Students must maintain good academic standing following the academic regulations stated in the University Bulletin as well as the Academic Regulations for the BA/MD and professional comportment as listed the MD Honor Code (<https://smhs.gwu.edu/academics/md-program/current-students/policies/>). A criminal background check will be conducted at the time the student receives the contract to the MD program. All students will have an undergraduate experience performance review by the admissions office of GW's School of Medicine and Health Sciences (<https://smhs.gwu.edu/academics/md-program/admissions/>), must submit all requested application materials, and must meet all requirements before the seat in the MD program is tendered.

The GW Early College Program—School Without Walls

The The GW Early College Program (GWECP) was created in order to provide opportunities to DC high school students to complete an associate's degree in general studies within the Columbian College of Arts and Sciences concurrently with their high school degree. Students admitted to the program are required to complete 60 credits in residence, which include the following in accordance with the University General Education Requirement (p. 27) and the college's G-PAC Requirements (p. 92):

- UW 1015 Writing Seminar Summer Scholars
- UW 1020 University Writing
- One writing in the discipline (WID) course
- One approved mathematics or statistics course
- Two approved natural/physical science courses
- Two approved social science courses
- Two approved humanities courses
- One approved arts course
- One approved global/cross-cultural course
- One approved local/civic engagement course

Students must meet the college's academic standing requirement, whereby a 2.0 cumulative GPA is required for

completion of the associate's degree. Students also must adhere to the GWECF Academic Performance Policy. In accordance with this policy, failure of one core course (any course identified to meet a District of Columbia Public School (DCPS) graduation requirement) will result in being placed on academic alert for the following semester. The student will be required to retake the course. Any subsequent core course failures may result in a student returning to the School Without Walls (SWW) for completion of high school requirements. Failure of two or more courses (core or otherwise) in a single semester will result in automatic withdrawal from the program and returning to SWW.

Academic suspension by the University will result in automatic withdrawal from the program. Second-year students may appeal an academic suspension and seek approval from the University to complete any outstanding core courses required to meet the DCPS graduation requirements.

Students in the GWECF program are assigned an academic advisor within CCAS with whom they work for the duration of the program. GWECF students interested in continuing on to a bachelor's degree program at the University must complete the Common Application (<https://www.commonapp.org/>) as well as a separate Continuing to BA Application through the Office of Undergraduate Admissions (<https://undergraduate.admissions.gwu.edu/>).

General CCAS Policies

Academic Workload—Undergraduate students may register for up to 18 credits through the normal registration process. After a student's first semester, a full-time student may request to register for more than 18 credits. To encourage academic performance of high quality, the College asks undergraduate students to reflect on their prior academic performance and make intentional, informed decisions when requesting a course overload. All students who meet the requirements may request a course overload but note that no request is guaranteed approval. Students should also be aware that registering for more than 18 credits in a semester will incur additional tuition charges at the per-credit rate established by the University. Students who wish to register for a 19th credit or more must be in good academic standing; have earned a 3.5 semester GPA, having taken at least 12 credits in the prior semester or have earned a cumulative GPA of 3.3; have no pending Incompletes and have no grades of *F*, *W*, *Z*, or *NP* from the previous semester. Students can apply for a course overload (<https://advising.columbian.gwu.edu/course-overload-application/>) online through the CCAS Office of Undergraduate Advising.

Pass/No Pass Option—A junior or senior student in Columbian College who is in good academic standing may, with the approval of the instructor and the Office of Undergraduate Studies, take one course per semester that is usually graded on a letter-grade basis for a grade of *P*, Pass, or *NP*, No Pass. Students may not elect to take more than four *P/NP* courses under this regulation. Students may, however, also receive

grades of *P/NP* in courses that are graded on a *P/NP* basis only. Courses taken under the *P/NP* option are not counted toward the G-PAC requirement or the requirements for any major or minor field. Transfer students may not elect this option until the second semester of enrollment in the University. Under no circumstances may a student change from *P/NP* status to graded status, or vice versa, after the end of the eighth week of class.

Preliminary Placement Examinations—All foreign language departments require students to take placement tests to determine their level of proficiency in languages studied prior to enrollment at the University. The student is placed in an appropriate course on the basis of these tests. Students may not register for a course other than that determined by the placement test without written permission of the language department. There is no charge to the student for placement tests, and no credit (advanced standing) is awarded for courses waived as a result of these tests. Students who wish to register for ECON 1011, MATH 1051 (<http://bulletin.gwu.edu/search/?P=MATH%201051>), MATH 1220 (<http://bulletin.gwu.edu/search/?P=MATH%201220>), MATH 1231 (<http://bulletin.gwu.edu/search/?P=MATH%201231>), or MATH 1252 (<http://bulletin.gwu.edu/search/?P=MATH%201252>) are required to take the placement test administered by the Department of Mathematics to determine eligibility based on their achieved score. In some cases, AP test scores or SAT II scores may be substituted for the placement test. See Interpreting Your Placement Score (<https://math.columbian.gwu.edu/aleks-math-placement-test/>) for more information.

Courses Outside of Columbian College—No more than 3 credits of Health and Wellness (HLWL) courses and 3 credits of Lifestyle, Sport, and Physical Activity (LSPA) courses may count toward the 120 credits required for the bachelor's degree in Columbian College.

Earning an Additional Credit—In exceptional circumstances and with the prior approval of the instructor and Office of Undergraduate Advising, a student may register for and earn an additional credit in upper-division courses within the College by doing a significant amount of extra work as assigned and supervised by the instructor of record and by submitting a completed/signed Add a Credit form to the Office of Undergraduate Advising.

Graduate Programs

CCAS Regulations

CCAS provides an online Graduate Student Handbook (<https://columbian.gwu.edu/graduate-students/>) that contains additional updated information on policies, regulations, and other matters of concern to enrolled and admitted students. It is the responsibility of the student to be aware of the information contained in both this Bulletin and the

Handbook. Students should also consult departmental/program handbooks and guidelines.

Admission Requirements

A detailed description of the policies that follow is available at the Columbian College website (<http://columbian.gwu.edu/graduate-studies/>). Applicants must hold an undergraduate degree from an accredited institution of higher learning. Applicants should have a strong academic background, usually with a major, or equivalent, in the field in which they intend to study for an advanced degree. Normally, a *B* average or equivalent from an accredited college is required. With evidence of special promise, such as high Graduate Record Examination (GRE) scores, an applicant whose academic record falls short of a *B* average may be accepted on a conditional basis. Meeting the minimum requirements does not assure acceptance. The departments/programs may, and often do, set higher admission standards. Students who apply in their senior year must provide evidence of the completion of their baccalaureate work before registration is permitted.

Many programs require applicants to submit scores on the GRE general test. In addition, some programs require scores on a GRE subject test. The applicant must have the Educational Testing Service send the required score reports directly to George Washington University. GRE scores are valid for five years.

Some programs require students to take prerequisite or deficiency courses within the first year of starting the degree program; such courses do not count toward degree requirements or the degree GPA. Prerequisite and/or deficiency courses are listed in the applicant's letter of admission.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English-Academic (PTE). English language scores are valid for two years. The most recent test scores are used for applicants who submit multiple scores. Specified possible exemptions from this policy can be found on the Graduate Admissions website (<https://columbian.gwu.edu/graduate-applicants/>). The required minimum score for admission to a program is 80 on the Internet-based or 550 on the paper-based TOEFL, or an overall band score of 6.0 on the IELTS with no individual band score below 5.0, or a score of 53 on the PTE. Some programs have higher minimum scores. Applicants who have a TOEFL score of at least 70, but lower than 80, or an IELTS overall band score of at least 5.0, but lower than 6.0, may be considered for admission on the condition that they successfully complete the Applied English Studies program prior to beginning their graduate studies.

Applicants for graduate assistantships must have a minimum score of 100 on the Internet-based TOEFL or 600 on the paper-based TOEFL, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking GW English for Academic Purposes (EAP) courses: TOEFL, 100 Internet-based or 600 paper-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; or a score of 68 on the PTE. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Readmission

A student who wishes to resume a graduate program that has been interrupted for a period of two years or more must file a new application for admission and provide supporting documentation to be considered for readmission. Readmission and transfer of credits are not guaranteed, and the application is subject to review by the department concerned and/or the associate dean for graduate studies. The student may be required to take additional coursework and qualifying examinations on the coursework completed. A student who wishes to resume a graduate program that has been interrupted for a period of less than two years must petition the department and the associate dean. Readmission and transfer of credits are not guaranteed, and back-registration may be required.

Grades

Information on grades and computing the grade-point average is found under University Regulations (p. 27).

The symbol *IPG* (In Progress) is given for all thesis and dissertation research courses until the thesis or dissertation is completed. Upon the satisfactory completion of the thesis or dissertation, the symbol *IPG* is changed by the Columbian College to *CR* (Credit). *IPG* may also be used in other courses, including advanced reading and research courses, externships, independent research courses, internships, and practicums, if the required coursework is not ordinarily completed within a single semester; in such cases, the department must submit a grade change upon completion of the coursework. *CR* may be indicated for advanced reading and research courses and independent research courses.

Incompletes

The symbol *I* (Incomplete) indicates that only a small portion of the required coursework remains to be completed and that a satisfactory explanation has been given to the instructor for the student's failure to complete the required work for a course. The conditions of the Incomplete must be detailed in a formal contract signed by the student and instructor and

submitted to the department prior to recording the *I*. A student who receives an Incomplete will have one additional semester to complete the required coursework, unless the instructor sets a shorter deadline. An instructor who wishes to grant a student more than one semester to complete the required coursework may do so by submitting a signed, formal contract to the CCAS Office of Graduate Studies and the department, but all coursework must be completed no more than one calendar year from the end of the semester in which the course was taken. Failure to follow the conditions of the incomplete contract will result in a grade of *F*. All other policies governing Incompletes are indicated under University Regulations (p. 27).

Academic Standing Requirements

Graduate students are required to maintain a minimum cumulative grade-point average of 3.0 (*B*) in all coursework taken following admission to a graduate program in the Columbian College. This includes credit taken for dual and joint degrees but excludes prerequisite and deficiency coursework. A cumulative GPA below 3.0 results in academic dismissal from the program unless the department successfully petitions the associate dean for graduate studies for academic probation rather than dismissal. If, after one semester of probation, a student's cumulative GPA remains below 3.0, they are subject to academic dismissal. Individual departments/programs may require a higher average. Once a student has matriculated at GW, graduate coursework that is taken at the University or through the Consortium and forms part of the student's departmentally-approved program of studies will be included in the cumulative GPA. When a grade of *F* is received for a course, the grade is included in the student's cumulative GPA whether or not the course is repeated. Receiving a grade of *F* in a graduate course may be grounds for probationary status or academic dismissal from the program.

Repeating Courses

A student may repeat a course in which a grade of *C-* or above was received only when permitted to do so by the associate dean for graduate studies and the department concerned, unless the course description states that the course may be repeated for credit. A written statement of permission must be submitted for approval to the CCAS Office of Graduate Studies by the program's director of graduate studies. If such a course is repeated, both grades received remain on the student's record and are included in the student's cumulative GPA. The second taking of the course does not count toward degree requirements.

Graduate Credit for Undergraduate Courses

A graduate student may take an advanced (2000-level or higher) undergraduate course for graduate credit only upon the approval of the student's graduate program at the time of registration. Such approval is granted only with the provision that the student complete additional work in order to receive graduate credit. Advanced undergraduate courses taken for graduate credit may be used to fulfill no more than 25 percent of credits required for any graduate program. No 1000-level

undergraduate courses (including language courses) will be considered for graduate credit.

Program of Studies

The program of studies is a formal agreement between a student and a department/program of the requirements to be met in completing a specific degree program as well as the dates by which each requirement must be completed. Students should consult their program's director of graduate studies to outline their program of studies as soon as they begin graduate work.

Students must ensure that they are fully informed of the requirements of the Columbian College of Arts and Sciences as well as the requirements of their department or program. Students who must complete additional requirements as specified in their letter of admission must consult their program's director of graduate studies early in their first semester.

Academic Workload

All graduate degree candidates must be registered for a minimum of 3 credits in the spring and fall semesters unless they are eligible for continuing research. Students finishing in the summer may contact the CCAS Office of Graduate Studies to register for 0 credits of continuous enrollment; continuous enrollment is not an option during the fall and spring semesters. Full-time students register for 9 to 12 credits each fall and spring semester; half-time students, for 5 to 8 credits; and part-time students, for 3 or 4 credits. In the summer, full-time status requires 6 credits and half-time status requires 3 credits. These enrollment requirements do not apply to students who have fewer than the stated number of credits remaining to complete their programs. No more than 15 credits may be taken during any one semester without permission of the department and the associate dean for graduate studies. Students who are employed more than 20 hours per week should not register for more than 6 credits in any semester.

Continuous Enrollment

All students must be continuously enrolled while working toward a degree, except during the summer sessions (unless required by the program or if the student intends to graduate in the summer). Students who have completed all coursework and thesis or dissertation research requirements and are within CCAS deadlines must register for 1 credit of continuing research (CCAS 0920 for master's students, CCAS 0940 for doctoral students) each semester until completion of the program; the course reference numbers are found in the Schedule of Classes under Columbian College. If continuous registration is not maintained, the student is dropped from the degree program unless they are registered for an approved leave of absence by the CCAS Office of Graduate Studies.

Leave of Absence

A student who is temporarily unable to continue their program of studies may request leave of absence for a specific period of time, not to exceed two semesters during the total period of degree candidacy. If the request is approved by the program and the associate dean for graduate studies, CCAS will register the student for a leave of absence for each semester. Leaves of absence are normally granted for medical or family reasons and may be granted for other reasons at the discretion of the department and associate dean.

Special Program Requirements

Certain programs require degree candidates to demonstrate a reading knowledge of an appropriate foreign language or languages, a competence in quantitative methods, or some other special subject requirement. Courses taken at the undergraduate level to fulfill these requirements may not be counted in the number of graduate credits required for these programs.

Graduation Requirements

All students must submit an online Application for Graduation (<http://registrar.gwu.edu/online-graduation-application-instructions/>) early in the semester or summer session in which they intend to graduate. Students must be registered in active status in the College during the semester or summer session in which they plan to graduate. Degrees are conferred in January, May, and August. Students who have completed the requirements for a degree but have not yet been awarded the degree are issued a letter to this effect upon request to the CCAS Office of Graduate Studies. A commencement ceremony is held annually in May.

Fellowships and Financial Aid

Many departments offer merit-based graduate assistantships and fellowships; students should consult their department/program concerning funding opportunities. Graduate assistants and University Fellows are appointed by the associate dean for graduate studies. Other kinds of sponsored and University awards are available. Awards are based on academic excellence, and only full-time graduate degree candidates in Columbian College are eligible to be considered. Doctoral candidates may be funded for a maximum of five years, MA and MS candidates for a maximum of two years, and MFA candidates for a maximum of three years.

Students applying for admission who also wish to apply for an assistantship/fellowship should submit a completed application for admission before the funding admission deadline. Currently enrolled students who wish to apply for graduate student support should consult their departmental requirements.

International students applying for graduate assistantships/fellowships should refer to the International Student Financial Aid section (p. 62) of this Bulletin for regulations governing the appointment of international graduate assistants.

Students who wish to apply for loans should indicate their intent to do so on the application for admission. An overview of funding opportunities is available from the University's Office of Graduate Student Assistantships and Fellowships (<http://www.gwu.edu/~fellows/>).

Partnerships

CCAS graduate programs have long-term partnerships with important Washington-area institutions that include the Smithsonian Institution; the National Institute of Standards and Technology and other federal agencies; the Folger Shakespeare Library; the Shakespeare Theatre; the Phillips Collection, the George Washington University Museum and the Textile Museum.

MAJORS

Undergraduate Majors

The Columbian College of Arts and Sciences offers the bachelor's degrees listed below.

All fields listed below (except where indicated) may lead to the Bachelor of Arts degree.

- Africana Studies (p. 93)
- American Studies (p. 102)
- Anthropology (p. 118)
- Arabic Studies (p. 187)
- Archaeology (p. 119)
- Art History (p. 263)
- Art History and Fine Arts (p. 259)
- Astronomy and Astrophysics (p. 386)
- Biological Anthropology (p. 122)
- Biology, Bachelor of Arts (p. 145)
- Biology, Bachelor of Science (p. 148)
- Biophysics (p. 388)
- Chemistry, Bachelor of Arts (p. 173)
- Chemistry, Bachelor of Science (p. 174)
- Chinese Language and Literature (p. 212)
- Classical and Ancient Near Eastern Studies (p. 188)
- Cognitive Neuroscience, Bachelor of Science (p. 429)
- Communication (p. 357)
- Creative Writing and English (p. 246)
- Criminal Justice (p. 469)
- Dance (p. 499)
- Data Science (p. 207)
- Economics, Bachelor of Arts (p. 227)
- Economics, Bachelor of Science (p. 229)
- English (p. 248)
- Environmental and Sustainability Science, Bachelor of Science (p. 285)
- Environmental Studies (p. 255)

- Fine Arts, Bachelor of Arts (p. 266)
- Fine Art, Bachelor of Fine Arts (p. 193)
- French Language, Literature, and Culture (p. 460)
- Geography (p. 283)
- Geological Sciences, Bachelor of Arts (p. 291)
- Geological Sciences, Bachelor of Science (p. 293)
- German Language and Literature (p. 461)
- Graphic Design, Bachelor of Fine Arts (p. 195)
- History (p. 308)
- Human Services and Social Justice (p. 471)
- Interaction Design, Bachelor of Fine Arts (p. 196)
- Interior Architecture, Bachelor of Fine Arts (p. 318)
- Japanese Language and Literature (p. 214)
- Journalism and Mass Communication (p. 342)
- Judaic Studies (p. 321)
- Korean Language and Literature (p. 215)
- Mathematics, Bachelor of Arts (p. 329)
- Mathematics, Bachelor of Science (p. 331)
- Music (p. 355)
- Neuroscience, Bachelor of Science (p. 151)
- Organizational Sciences (p. 359)
- Peace Studies (p. 367)
- Philosophy (p. 378)
- Philosophy: Public Affairs Focus (p. 379)
- Photojournalism, Bachelor of Fine Arts (p. 198)
- Physics, Bachelor of Arts (p. 385)
- Physics, Bachelor of Science (p. 389)
- Political Communication (p. 344)
- Political Science, Bachelor of Arts (p. 403)
- Political Science, Bachelor of Arts: Public Policy Focus (p. 405)
- Political Science, Bachelor of Science (p. 409)
- Psychological and Brain Sciences (p. 427)
- Religion (p. 455)
- Russian Language and Literature (p. 463)
- Sociology (p. 472)
- Spanish and Latin American Languages, Literatures, and Cultures (p. 464)
- Speech, Language, and Hearing Sciences (p. 481)
- Statistics (p. 491)
- Theatre (p. 501)
- Women's, Gender, and Sexuality Studies (p. 510)

Scholarship Performance in the Major

Major programs are defined by a set of required courses that can be internal to the home department or external to that department but still required in the major program. The prescribed curricula and minimum specific requirements for majors are outlined under each department's heading in this

Bulletin. For all majors in all departments, a minimum grade of C– must be attained in all upper-level courses numbered in the 2000s through 4000s that are required for the major, regardless of whether those courses are internal or external to the home department.

If a student receives a grade of D+, D, or D– in such a course, the major department may permit that course to satisfy a curricular requirement (such as a prerequisite), but it will not count toward the minimum number of credits required for the major until the course is repeated and a satisfactory grade (C– or better) is attained. Once the student has completed the course with a satisfactory grade, credits earned the first time the course was taken will count toward the minimum number of credits required in the major program. Credit earned for the repetition does not count toward the degree.

This condition of C– or better does not apply to introductory-level courses (numbered in the 1000s) that may apply to the major, although a department may choose to implement such a restriction based on its own discretion.

Double Majors

Students who complete the requirements of two majors in Columbian College (such as mathematics and physics or history and economics) may graduate with a double major. Students must consult with advisors in the two departments concerned before officially declaring both majors with Columbian Undergraduate Academic Advising (<https://advising.columbian.gwu.edu/>).

A Columbian College student may declare a second major in the School of Business, School of Engineering and Applied Science, Elliott School of International Affairs, or Milken Institute School of Public Health. Students in other schools may declare a second major in Columbian College. Students wishing to pursue one of these options must request approval through the appropriate department and Columbian Undergraduate Academic Advising (<https://advising.columbian.gwu.edu/>). In all cases, students must complete the general education requirements and a major in their home school in order to graduate.

Double majors do not result in two degrees. See Double Majors (p. 31) and Double Degrees (p. 31) under University Regulations (p. 27).

Special Interdisciplinary Majors

A student may propose a special interdisciplinary major, in consultation with appropriate academic advisors. The proposed major must have valid and clearly defined academic goals to be considered for approval. Only students with a 3.0 or better cumulative grade-point average are eligible to propose a special interdisciplinary major. The proposal must be submitted for approval by the end of the fourth semester or the

semester following completion of 45 credits, whichever comes first.

Approval of the proposed major rests with the Committee on Undergraduate Studies (<https://advising.columbian.gwu.edu/>), which must also approve the proposed name of the major and the composition of the committee that will oversee it. At least 45 credits of the major must be completed in Columbian College. Because of the broad scope of an interdisciplinary program, it may not be part of a double major although students are allowed to declare a minor with approval of the Committee on Undergraduate Studies.

At the discretion of the committee overseeing the major, the student must either write an acceptable senior thesis or pass a comprehensive examination in the last semester of study toward the degree. To be eligible, students must meet the requirements for Special Honors (p. 31) stated under University Regulations, must have a minimum cumulative grade-point average of 3.5, and must receive a Pass With Distinction from all members of the major committee on the final project or thesis through the required CCAS 4191 Special Interdisciplinary Major Capstone course.

MINORS

Minors

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major. Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the department concerned. A student interested in a minor should consult a faculty advisor in the applicable department and declare both major and minor programs through the Office of Undergraduate Studies. Students may pursue at most two minors.

At least one-half of the coursework required for a minor must be done in residence. Grades of C– or better must be earned in upper-division courses, including such courses transferred as advanced standing from another institution. Courses passed with a grade below C– may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credits required for the minor.

Columbian College students can pursue minors in other schools of the University, as well as those in naval science and in sustainability.

Columbian College offers minors in the following fields:

- Africana Studies (p. 95)
- American Studies (p. 104)
- Anthropology (p. 125)
- Applied Ethics (p. 383)
- Arabic Studies (p. 190)
- Arabic and Hebrew Languages and Cultures (p. 189)

- Archaeology (p. 125)
- Art History (p. 270)
- Art History and Fine Arts (p. 268)
- Astronomy and Astrophysics (p. 392)
- Biological Anthropology (p. 126)
- Biology (p. 153)
- Biophysics (p. 392)
- Chemistry (p. 183)
- Chinese Language and Literature (p. 218)
- Classical and Ancient Near Eastern Studies (p. 190)
- Communication (p. 365)
- Creative Writing (p. 252)
- Criminal Justice (p. 475)
- Cross-Cultural Communication (p. 126)
- Dance (p. 503)
- Data Science (p. 209)
- Economics (p. 231)
- English (p. 252)
- English for Business Students (p. 253)
- Film Studies (p. 257)
- Fine Arts (p. 270)
- French Language, Literature, and Culture (p. 466)
- Geographic Information Systems (p. 288)
- Geography (p. 289)
- Geological Sciences (p. 294)
- German Language and Literature (p. 467)
- Graphic Design (p. 200)
- Hebrew (p. 191)
- History (p. 312)
- Human Services and Social Justice (p. 475)
- Italian Language and Literature (p. 467)
- Japanese Language and Literature (p. 219)
- Journalism and Mass Communication (p. 347)
- Judaic Studies (p. 323)
- Korean Language and Literature (p. 219)
- Law and Society (p. 476)
- LGBT and Sexuality Studies (p. 515)
- Linguistics (p. 68)
- Logic (p. 383)
- Mathematics (p. 336)
- Mind-Brain Studies (p. 383)
- Music (p. 356)
- Organizational Communication (p. 366)
- Organizational Sciences (p. 366)
- Peace Studies (p. 370)
- Philosophy (p. 384)
- Photography (p. 200)
- Physics (p. 393)

- Political Science (p. 412)
- Psychological and Brain Sciences (p. 431)
- Public Policy (p. 413)
- Religion (p. 458)
- Russian Language and Literature (p. 467)
- Sociocultural Anthropology (p. 127)
- Sociology (p. 476)
- Spanish and Latin American Languages, Literatures, and Cultures (p. 468)
- Speech, Language, and Hearing Science (p. 485)
- Statistics (p. 494)
- Theatre (p. 504)
- Women's, Gender, and Sexuality Studies (p. 516)

MASTER'S

Master's Programs

See Requirements listed below.

- Master of Arts in the field of American studies (p. 104)
- Master of Arts in the field of anthropology (p. 128)
- Master of Arts in the field of applied economics (p. 231)
- Master of Arts in the field of art history (p. 268)
- Master of Arts in the field of art therapy (p. 133)
- Master of Arts in the field of Chinese language and culture (p. 217)
- Master of Arts in the field of communication management (p. 363)
- Master of Arts in the field of criminology (p. 473)
- Master of Arts in the field of decorative arts and design history (p. 200)
- Master of Arts in the field of English (p. 251)
- Master of Arts in the field of environmental resource policy (p. 446)
- Master of Arts in the field of exhibition design (p. 201)
- Master of Arts in the field of forensic psychology (p. 420)
- Master of Arts in the field of history (p. 311)
- Master of Arts in the field of interaction design (p. 202)
- Master of Arts in the field of interior architecture (<http://bulletin.gwu.edu/arts-sciences/corcoran/ma-interior-architecture/>)
- Master of Arts in the field of Islamic studies (p. 457)
- Master of Arts in the field of leadership education and development (p. 364)
- Master of Arts in the field of mathematics (p. 334)
- Master of Arts in the field of media and strategic communication (p. 346)
- Master of Arts in the field of museum studies (p. 351)
- Master of Arts in the field of new media photojournalism (p. 203)
- Master of Arts in the field of organizational sciences (p. 364)
- Master of Arts in the field of philosophy (p. 381)
- Master of Arts in the field of political science (p. 413)
- Master of Arts in the field of public policy with a concentration in philosophy and social policy (p. 382)
- Master of Arts in the field of public policy-women's, gender, and sexuality studies (p. 514)
- Master of Arts in the field of sociology (p. 474)
- Master of Arts in the field of speech-language pathology (p. 484)
- Master of Arts in the field of women's, gender, and sexuality studies (p. 515)
- Master of Fine Arts in the field of classical acting (p. 185)
- Master of Fine Arts in the field of fine arts (p. 269)
- Master of Fine Arts in the field of interior architecture (p. 319)
- Master of Fine Arts in the field of production design (p. 503)
- Master of Fine Arts in the field of social practice (<http://bulletin.gwu.edu/arts-sciences/corcoran/social-practice-mfa/>)
- Master of Forensic Sciences (p. 275)
- Master of Forensic Sciences in the field of forensic molecular biology (p. 276)
- Master of Forensic Sciences in the field of forensic chemistry (p. 275)
- Master of Public Administration (p. 447)
- Master of Public Policy (p. 448)
- Master of Science in the field of anatomical and translational sciences (p. 108)
- Master of Science in the field of applied mathematics (p. 335)
- Master of Science in the field of biological sciences (p. 153)
- Master of Science in the field of bioinformatics and molecular biochemistry (p. 136)
- Master of Science in the field of biostatistics (p. 166)
- Master of Science in the field of chemistry (p. 181)
- Master of Science in the field of crime scene investigation (p. 277)
- Master of Science in the field of data science (p. 210)
- Master of Science in the field of environmental and green chemistry (p. 182) (p. 181)
- Master of Science in the field of geography (p. 287)
- Master of Science in the field of human paleobiology (p. 315)
- Master of Science in the field of physics (p. 391)
- Master of Science in the field of statistics (p. 493)

Unless otherwise specified, the requirements listed below are applicable to candidates for all master's degrees offered by the Columbian College of Arts and Sciences.

General Requirements

Minimum credit requirements follow, but it should be noted that many departments set credit requirements well above the number of credits stated here. Specific requirements appear under the name of the department or program concerned in this Bulletin. For a master's degree program that includes a thesis, satisfactory completion of a minimum of 30 credits of approved graduate coursework is required. For a master's degree program that does not include a thesis, the number of credits of approved graduate coursework is determined by the department. Some departments offer a choice between a thesis option and a non-thesis option. Undergraduate courses taken without additional graduate-level work, deficiency coursework, and EAP courses are not counted toward program requirements or the cumulative degree GPA.

Upon approval, up to one-half of the required graduate work may be taken in courses offered by another degree-granting division of this University. With approval, up to one-quarter of work toward a master's degree may be taken in courses offered by the other affiliated institutions of the Consortium of Universities of the Washington Metropolitan Area. In all cases, at least one-half of the credits counting toward the master's degree must be taken after entering the program, in graduate courses offered by the Columbian College of Arts and Sciences.

Master's students have an overall four-year time limit for completion of all degree requirements. An approved leave of absence is not counted towards the time limit requirement. Students must apply and be approved for an extension of time by the associate dean for graduate studies if they wish to study beyond the time limit.

Transfer of Credit

A maximum of one-quarter of the credits of graduate coursework required for a degree may be approved for transfer to a graduate program in the Columbian College from enrollment in non-degree status at GW or from another degree-granting school of this University or another accredited college or university. For a transfer of credit to be approved, *all* of the following conditions must be met:

1. The coursework must be from an accredited institution and must have been taken within the five years prior to matriculation;
2. The transfer requests must be approved by the department as part of the student's program of studies;
3. The credits must not have been applied to the completion of requirements for another degree;

4. The credits must be post-baccalaureate graduate-level coursework; and
5. All coursework must have received a minimum grade of B.

Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the associate dean for graduate studies during the student's first year in the program. An official transcript of the coursework must be on file before the request can be considered. Grades from transfer credit will not be counted toward the graduate degree GPA, except in the case of approved non-degree GW credits.

Once enrolled in the Columbian College of Arts and Sciences, students are not permitted to enroll in another university, except under extraordinary circumstances; permission must be sought from the department and the associate dean in advance.

Master's Comprehensive Examination

Many programs require degree candidates to pass a master's comprehensive examination in the major subject. The nature and form of the examination are the responsibility of the department or program. A student who fails to pass the master's comprehensive examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

The Thesis

The main purposes of a master's thesis are to demonstrate the student's ability to make independent use of information and training and to furnish objective evidence of constructive powers in a chosen field. The student normally registers for 3 to 6 credits of thesis research supervised by a director and a reader. Registration for thesis research entitles the student to the advice and direction of the member of the faculty under whom the thesis is to be written. If a student has completed the credits required for the degree but has not yet completed their thesis, they may register for one credit of Continuing Research (CCAS 0920). The thesis subject must be approved by the faculty members who will direct the thesis. All theses must be submitted electronically by the stated deadlines and meet the formatting and other requirements set forth on the Electronic Theses and Dissertation (<http://library.gwu.edu/etd/>) webpage.

DOCTORAL

Doctoral Programs

- Doctor of Philosophy (p. 87)
- Doctor of Psychology (p. 89)

Doctor of Philosophy Programs

- Doctor of Philosophy in the field of American studies (p. 105)

- Doctor of Philosophy in the field of American religious history (p. 310)
- Doctor of Philosophy in the field of anthropology (p. 129)
- Doctor of Philosophy in the field of applied social psychology (p. 431)
- Doctor of Philosophy in the field of biological sciences (p. 154)
- Doctor of Philosophy in the field of biostatistics (p. 164)
- Doctor of Philosophy in the field of cancer biology (p. 156)
- Doctor of Philosophy in the field of chemistry (p. 180)
- Doctor of Philosophy in the field of clinical psychology (p. 432)
- Doctor of Philosophy in the field of cognitive neuroscience (p. 434)
- Doctor of Philosophy in the field of economics (p. 232)
- Doctor of Philosophy in the field of English (p. 251)
- Doctor of Philosophy in the field of genomics and bioinformatics (p. 157)
- Doctor of Philosophy in the field of history (p. 311)
- Doctor of Philosophy in the field of human paleobiology (p. 313)
- Doctor of Philosophy in the field of mathematics (p. 332)
- Doctor of Philosophy in the field of microbiology and immunology (p. 159)
- Doctor of Philosophy in the field of neuroscience (p. 160)
- Doctor of Philosophy in the field of pharmacology and physiology (p. 162)
- Doctor of Philosophy in the field of physics (p. 390)
- Doctor of Philosophy in the field of political science (p. 416)
- Doctor of Philosophy in the field of industrial/organizational psychology (p. 361)
- Doctor of Philosophy in the field of public policy and administration (p. 441)
- Doctor of Philosophy in the field of speech, language, and hearing science (p. 483)
- Doctor of Philosophy in the field of statistics (p. 492)

The doctor of philosophy program is divided into two parts: pre-candidacy and candidacy. During pre-candidacy, a student completes the general requirements and the general examination. Once admitted to candidacy, the student prepares, submits, and defends the dissertation.

General requirements

The programs leading to the degree of doctor of philosophy require the satisfactory completion of a minimum of 72 credits of approved graduate coursework, including at least 6 and at most 27 credits of dissertation research. Students must receive the permission of the associate dean for graduate studies to complete fewer than 6 credits of dissertation research. A minimum of 45 of the 72 credits must be taken in the pre-candidacy stage, in preparation for the general examination.

A maximum of 12 of these credits may be taken in courses offered by the other affiliated members of the Consortium of Washington Area Universities. The exact number of credits required for any part of the total program is assigned by each department and may exceed the minimum required by the Columbian College.

PhD students have an overall eight-year time limit for completion of all degree requirements. An approved leave of absence is not counted toward the time limit requirement. Students must apply and be approved for an extension of time by the associate dean for graduate studies if they wish to study beyond the time limit.

Transfer of credit

Entering students who hold a master's degree from an accredited institution and in a field relevant to the proposed doctoral field of study may request transfer of up to 30 credits toward a doctoral degree. For those who do not hold a master's degree, a maximum of 30 credits may be transferred, provided the conditions below are met:

1. The coursework must be from an accredited institution and must have been taken within five years prior to matriculation.
2. The transfer requests must be approved by the department as part of the student's program of studies.
3. The credits must not have been applied to the completion of requirements for another degree.
4. The credits must be in post-baccalaureate, graduate-level coursework.
5. All coursework must have received a minimum grade of *B*.

Requests for transfer credit must be submitted in writing and approved by the department and the associate dean for graduate studies during the student's first year at GW. An official transcript of the coursework must be on file before the request can be considered. Grades from transfer credit will not be counted toward the graduate degree GPA, except in the case of approved non-degree GW credits.

The general examination

The general examination is composed of an examination in each of the areas of study comprising the student's program. A student who fails to pass any part of the general examination may, with the approval of the department, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

Satisfactory performance on the general examination is required for admission to candidacy but does not guarantee it. A department recommends advancement to candidacy only if satisfied with the student's performance in every aspect of the program, only after a dissertation advisor has been selected and a dissertation area determined, and only if the department

is confident of the student's ability to complete the dissertation within the allotted time.

Master of philosophy degree

Upon departmental recommendation and approval of the associate dean for graduate studies, the degree of master of philosophy may be awarded to students who have been advanced to candidacy and successfully completed all requirements for the doctor of philosophy degree up to and including the general examination. Not all departments recommend students for this degree. Students requesting the MPhil must contact the CCAS Office of Graduate Studies and submit an online application for graduation (<http://registrar.gwu.edu/online-graduation-application-instructions/>). The degree is not automatically conferred upon advancing to candidacy. Students must have completed at least 18 credits of coursework at GW to be eligible for the master of philosophy degree.

Dissertation and final examination

A dissertation directed or co-directed by a member of the GW faculty is required of each doctoral candidate as evidence of ability to perform scholarly research and interpret its results. The student's core research committee is composed of a director and two readers who advise the student during the dissertation research process. It is permissible for the dissertation director to be drawn from outside of the academic unit in which the student is enrolled. If the director is from outside the academic unit, then the committee must also have a co-director from inside the unit.

The student normally enrolls for 6 to 27 credits of dissertation research after admission to candidacy. Dissertation Research must be taken in units of no fewer than 3 credits per semester. When the dissertation has been approved by the director and the members of the Dissertation Research Committee, the candidate takes the Final Examination (the defense). A committee of examiners composed of Columbian College faculty and outside scholars conducts the examination. This examination committee consists of the director (and co-director, if applicable) and the two readers who made up the research committee, as well as two additional examiners and a chair. The examiners cannot have had a direct role in the dissertation research process. One examiner must be from within the academic unit, with the other examiner coming from outside the academic unit. The chair of the examination cannot be drawn from the research committee or examiners. If the candidate passes, they are recommended to Columbian College for the degree of doctor of philosophy. The dissertation must be submitted electronically by the stated deadline and meet the formatting and other requirements set forth on the Electronic Theses and Dissertations website (<http://library.gwu.edu/etd/>).

Dual doctor of medicine/doctor of philosophy degree program

A dual degree program is available to qualified students who seek both the doctor of medicine and doctor of philosophy degrees. The requirements that must be fulfilled for both

degrees are identical to those currently and separately established in the School of Medicine and Health Sciences and the Columbian College of Arts and Sciences. A student working toward these degrees may apply a maximum of 24 credits of approved coursework in the School of Medicine and Health Sciences toward the doctor of philosophy degree. The estimated time for the completion of this dual program is six years. In order to enter the dual degree program, a prospective student must apply for and gain admission both to the Columbian College and to the School of Medicine and Health Sciences separately through established procedures. Upon admission to both schools, the student may then apply for affiliation with the dual degree program.

Doctor of Psychology Program

- Doctor of Psychology in the field of professional psychology (p. 418)

General requirements

The program leading to the degree of doctor of psychology requires the satisfactory completion of a minimum of 83 credits of approved graduate work. A maximum of 12 credits may be taken in courses offered by the other affiliated members of the Consortium of Universities. Doctor of psychology students have an overall five-year time limit for completion of all degree requirements. An approved leave of absence is not counted toward the time limit requirement. Students must apply and be approved for an extension of time by the associate dean for graduate studies if they wish to study beyond the time limit.

Transfer of credit

Provisions are the same as those of the doctor of philosophy program, above.

General examination

Each student is required to complete the general examination no later than the beginning of the final semester of the program. A student who fails to pass any part of the general examination may, in exceptional circumstances, and with the approval of the program, repeat the examination at the next scheduled examination date. If the student fails a second time, no further opportunity to take the examination is permitted, and the student's degree candidacy is terminated.

The master of psychology degree

Students who have earned 53 credits toward the PsyD may receive the MPsy degree. Further information on the requirements of the doctor of psychology degree appears under Professional Psychology (<http://bulletin.gwu.edu/arts-sciences/professional-psychology/>). Students requesting the MPsy degree must contact the CCAS Office of Graduate Studies and submit an online application for graduation (<http://registrar.gwu.edu/online-graduation-application-instructions/>). The degree is not automatically conferred after completion of 53 credits

CERTIFICATES

Graduate certificate programs

The Columbian College of Arts and Sciences offers a range of graduate certificate programs. Departments and programs offering graduate certificates are indicated in italics.

- Anatomical and (p. 108)translational sciences—*Institute of Biomedical Sciences*
- Budget and public finance (p. 443)—*Public Policy and Public Administration*
- Contexts of environmental policy (p. 444)—*Public Policy and Public Administration/Environmental Resource Policy*
- Data science (p. 211)—*Data Science*
- Documentary filmmaking (p. 336)—*Media and Public Affairs*
- Environmental resource policy (p. 445)—*Public Policy and Public Administration/Environmental Resource Policy*
- Financial mathematics (p. 333)—*Mathematics*
- Forensic investigation (p. 274)—*Forensic Sciences*
- Geographical information systems (p. 287)—*Geography*
- Islamic studies (p. 456)—*Religion*
- Jewish cultural arts (p. 322)—*Judaic Studies*
- LGBT health policy and practice (p. 419)—*Professional Psychology*
- Mathematics (p. 334)—*Mathematics*
- Museum collections management and care (p. 350)—*Museum Studies*
- Museum studies (p. 350)—*Museum Studies*
- Nonprofit management (p. 445)—*Trachtenberg School of Public Policy and Public Administration*
- Women's, gender, and sexuality studies (p. 513)—*Women's, Gender, and Sexuality Studies*

Admission

Certificate students are not automatically admitted to a master's or doctoral program; they must submit an application for admission, meet the admission requirements, and be admitted to the degree program.

With departmental and Columbian College approval, students may concurrently register for a certificate and another Columbian College degree. If the certificate is conferred by another school, students must secure permission from both schools and apply and be admitted to both schools.

Certificate Completion

The Columbian College of Arts and Sciences requires all certificate candidates, both full-time and part-time, to complete all academic requirements within a maximum of three calendar years from admission. An approved leave of absence is not counted towards the time limit requirement. Students must apply and be approved for an extension of time by

the associate dean for graduate studies if they wish to study beyond the time limit.

To be eligible for a graduate certificate, students must complete all course requirements with a minimum GPA of 3.0, with no grades of F.

Transfer of Credit

Requests for transfer credit must be submitted in writing and approved by the department's director of graduate studies and the associate dean for graduate studies during the student's first year in the program. An official transcript of the coursework must be on file before the request can be considered. Grades from transfer credit are not part of the graduate GPA.

Once enrolled in the Columbian College of Arts and Sciences, students are not permitted to transfer coursework taken outside the University, except under extraordinary circumstances; permission must be sought from the associate dean for graduate studies in advance.

Transfer of credit to the certificate

All courses transferred in to a graduate certificate program must meet the following conditions:

1. The coursework must be from an accredited institution and must have been taken within the five years prior to matriculation.
2. The transfer requests must be approved by the department as part of the student's program of studies.
3. The credits must be from post-baccalaureate, graduate-level coursework.
4. All coursework must have received a minimum grade of B.

In addition, the following restrictions apply:

1. A maximum of one course from outside GW can be transferred in.
2. A maximum of two courses that have been used toward a previously completed CCAS program can be transferred in.
3. No course may count toward more than one graduate certificate.

Transfer of credit from certificate to degree programs

Students may transfer up to 100 percent of coursework (maximum of 18 credits) from a CCAS certificate program to a CCAS degree program if the curriculum for the certificate is wholly a subset of the degree, providing the conditions below are met:

1. The coursework must have been taken within the five years prior to matriculation.
2. The course must have received a minimum grade of B.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
 - Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
 - Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
 - The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
-
- Africana Studies (AFST) (p. 1400)
 - American Studies (AMST) (p. 1400)
 - Anthropology (ANTH) (p. 1409)
 - Arabic (ARAB) (p. 1418)
 - Art Therapy (ARTH) (p. 1426)
 - Astronomy (ASTR) (p. 1428)
 - Biochemistry and Molecular Medicine (BIOC) (p. 1429)
 - Biological Sciences (BISC) (p. 1431)
 - Biomedical Sciences (BMSC) (p. 1442)
 - Biostatistics (BIOS) (p. 1443)
 - Chemistry (CHEM) (p. 1445)
 - Chinese (CHIN) (p. 1450)
 - Classical Acting (ACA) (p. 1396)
 - Classical Studies (CLAS) (p. 1461)
 - Columbian College of Arts and Sciences (CCAS) (p. 1468)
 - Communication (COMM) (p. 1468)
 - Corcoran Art History (CAH) (p. 1483)
 - Corcoran Continuing Education (CCE) (p. 1491)
 - Corcoran Decorative Arts and Design (CDAD) (p. 1491)
 - Corcoran Exhibition Design (CEX) (p. 1492)
 - Corcoran First Year Foundation (CFN) (p. 1493)
 - Corcoran Graphic Design (CGD) (p. 1494)
 - Corcoran Interior Architecture (IA) (p. 1658)
 - Corcoran Interior Architecture (CIAR) (p. 1498)
 - Corcoran Interaction Design (CIXD) (p. 1496)
 - Corcoran Museum Studies (CMST) (p. 1500)
 - Corcoran Photojournalism (CPJ) (p. 1506)
 - Corcoran Studio Arts (CSA) (p. 1509)
 - Corcoran Theatre and Dance (TRDA) (p. 1517)
 - Data Science (DATS) (p. 1530)
 - East Asian Languages and Literature (EALL) (p. 1537)
 - Economics (ECON) (p. 1538)
 - English (ENGL) (p. 1576)
 - English for Academic Purposes (EAP) (p. 1587)
 - Environmental Resource Policy (ENRP) (p. 1588)
 - Film Studies (FILM) (p. 1593)
 - Forensic Psychology (FORP) (p. 1597)
 - Forensic Sciences (FORS) (p. 1599)
 - French (FREN) (p. 1602)
 - Geography (GEOG) (p. 1605)
 - Geological Sciences (GEOL) (p. 1610)
 - Germanic Language and Literature (GER) (p. 1611)
 - Greek (GREK) (p. 1615)
 - Hebrew (HEBR) (p. 1628)
 - History (HIST) (p. 1629)
 - Hominid Paleobiology (HOMP) (p. 1642)
 - Human Services and Social (HSSJ) (p. 1650)
 - Italian (ITAL) (p. 1669)
 - Japanese (JAPN) (p. 1671)
 - Judaic Studies (JSTD) (p. 1672)
 - Korean (KOR) (p. 1673)
 - Latin (LATN) (p. 1674)
 - Leadership Education and Development (LEAD) (p. 1674)
 - Linguistics (LING) (p. 1679)
 - Mathematics (MATH) (p. 1687)
 - Microbiology, Immunology, and Tropical Medicine (MICR) (p. 1704)
 - Molecular Medicine (MMED) (p. 1705)
 - Corcoran Music (MUS) (p. 1502)
 - Organizational Sciences (ORSC) (p. 1714)
 - Peace Studies (PSTD) (p. 1717)
 - Persian (PERS) (p. 1717)
 - Pharmacology (PHAR) (p. 1719)
 - Philosophy (PHIL) (p. 1720)
 - Physics (PHYS) (p. 1731)
 - Political Science (PSC) (p. 1740)
 - Portuguese (PORT) (p. 1749)
 - Professional Psychology (PSYD) (p. 1750)
 - Psychology (PSYC) (p. 1771)
 - Public Policy and Public Administration (PPPA) (p. 1800)
 - Religion (REL) (p. 1806)
 - School of Media and Public Affairs (SMPA) (p. 1813)
 - Slavic Language and Literature (SLAV) (p. 1819)
 - Sociology (SOC) (p. 1821)
 - Spanish (SPAN) (p. 1826)
 - Speech, Language, and Hearing Sciences (SPHR) (p. 1835)
 - Statistics (STAT) (p. 1843)
 - Turkish (TURK) (p. 1854)
 - University Writing (UW) (p. 1855)
 - Vietnamese (VIET) (p. 1856)
 - Women's, Gender, and Sexuality Studies (WGSS) (p. 1856)
 - Yiddish (YDSH) (p. 1864)

GENERAL EDUCATION CURRICULUM-PERSPECTIVE, ANALYSIS, COMMUNICATION (G-PAC)

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in

addition to the one course in this category required by the University General Education Requirement.

- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

AFRICANA STUDIES

The Africana Studies program promotes an interdepartmental, interdisciplinary examination of the diverse histories, cultures, politics, and peoples of the African diaspora. Regional coverage includes the United States, Africa, the Caribbean, Latin America, Europe, and the Middle East. Students are introduced to methodology from core areas of the humanities and social sciences to develop skills in comparative, cross-cultural analysis and research. A student's course of study might range from Caribbean cultures, the literature of Black America, the historical evolution of African independence movements, or the sociology of power and equality in the United States, to an anthropological approach to the transatlantic slave trade.

Visit the department website (<https://africanastudies.columbian.gwu.edu/>) for more information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in Africana studies (p. 93)

Minor

- Minor in Africana studies (p. 95)

FACULTY

Committee on Africana studies J. James (*Director*), N. Blyden, H.G. Carrillo, S. Lubkemann, J.A. Miller, G. Squires, G. Wald, A. Zimmerman

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AFST 1001. Introduction to Africana Studies. 3 Credits.

An interdisciplinary introduction to the study of people of Africa and the African diaspora in historical context. Links in the cultural, political, and intellectual experiences of people of African descent in the Americas, Caribbean, Europe, and Africa.

AFST 1099. Variable Topics. 36 Credits.

AFST 3001. Documenting Black Lives. 3 Credits.

Students complete and present an original research project pertaining to black history and culture; research strategies, including the use of digital material, historical archives, and public history sites. Recommended background: completion of a prior course in any Africana-related topic and an interest in research.

AFST 3099. Variable Topics. 1-12 Credits.

AFST 5099. Variable Topics. 1-99 Credits.

BACHELOR OF ARTS WITH A MAJOR IN AFRICANA STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Additional curriculum requirements:

Code	Title	Credits
Required for the major—39 credits:		
AFST 1001	Introduction to Africana Studies (taken within three semesters of declaring the major)	
African American studies:		
HIST 3360	African American History to 1865	
SOC 2179	Race and Minority Relations	
ENGL 3570	Nineteenth-Century Black Literature	
or ENGL 3950	Cultural Theory and Black Studies	
Another course from the following designated courses: *		
AMST 2440	The American City	
ENGL 3940	Topics in African American Literary Studies	
ENGL 3945	African American Poetry	

HIST 3360	African American History to 1865
HIST 3361	African American History Since 1865
HIST 3362	African American Women's History
HIST 2312	The American Civil War and Reconstruction, 1850-1877
MUS 1108	History of Jazz
MUS 3175	Topics in Music History and Literature
SOC 2151	Jackie Robinson: Race, Sports, and the American Dream
SOC 2170	Class and Inequality in American Society
SOC 2179	Race and Minority Relations
SOC 2169	Urban Sociology

Four courses in African studies:

ANTH 3708	Anthropology of Africa
HIST 3520	Africans in the Making of the Atlantic World
or HIST 3540	West Africa to Independence

Two additional courses from the following list of designated courses *

HIST 3501	Topics: Africa
HIST 3510	African History to 1880
HIST 3520	Africans in the Making of the Atlantic World
HIST 3530	Women in Africa
HIST 3540	West Africa to Independence
ANTH 3801	African Roots from Australopithecus to Zimbabwe
IAFF 2093	Africa: Problems and Prospects
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2482	African International Politics
FREN 3300	Topics in French and Francophone Literatures and Cultures in Translation
FREN 3560	Topics in Contemporary Francophone Literature and Cinema

GEOG 3154	Geography of the Middle East and North Africa
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GEOG 3164	The Geography of Africa
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Two courses in Latin American, Latino, and Caribbean studies:

HIST 3710	History of Latin America I
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Another course from the following list of designated courses *

ENGL 3920	U.S. Latina/o Literature and Culture
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ENGL 3930	Topics in U.S. Latina/o Literature and Culture
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FREN 3300	Topics in French and Francophone Literatures and Cultures in Translation
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FREN 3560	Topics in Contemporary Francophone Literature and Cinema
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GEOG 3161	Geography of Latin America
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IAFF 2090	Latin America: Problems and Promise
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HIST 3711	History of Latin America II
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SPAN 3600	Special Topics
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An upper-division course in gender studies from the following list of designated courses (this course may also count toward one of the above categories) *

ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
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HIST 3530	Women in Africa
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HIST 3362	African American Women's History
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PHIL 2125	Philosophy of Race and Gender
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REL 3481	Women in Islam
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One additional course from above or from the following:

AMST 2020	Washington, DC: History, Culture, and Politics
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AMST 2410	Twentieth Century U.S. Immigration
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HIST 2803	The Ancient Near East and Egypt to 322 B.C.
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REL 3475	Islamic Religion and Art
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REL 3414	Islamic Philosophy and Theology
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GEOG 2133	People, Land, and Food
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GEOG 2141	Cities in the Developing World
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GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in

addition to the one course in this category required by the University General Education Requirement.

- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

MINOR IN AFRICANA STUDIES REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including a 3-credit required course and 18 credits in elective courses.

Code	Title	Credits
Required		
AFST 1001	Introduction to Africana Studies	
Electives		
18 credits in courses to be selected in consultation with the program director.		

Visit the program website (<https://africanastudies.columbian.gwu.edu/minor-africana-studies/>) for additional information.

AMERICAN STUDIES

American Studies explores the culture and politics of the United States and the role of the United States in the world. Faculty and students analyze issues of race, gender, sexuality, and other forms of power in American life; transnational flows of culture, ideas, and religious beliefs; the development and transformation of public cultures and spaces; and the ways that policy interacts with each of these areas of inquiry. At both the undergraduate and graduate levels, students are prepared for careers in academic and popular education, media, journalism, cultural resource management, museums, and preservation, as well as for further education in law, medicine, academia, and a wide range of disciplines.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in American studies (p. 102)

Combined program

- Dual Bachelor of Arts with a major in American studies and Master of Arts in the field of American Studies (p. 104)

Minor

- Minor in American studies (p. 104)

GRADUATE

Master's program

- Master of Arts in the field of American studies (p. 104)

Doctoral program

- Doctor of Philosophy in the field of American studies (p. 105)

FACULTY

University Professor V.N. Gamble

Professors D. Bjelajac, M. McAlister, T.A. Murphy, G. Wald

Associate Professors E. Anker, J.N. Cohen-Cole, T. Guglielmo (Chair), C. Heap, A. Musser, D. Orenstein, S. Osman, E. Peña

Assistant Professor N. Ivy

Professorial Lecturers K. Ott, J. Deutsch

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AMST 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

AMST 1050. Explorations in American Culture. 3 Credits.

Exploration of different aspects of American culture depending on the topic. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AMST 1070. The American Cinema. 3 Credits.

History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. (Same as AH 1070).

AMST 1099. Variable Topics. 1-36 Credits.**AMST 1100. Politics and Film. 3 Credits.**

How American films interpret and challenge political power in America.

AMST 1160. Race, Gender, and Law. 3 Credits.

Significant civil rights cases, critical race theory, feminist theory, and current public policy debates on domestic violence, mass imprisonment, sexual assault, and racial profiling.

AMST 1200. The Sixties in America. 3 Credits.

A survey of American society, culture, and politics during the decade of the 1960s. Topics include the civil rights movement, the student movement, the Vietnam War, and the counterculture.

AMST 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester; see department for more details. Permission of the instructor required prior to enrollment.

AMST 2010. Early American Cultural History. 3 Credits.

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as HIST 2010.

AMST 2011. Modern American Cultural History. 3 Credits.

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as HIST 2011.

AMST 2020. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same As: AMST 2020W, HIST 2020, HIST 2020W.

AMST 2020W. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2020, HIST 2020, HIST 2020W.

AMST 2071. Introduction to the Arts in America. 3 Credits.

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AH 2071.

AMST 2120W. Freedom in American Thought and Popular Culture. 3 Credits.

America was founded on the premise of providing freedom to its people. But what, exactly, is freedom? The question has been debated in America since its founding and continues today; this course examines varied answers provided by American political thought and popular culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and PSC 2120W.

AMST 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Same as WGSS 2125. Prerequisites: WGSS 1020 or WGSS 2120.

AMST 2144. Explorations in Historical Geography. 3 Credits.

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as GEOG 2144.

AMST 2210. The African American Experience. 3 Credits.

This course provides a survey of the historical, political, and cultural dimensions of the African American experience in the U.S. The course is organized chronologically and thematically and covers topics such as American slavery, medical experimentation, Hurricane Katrina, aesthetics, hip-hop, and Afro-futurism.

AMST 2320. U.S. Media and Cultural History. 3 Credits.

History and analysis of twentieth-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. (Same as HIST 2320).

AMST 2350. U.S. Religion and Politics. 3 Credits.

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as HIST 2350.

AMST 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as HIST 2380 and WGSS 2380.

AMST 2385. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics.

AMST 2385W. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 2410. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same As: AMST 2410W, HIST 2410, HIST 2410W.

AMST 2410W. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2410, HIST 2410, HIST 2410W.

AMST 2430. Capitalism and Culture. 3 Credits.

Cultural and political history of American capitalism from Wall Street to Whole Foods, including advertising, automation, baseball, Fordism, graffiti, housework, punk, real estate, strike-breaking, sex work, and slavery.

AMST 2440. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as HIST 2440.

AMST 2440W. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2440, HIST 2440, HIST 2440W.

AMST 2490. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. (Same as HIST 2490).

AMST 2490W. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 2490W).

AMST 2495. Special Topics in African American History. 3 Credits.

Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

AMST 2520. American Architecture I. 3 Credits.

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600-1860. (Same as AH 2154, CAH 2154).

AMST 2521. American Architecture II. 3 Credits.

Continuation of AMST 2520. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning; analysis of buildings both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860 to present. (Same as AH 2155, CAH 2155).

AMST 2533. Material Culture in America. 3 Credits.

Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as ANTH 2533.

AMST 2600. U.S. Popular Music and Culture. 3 Credits.

Interdisciplinary approach to U.S. popular music as a means for thinking critically about identity, culture, and history from the nineteenth century to the present; popular music as a cultural reflection of society and a key means through which Americans enact and negotiate social opportunities, challenges, and struggles.

AMST 2610. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late 19th century to the present.

AMST 2610W. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late nineteenth century to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2610, HIST 2610, HIST 2610W.

AMST 2620. Human Mind and Artificial Intelligence. 3 Credits.

The history of computers, robots, and artificial intelligence; visions of the future presented in science fiction; how human perceptions of machines affect their perceptions of the human mind.

AMST 2630. Discovering the Mind. 3 Credits.

Introduction to the ways in which the mind sciences have shaped how we understand ourselves, human nature, sex and race, morals, politics, and power.

AMST 2680W. Hashtag America. 3 Credits.

Influential technoskeptic and techno-utopian writing about social media and new media; the relationship between the Internet and society from various scholarly perspectives. Includes a significant engagement with writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 2710. The United States in the World. 3 Credits.

U.S. cultural and political engagement with the rest of the world in the twentieth and twenty-first centuries. Global culture, transnational ideas and social movements, travel and tourism, and the impact of media. Same As: HIST 2710.

AMST 2730. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2730W. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 2730).

AMST 2750. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same As: AMST 2750W, ANTH 2750, ANTH 2750W.

AMST 2750W. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2750, ANTH 2750, ANTH 2750W.

AMST 3099. Variable Topics. 1-12 Credits.**AMST 3151. American Art in the Age of Revolution. 3 Credits.**

Same as AH 3151.

AMST 3152. American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art, and religion. (Same as AH 3152).

AMST 3324. U.S. Urban History. 3 Credits.

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 3324.

AMST 3351. U.S. Social History. 3 Credits.

Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as HIST 3351).

AMST 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

AMST 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 3353. U.S. Women's History II. 3 Credits.

Continuation of AMST 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. Same as HIST 3353/ WGSS 3353. (Same as HIST 3353, WGSS 3353).

AMST 3360. African American History to 1865. 3 Credits.

Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as HIST 3360).

AMST 3361. African American History Since 1865. 3 Credits.

African American efforts to realize full freedom after emancipation from slavery. Gender politics, cultural expression, labor organizing, and radicalisms; dynamics of racism within major eras of African American activity from Reconstruction through the Great Migration; and the history of civil rights, Black Power, and black feminism. (Same as HIST 3361).

AMST 3362. African American Women's History. 3 Credits.

Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late twentieth century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as AMST 3362W, HIST 3362, HIST 3362W, WGSS 3362, WGSS 3362W).

AMST 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AMST 3362, HIST 3362, HIST 3362W, WGSS 3362, WGSS 3362W).

AMST 3367. The American Jewish Experience. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people. (Same as HIST 3367).

AMST 3600. Popular Music and Politics. 3 Credits.

The interactions and intersections of music and politics, focusing on the twentieth-century United States; music as political expression, music in social protest movements, and music as a tool of political organizing.

AMST 3625. Ethnographic and Historical Perspectives on Data Ethics. 3 Credits.

An introduction to ethics of data sciences from two disparate perspectives: historical and ethnographic. For students in all fields interested in understanding and evaluating the ethical implications of data and algorithms. Same As: ANTH 3625.

AMST 3810. Planning Cities. 3 Credits.

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as GEOG 3810. Prerequisite: GEOG 1001.

AMST 3811. Historical Archaeology. 3 Credits.

Survey of the basic data and methods of research in the material culture of recent history. Same as ANTH 3811.

AMST 3835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 3835.

AMST 3900. Critiquing Culture. 3 Credits.

Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visuality, discourse, and affect. Restricted to American studies majors or American studies minors with permission of the instructor.

AMST 3901. Examining America. 3 Credits.

Modes of power and forms of identification within and across U.S. national borders. Social constructions of the nation; forms of diversity and identity, such as race, gender, and sexuality; and the transnational flow of people, ideas, culture, and religion. Restricted to students in the American studies program.

AMST 3950. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Topics announced in the Schedule of Classes.

AMST 3950W. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Topic announced in the Schedule of Classes. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HIST 3301W.

AMST 4400. Independent Study. 1-3 Credits.

Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required.

AMST 4450. Internship. 1-3 Credits.

Open to a limited number of American studies majors pursuing an internship directly related to the study of American culture. Students must make the case for a scholarly project that emerges from the internship and must write a significant final paper. Approval of a supervising faculty member required for registration. P/NP grading only.

AMST 4500. Proseminar in American Studies. 3 Credits.

Directed research and writing on special topics. May be repeated for credit provided the topic differs. Restricted to students in the American studies program. Prerequisites: AMST 2010, AMST 2011, AMST 3900 and AMST 3901.

AMST 4500W. Proseminar in American Studies. 3 Credits.

Directed research and writing on special topics. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Students select two of the prerequisite courses. Restricted to students in the American studies program. Prerequisites: AMST 2010, AMST 2011, AMST 3900 and AMST 3901.

AMST 4701W. Epidemics in American History. 3 Credits.

The history of epidemics in the United States from the late nineteenth to the early twentieth century. The development of medical and public health responses to epidemics, and their social, political, cultural, and economic impacts. Sources include primary documents, historical accounts, memoirs, fiction, and films. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 4702W. Race, Medicine, and Public Health. 3 Credits.

The experiences of African Americans as patients and health care providers; the history of the relationship between race, American medicine, and public health. Emphasis on the importance of understanding the historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 5099. Variable Topics. 1-99 Credits.**AMST 6100. Scope and Methods in American Studies. 3 Credits.**

Consideration of American studies as an area for research and teaching; introduction to bibliography. Required of candidates for the degree of Master of Arts in the field of American studies.

AMST 6110. Cultural Theory and American Studies. 3 Credits.

Major issues in critical and cultural theory as they relate to American culture. Various interpretive approaches including discourse analysis, cultural studies, new historicism, anthropological theory, etc. Prerequisites: AMST 6100 or permission of the instructor.

AMST 6120. Theories and Practices in the Study of Media. 3 Credits.

Examination of theories and methods in the study of media and popular culture; case studies explore specific issues related to cultural products such as film, television, music, and the Internet.

AMST 6190. Topics in American Studies. 1-4 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and ANTH 6591, ENGL 6451, HIST 6001.

AMST 6195. Research Seminar in American Studies. 3 Credits.

May be repeated for credit provided the topic differs.

AMST 6210. The United States in a Global Context. 3 Credits.

Analysis of the cultural constructions of the nation and international power, comparing the context of the eighteenth and nineteenth century, European colonialism, and U.S. expansion in the twentieth century. The role of literature and mass media in furthering the logic of globalization. Readings are both theoretical and historical.

AMST 6220. Theory and Emotions. 3 Credits.

Interdisciplinary exploration of politics of emotion, with an emphasis on the emotions that attach to race, gender, and sexuality.

AMST 6230. The Politics of Freedom. 3 Credits.

This seminar examines critical interventions into the theories, rhetorics, and practices of freedom. The seminar focuses on the politics of freedom in relation to an array of themes that may include liberalism, slavery, imperialism, political economy, individualism, and neoliberalism.

AMST 6240. Borders and Boundaries. 3 Credits.

Exploration of borders (the literal edge or limit of a territory) and boundaries (intra-societal differences). Readings from cultural anthropology, political science, and social history examine classic tensions between state formation and nation building. The U.S.-Mexico border and other border zones across the globe are used to assess and challenge what is local and particular about border space.

AMST 6410. Readings in American Cultural History. 3 Credits.

Studies in the cultural history of the United States.

AMST 6420. Religion and American Culture. 3 Credits.

Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as HIST 6420.

AMST 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

AMST 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of AMST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as HIST 6431/ WGSS 6431.

AMST 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as HIST 6435/ WGSS 6435.

AMST 6450. Race in America. 3 Credits.

Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as HIST 6450.

AMST 6455. American Social Movements. 3 Credits.

The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as HIST 6455.

AMST 6460. Popular Music Studies. 3 Credits.

Readings in popular music studies; varying methodologies for American studies work on sound and popular music; cultural histories of popular music; American music transnationally. Restricted to graduate students.

AMST 6470. Cityscapes. 3 Credits.

Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as HIST 6470.

AMST 6475. U.S. Urban History. 3 Credits.

History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 6475.

AMST 6480. Theory and Practice of Public History. 3 Credits.

Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as HIST 6480.

AMST 6495. Historic Preservation: Principles and Methods. 3 Credits.

The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6495.

AMST 6496. Historic Preservation: Principles and Methods. 3 Credits.

Continuation of AMST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6496.

AMST 6520. Economics of Preservation. 3 Credits.

Analysis of economic techniques and benefits used to encourage the retention and reuse of historic buildings and districts in the United States. Emphasis on revitalization of older commercial centers and the Mainstreet program. Permission of the instructor required prior to enrollment.

AMST 6525. The Politics of Historic Preservation. 3 Credits.

Overview of the political issues, forces, events, and players that have shaped contemporary preservation practice, with an emphasis on public policy issues that have not been resolved and continue to confront preservation objectives. Permission of the instructor required prior to enrollment.

AMST 6530. Field Methods in Architectural Documentation. 3 Credits.

In-depth thematic examination of cultural landscape, focusing on field techniques for recording, analysis, and interpretation of historic properties. Work at field sites is supplemented by lectures, discussion, and readings. Restricted to graduate students.

AMST 6550. Seminar in American Architecture. 3 Credits.

Advanced research problems addressing artistic, cultural, social, technical, and urbanistic aspects of American architecture in the 19th and 20th centuries. Topics vary. Prerequisites: AMST 2520 or AMST 2521, or permission of the instructor.

AMST 6560. Vernacular Architecture. 3 Credits.**AMST 6650. Advanced Workshop in American Studies. 1-4 Credits.**

Required for first- and second-year PhD students; open to other graduate students. Provides instruction and guidance in the process of writing, revising, and submitting journal articles, conference papers, and dissertations. Faculty and peer review of written work. Students are expected to enroll for the full academic year. Restricted to American studies graduate students.

AMST 6709. Interpretation in the Historic House Museum. 3 Credits.

Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Admission by permission of instructor. Same as EDUC 6709.

AMST 6710. American Material Culture. 3 Credits.

Opportunities for research and publication based on historical objects in the collections of the Smithsonian Institution.

AMST 6720. American Decorative Arts I. 3 Credits.

Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6721. American Decorative Arts II. 3 Credits.

Continuation of AMST 6720. Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6730. Studies in American Art and History. 3 Credits.

Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AH 6255.

AMST 6835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 6835.

AMST 6930. Independent Study. 3 Credits.

Permission of the instructor required prior to enrollment. Restricted to master's and doctoral candidates.

AMST 6998. Thesis Research. 3 Credits.**AMST 6999. Thesis Research. 3 Credits.****AMST 8998. Advanced Reading and Research. 1-9 Credits.**

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

AMST 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN AMERICAN STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Additional curriculum requirements:

Code	Title	Credits
Required		
AMST 2010	Early American Cultural History	
AMST 2011	Modern American Cultural History	
AMST 3900	Critiquing Culture	
AMST 3901	Examining America	
AMST 4500	Proseminar in American Studies	
Electives		
Five additional AMST courses selected from the following, no more than two of which may be at the 1000 level.		
AMST 1000	Dean's Seminar	
AMST 1050	Explorations in American Culture	
AMST 1070	The American Cinema	

AMST 1100	Politics and Film
AMST 1160	Race, Gender, and Law
AMST 1200	The Sixties in America
AMST 2000	Sophomore Colloquium
AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
AMST 2071	Introduction to the Arts in America
AMST 2120W	Freedom in American Thought and Popular Culture
AMST 2125	Varieties of Feminist Theory
AMST 2144	Explorations in Historical Geography
AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History
AMST 2350	U.S. Religion and Politics
AMST 2380	Sexuality in U.S. History
AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
AMST 2410	Twentieth Century U.S. Immigration
AMST 2410W	Twentieth Century U.S. Immigration
AMST 2430	Capitalism and Culture
AMST 2440	The American City
or AMST 2440W	The American City
AMST 2490	Themes in U.S. Cultural History
or AMST 2490W	Themes in U.S. Cultural History
AMST 2495	Special Topics in African American History
AMST 2520	American Architecture I
AMST 2521	American Architecture II
AMST 2533	Material Culture in America
AMST 2600	U.S. Popular Music and Culture
AMST 2610	Science, Technology, and Politics in Modern America

or AMST 2610W	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2630	Discovering the Mind
AMST 2680W	Hashtag America
AMST 2710	The United States in the World
AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States
AMST 3151	American Art in the Age of Revolution
AMST 3152	American Art in the Era of National Expansion
AMST 3324	U.S. Urban History
AMST 3351	U.S. Social History
AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
AMST 3353	U.S. Women's History II
AMST 3360	African American History to 1865
AMST 3361	African American History Since 1865
AMST 3362	African American Women's History
or AMST 3362W	African American Women's History
AMST 3367	The American Jewish Experience
AMST 3600	Popular Music and Politics
AMST 3810	Planning Cities
AMST 3811	Historical Archaeology
AMST 3835	Historical Archaeology Field Program
AMST 3950	Special Topics
or AMST 3950W	Special Topics
AMST 4701W	Epidemics in American History
AMST 4702W	Race, Medicine, and Public Health

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education

curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may

count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in American Studies, a major must receive a grade of A on the senior paper written for AMST 4500 Proseminar in American Studies.

DUAL BACHELOR OF ARTS WITH A MAJOR IN AMERICAN STUDIES AND MASTER OF ARTS IN THE FIELD OF AMERICAN STUDIES

The Department of American Studies offers a dual bachelor of arts with a major in American studies (p. 102) and master of arts in the field of American studies (p. 104) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://americanstudies.columbian.gwu.edu/combined-bama-american-studies/>) for additional information.

MINOR IN AMERICAN STUDIES REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
AMST 2010	Early American Cultural History	
AMST 2011	Modern American Cultural History	
Electives		

12 credits in AMST courses taken at the 2000-3000 level.

MASTER OF ARTS IN THE FIELD OF AMERICAN STUDIES

Housed in the Columbian College of Arts and Sciences, American studies at GW is one of the nation's most rigorous

and innovative programs. With a core of 15 full-time and 20 affiliated faculty members, the program emphasizes interdisciplinary cultural analysis with approaches from anthropology, architectural history, art history, English, folklife, geography, media studies, history, performance studies and political theory. The department's particular strengths are in cultural history and cultural studies, art and culture, race and ethnicity, gender and sexuality, transnational American studies, urban studies of space and place, political and public cultures and religion.

Students in the master's program can pursue a general degree in American studies or a concentration in museums and material culture. The general M.A. prepares students for advanced PhD. work. The material culture M.A., which draws on the department's interdisciplinary strengths in the analysis of culture, provides pre-professional training with strong links to pertinent D.C. cultural resource management institutions, including the Smithsonian Institution. Both degree programs stress professional-level research and writing skills.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Completion of course and other requirements in either general studies or in the museums and material culture concentration.

General studies—30 credits, including a 3-credit required course, 6 credits in research seminar courses, and 21 credits in elective courses; museums and material culture concentration—30 credits, including 6 credits in required courses, 6 credits in research seminars, and 18 credits in elective courses.

General studies requirements

Code	Title	Credits
AMST 6100	Scope and Methods in American Studies	
At least six credits in research seminars. This may include AMST 6195 taken twice or other approved research courses.		
A minimum of 21 credits in elective courses pertaining to the study of American culture approved by the department. These may include graduate courses in anthropology, English, fine arts and art history, geography, history, media and public affairs, and political science.		
An optional thesis may be undertaken for 6 credits as part of these 21 credits.		

Concentration in museums and material culture requirements

This concentration, offered in association with the Smithsonian Institution, emphasizes the use of physical objects and spaces in historical research.

Code	Title	Credits
Required		
AMST 6100	Scope and Methods in American Studies	
AMST 6710	American Material Culture	
At least 6 credits in designated research seminars.		
At least 18 additional credits in courses pertaining to the study of American culture, museum studies, and museum education		

DOCTOR OF PHILOSOPHY IN THE FIELD OF AMERICAN STUDIES

Housed in the Columbian College of Arts and Sciences, American studies at GW is one of the nation's most rigorous and innovative programs. With a core of 15 full-time and 20 affiliated faculty members, the program emphasizes interdisciplinary cultural analysis with approaches from anthropology, architectural history, art history, English, folklife, geography, media studies, history, performance studies and political theory. The department's particular strengths are in cultural history and cultural studies, art and culture, race and ethnicity, gender and sexuality, transnational American studies, urban studies of space and place, political and public cultures and religion.

Students in the PhD program construct a comprehensive plan of study in three related fields tailored to their interests. These interdisciplinary fields highlight major problems in American studies and in related disciplines, such as art history, English, history and political science. Students develop research agendas early in their studies through participation in seminars and workshops, often drawing on the rich resources of Washington-based archives and research institutes. The department strongly supports the acquisition of foreign language skills.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Code	Title	Credits
Required		
AMST 6100	Scope and Methods in American Studies	
At least two designated research seminars.		
At least one course in theory approved by the advisor.		

Degree candidates must pass a general examination in three areas, to be taken over the course of one month, by the end of the third year from matriculation. The three fields are elected with approval of the advisory committee and should constitute a coherent, interdisciplinary program of study; one field may be devoted to the comparative study of a non-U.S. culture.

ANATOMY AND CELL BIOLOGY

The Department of Anatomy and Cell Biology offers two pre-medicine academic enhancer programs for candidates interested in applying to medical schools, physician assistant programs, or biomedical sciences doctoral programs: the graduate certificate in anatomical and translational sciences (GCATS) and master of science in the field of anatomical and translational sciences (M-ATS), a pre-med special master's program. Both programs are designed to enhance a graduate's competitiveness when applying to medical school or physician assistant programs, or to transition to an advanced graduate degree in the biomedical sciences. Applicants select a program based on their level of readiness for admission to a health professional school.

Visit the (<http://gsehd.gwu.edu/programs/museum-education/>)Department of Anatomy and Cell Biology website (<http://smhs.gwu.edu/anatomy/>) for additional information.

GRADUATE

Master's program

- Master of Science in the field of anatomical and translational sciences (p. 108)

CERTIFICATE

Certificate Program

- Graduate certificate in anatomical and translational sciences (p. 108)

FACULTY

Professors R.G. Hawley, Y. Hu, K.E. Johnson, S.A. Moody (*Chair*), R.H. Miller, K. Peusner, M.A. Stepp

Associate Professors K. Brown, A. Chiaramello, A. Tzatsos, X. Zheng

Assistant Professors I. Chung, N. DeVaul, K. DeVeau, T. Efimova, A. Pajooohesh-Ganji, M. Shibata, M. Spencer, V. Taylor

Research Assistant Professor A. Tavares

Adjunct Instructor K. Lashley

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANAT 1099. Variable Topics. 1-36 Credits.

ANAT 2130. Human Embryology. 3 Credits.

Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

ANAT 2150. Human Microscopic Anatomy. 3 Credits.

Normal histological structure of cells, tissues, and organs. Structural-functional correlates; the relationship between histological structure-function and the etiology of disease states.

ANAT 2160. Human Functional Neuroanatomy. 3 Credits.

Intensive introductory course on human central (CNS) and peripheral nervous systems, focusing on CNS pathways, connections, effects of lesions, and recent research findings. Restricted to juniors and seniors. Prerequisites: BISC 2202, BISC 2214, and BISC 2322 (may be waived with course director's permission).

ANAT 2181. Human Gross Anatomy. 3 Credits.

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisites: BISC 1111 and BISC 1112; except by permission of the instructor. Same As: BISC 2581.

ANAT 3099. Variable Topics. 1-12 Credits.

ANAT 5099. Variable Topics. 1-99 Credits.

ANAT 6130. Clinically Oriented Human Embryology. 3 Credits.

The mechanisms of human embryology with clinical correlations of embryological development. Developmental control mechanisms and development of basic organ systems. Molecular control of development. Assisted reproductive technologies. Congenital birth defects. Demonstration labs and online animations for clinical correlates. Restricted to students in the graduate certificate in anatomical and translational sciences program. Recommended background: Introductory course in biology. Credit cannot be earned for this course and ANAT 2130.

ANAT 6150. Clinically Oriented Human Microscopic Anatomy. 4 Credits.

The normal histological structure of cells, tissues, and organs of the human body with emphasis on clinical relevance; structural/functional correlates at both the light and electron microscopic levels; alterations in normal histology through disease or injury and the etiology of various disease states; integration of histological concepts with clinical correlates. Restricted to students in the graduate certificate in anatomical and translational sciences (GCATS) or master's in anatomical and translational sciences (M-ATS) programs. Prerequisites: BISC 1111 and BISC 2202.

ANAT 6160. Human Clinical Neuroanatomy. 3 Credits.

Anatomy and function of the human central and peripheral nervous systems. Emphasis on clinical relevance. Gross and microscopic structure, embryology, and neurophysiology of the brain, spinal cord, and nerves with descriptions of alterations in normal anatomy through disease or injury. Completion of an introductory biology course for science or non-science majors is required prior to enrollment. Restricted to students in the anatomical and translational sciences graduate certificate and Institute for Biomedical Sciences PhD programs or with the permission of the course director.

ANAT 6181. Clinically Oriented Human Gross Anatomy. 4 Credits.

Structural organization of the human body and the relationship of the organization to regional and systems-related functions; application of normal anatomical structure/function relationships to understand clinical implications of disease or injury. The laboratory is used for cadaveric dissection to learn anatomical relationships and basic knowledge of radiographic imaging. Restricted to students in the graduate certificate and master's programs in anatomical and translational sciences and other graduate students with the permission of the course director. Recommended background: Completion of higher-level science courses during the student's undergraduate degree program. Credit cannot be earned for this course and ANAT 2181.

ANAT 6182. Fundamentals of Translational Science. 4 Credits.

Fundamentals of organ development and study; how molecular defects during development can lead to disease. Restricted to students in the graduate certificate in anatomical and translational sciences program.

ANAT 6203. Human Developmental Anatomy. 1 Credit.

ANAT 6204. Neuroanatomy. 2 Credits.

ANAT 6215. Anatomy for Physician Assistant Students. 3 Credits.

Lecture and student examination of prosected cadavers. Provides foundational anatomical knowledge for future courses in the physician assistant curriculum. Restricted to students enrolled in the physician assistant program.

ANAT 6216. Cellular Anatomy and Histology. 2 Credits.

ANAT 6219. Biomedical Ethics for Translational Sciences. 2 Credits.

Ethical issues relevant to the practice of medicine and biomedical research involving human subjects. Permission of the instructor required prior to enrollment. Restricted to graduate students. Recommended background: ANAT 6130, ANAT 6150, ANAT 6160, ANAT 6181 and ANAT 6292.

ANAT 6221. Special Topics in Stem Cell Biology. 1-3 Credits.

ANAT 6222. Special Topics in Stem Cell Biology. 1-3 Credits.

ANAT 6223. Special Topics in Regenerative Medicine. 2 Credits.

Students attend seminars given by invited lecturers to present their research findings and breakthroughs on topics of regenerative medicine. Seminars can be sponsored by the Department of Anatomy and Regenerative Biology, the Stem Cell Interest Group Journal and Data Club, the Molecular Medicine Graduate Program (MMED 8214), and the GW Institute for Neuroscience. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6249. Introduction to Anatomical Research. 1 Credit.

ANAT 6252. Human Variation. 1 Credit.

ANAT 6253. Developmental Neurobiology. 3 Credits.

ANAT 6260. Developmental Genetics. 2 Credits.

ANAT 6262. Gross Anatomy of Upper and Lower Extremities. 2 Credits.

ANAT 6264. Gross Anatomy of Head and Neck. 2 Credits.

ANAT 6266. Gross Anatomy of Thorax and Abdomen. 2 Credits.

ANAT 6268. Gross Anatomy of Pelvis, Perineum, and Lower Extremities. 2 Credits.

ANAT 6275. Advanced Studies in Translational Sciences. 3 Credits.

Semester-long rotation in a research laboratory conducting translational researching, applying fundamental concepts learned in didactic courses, and developing versatility with new technologies. Permission of the program director is required. Restricted to students in the graduate certificate and master of science in anatomical and translational sciences programs. Prerequisites: Prior completion of an introductory-level course in biology for science or non-science majors.

ANAT 6276. Advanced Studies in Anatomy. 1 Credit.

Detailed study of an anatomic topic tailored to the needs of the individual student. Restricted to graduate students who are in the Graduate Certificate in Anatomical and Translational Sciences program or who have permission of the program director and medical students.

ANAT 6279. Applied Regional Anatomy. 1-5 Credits.

Regional dissection, guided readings.

ANAT 6284. Applied Surface Anatomy and Radiology. 5 Credits.

ANAT 6291. Special Projects in Anatomy. 1-12 Credits.

Independent study on any aspect of gross anatomy.

ANAT 6292. Projects in Anatomical Sciences: Introduction to Neuroradiology. 1 Credit.

Various imaging techniques and approaches to visualize normal neuroanatomy toward development and application of skills in teamwork, presentation, discussion, and literature searches. Restricted to students in the graduate certificate in anatomical and translational sciences program.

ANAT 8120. Graduate Human Gross Anatomy. 5 Credits.

An in-depth introduction to human gross anatomy with cadaveric dissection. The structural organization of the human body, including its regional and systems-related functions. The relationship between normal human anatomical variation in structure and function and how disease and/or injury affect these relationships. Permission of the instructor is required prior to enrollment. Offered spring semester in even years. Restricted to doctoral students with permission of the instructor. Recommended background: Prior coursework in the biological sciences or anthropology.

ANAT 8501. Didactic Anatomy. 3 Credits.

Development of a didactic program to include human developmental anatomy, microscopic anatomy, gross anatomy, and/or neuroanatomy. May also include interdepartmental study.

ANAT 8802. Summer Remedial: Human Developmental Anatomy. 1 Credit.

MASTER OF SCIENCE IN THE FIELD OF ANATOMICAL AND TRANSLATIONAL SCIENCES

The master of science in anatomical and translational sciences (M-ATS) is a two-year, non-thesis program designed to give students advanced knowledge in basic medical sciences, clinical studies, and clinical and translational research methods. The program provides students with an in-depth understanding of human gross anatomy, embryology, functional histology, neuroanatomy, genomic medicine, bioinformatics, systems physiology, pharmacology, pharmacogenomics, and modern stem cell biology. It also provides students with a solid background in personalized medicine and the methodological aspects of translational research and clinical investigation. This program is designed to maximize students' academic and career opportunities by enhancing competitiveness of applications to medical schools, physician assistant programs, or advanced graduate degree programs. The M-ATS program has an interdisciplinary curriculum drawing upon the unique strengths and collective expertise of three departments of the GW School of Medicine and Health Sciences—Anatomy and Regenerative Biology, Pharmacology and Physiology, and Clinical Research and Leadership.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

The following requirements must be fulfilled: 40 credits in required courses.

Code	Title	Credits
Required		
Year 1		
ANAT 6130	Clinically Oriented Human Embryology	
ANAT 6150	Clinically Oriented Human Microscopic Anatomy	
ANAT 6160	Human Clinical Neuroanatomy	
ANAT 6181	Clinically Oriented Human Gross Anatomy	
ANAT 6292	Projects in Anatomical Sciences: Introduction to Neuroradiology	

And one or both of the following*

ANAT 6223 Special Topics in Regenerative Medicine

ANAT 6275 Advanced Studies in Translational Sciences

Year 2

ANAT 6182 Fundamentals of Translational Science

ANAT 6219 Biomedical Ethics for Translational Sciences

MICR 6236 Fundamentals in Geonomics and Proteomics I

PHAR 6205 Pharmacology

PHAR 6206 Advanced Pharmacology

PHAR 6116 Pharmacogenomics and Personalized Medicine

*As part of the required curriculum, students choose one of the following options in Year 1: ANAT 6223 taken twice; or, ANAT 6275 taken twice; or, ANAT 6223 and ANAT 6275, each taken once. Students must consult the academic advisor before enrolling in either of these two courses.

GRADUATE CERTIFICATE IN ANATOMICAL AND TRANSLATIONAL SCIENCES

The graduate certificate in anatomical and translational sciences (GCATS) in the Columbian College of Arts and Sciences educates students in translational sciences with an understanding of human gross anatomy, embryology, functional histology, neuroanatomy, modern stem cell and developmental biology, and technology for biomedical molecular imaging. GCATS offers a contemporary clinical emphasis using problem-based learning. This two-semester program is designed to maximize career opportunities in the health fields, to enhance competitiveness of applications to medical school or physician assistant programs, or to transition into an advanced graduate degree program in the biomedical sciences.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The following requirements must be fulfilled: 19 credits in required courses.

Code	Title	Credits
Required:		
ANAT 6130	Clinically Oriented Human Embryology	
ANAT 6150	Clinically Oriented Human Microscopic Anatomy	
ANAT 6160	Human Clinical Neuroanatomy	
ANAT 6181	Clinically Oriented Human Gross Anatomy	
ANAT 6292	Projects in Anatomical Sciences: Introduction to Neuroradiology	

One of the following options:

ANAT 6223 taken twice; or ANAT 6275 taken twice; or ANAT 6223 and ANAT 6275 each taken once. Students must consult the academic advisor before selecting one of these options.

ANTHROPOLOGY

The Anthropology program includes four concentrations:

- Biological anthropology explores human evolution, anatomy and primatology.
- Sociocultural anthropology examines the role culture plays in shaping human action.
- Linguistic anthropology considers the role of language in human thought.
- Archaeology examines both human origins and more recent issues of state formation and urbanization.

In teaching and research, the program collaborates with the Smithsonian Institution's National Museum of Natural History, as well as departments within the University.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in anthropology (p. 118)
- Bachelor of Arts with a major in archaeology (p. 119)
- Bachelor of Science with a major in biological anthropology (p. 122)

Combined Programs

- Bachelor of Arts with a major in anthropology and Master of Arts in the field of anthropology (p. 124)
- Bachelor of Arts with a major in archaeology and Master of Arts in the field of anthropology (p. 124)
- Bachelor of Science with a major in biological anthropology and Master of Arts in the field of anthropology (p. 124)

- Bachelor of Science with a major in biological anthropology and Master of Science in the field of human paleobiology (p. 125)

Minors

- Minor in anthropology (p. 125)
- Minor in archaeology (p. 125)
- Minor in biological anthropology (p. 126)
- Minor in cross-cultural communication (p. 126)
- Minor in linguistics (p. 68) (interdisciplinary)
- Minor in sociocultural anthropology (p. 127)

GRADUATE

Master's program

- Master of Arts in the field of anthropology (p. 128)

Doctoral program

- Doctor of Philosophy in the field of anthropology (p. 129)

FACULTY

University Professor B. Wood

Professors D.R. Braun, A.S. Brooks, E.H. Cline, I. Feldman, R.R. Grinker, J.C. Kuipers, B.D. Miller, M. Schanfield, C.C. Sherwood

Associate Professors A. Ahmad, J.P. Blomster, B.J. Bradley, A.S. Dent (Chair), M.C. Edberg, S.C. Lubkemann, S.C. McFarlin, C.M. Murray, S.E. Wagner

Assistant Professors W.A. Barr, D. Pardo Pedraza, K. Quave

Professorial Lecturers S.M. Ali, A. Antohin, R. Asmi, J. Bell, P.J. Cressey, C. Greene, D. Hunt, S. Johnston, M. London, M. Merritt, D.K. Thulman, D.H. Ubelaker, E.C. Wortham

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANTH 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ANTH 1001. Biological Anthropology. 4 Credits.

Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee.

ANTH 1002. Sociocultural Anthropology. 3 Credits.

Survey of the world's cultures, illustrating the principles of cultural behavior. Credit cannot be earned for this course and HONR 2047W.

ANTH 1002W. Sociocultural Anthropology. 3 Credits.

Survey of the world's cultures, illustrating the principles of cultural behavior. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ANTH 1003. Archaeology. 3 Credits.

Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises.

ANTH 1004. Language in Culture and Society. 3 Credits.

Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power.

ANTH 1005. The Biological Bases of Human Behavior. 4 Credits.

Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee.

ANTH 1099. Variable Topics. 1-36 Credits.**ANTH 2000. Sophomore Colloquium. 3 Credits.**

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

ANTH 2008. Foundations of Anthropological Thought. 3 Credits.

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: ANTH 1002.

ANTH 2008W. Foundations of Anthropology. 3 Credits.

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 2406. Human Evolutionary Genetics. 3 Credits.

Introduction to the patterns and processes of human genetic variation. Topics include human origins and migration; molecular adaptations to environment, lifestyle, and disease; ancient and forensic DNA analyses; and genealogical reconstructions.

ANTH 2501. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as WGSS 2121.

ANTH 2502. Anthropology of Science and Technology: Twenty-First Century Brave New Worlds. 3 Credits.

The relationship between science and society, with consideration of how scientific knowledge and emergent technologies affect our lives, identities, social relations, and material conditions. The sociopolitical context in which scientific knowledge is produced and the ethnographic study of biotechnology, especially genetics and its various applications.

ANTH 2505. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Prerequisites: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of the instructor. (Same as MUS 2105).

ANTH 2506. Religion, Myth, and Magic. 3 Credits.

Anthropological approaches to religion from a cross-cultural perspective; ethnographic examples of religious beliefs and activity, with emphasis on non-Western societies; religious process and change.

ANTH 2533. Material Culture in America. 3 Credits.

Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as AMST 2533.

ANTH 2750. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2750, AMST 2750W, ANTH 2750W.

ANTH 2750W. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same As: AMST 2750, AMST 2750W, ANTH 2750.

ANTH 2821. Myths and Mysteries in Archaeology. 3 Credits.

How archaeological methods and techniques can falsify, or support, exotic beliefs about the past. Topics range from King Arthur to Atlantis.

ANTH 2822. Archaeology in Film and Television. 3 Credits.

The relationships between archaeology, the media, and popular culture; nationalism, descendant communities, gender, race, and colonialism.

ANTH 3099. Variable Topics. 1-12 Credits.

ANTH 3401. Human Functional Anatomy. 3 Credits.

The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3402. Human Evolutionary Anatomy. 3 Credits.

The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominins. Prerequisite: ANTH 1001.

ANTH 3403. Forensic Anthropology Laboratory. 2 Credits.

Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations. Taught at the Smithsonian. Corequisite: ANTH 3404.

ANTH 3404. Human Variation. 1 Credit.

An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Corequisite: ANTH 3403 Prerequisite: ANTH 1001. Same As: ANAT 6252.

ANTH 3406. Advanced Human Osteology. 3 Credits.

Advanced techniques in determination of age, sex, ancestry, and pathological conditions using the skeleton. Taught at the Smithsonian. Prerequisites: ANTH 3403 and ANTH 3404.

ANTH 3407. Conservation in a Changing World: Human and Animal Behavior. 3 Credits.

How humans and animals interact in a wide variety of settings, how human and animal welfare can be ensured, and how we can create a scientifically sound, yet socially and economically acceptable, conservation of the planet's biodiversity. Prerequisites: ANTH 1001.

ANTH 3408. The Evolution of Human Families. 3 Credits.

Human parental behavior considered from an evolutionary perspective, including parental care among mammals, concepts of parental investment, and parent-offspring conflict. Focus on parenting in the human lineage from early hominins to hunter-gatherers to the modern context. Prerequisites: ANTH 1001.

ANTH 3409. Evolution of Primate Life Histories. 3 Credits.

Human and non-human primate life histories and their evolution; factors such as body size, brain size, fertility, and life span. Features of modern human life histories, proposed explanations for them, and pertinent fossil evidence. Prerequisite: ANTH 1001.

ANTH 3411. Primatology. 3 Credits.

Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: ANTH 1001.

ANTH 3412. Hominin Evolution. 3 Credits.

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3412W. Hominin Evolution. 3 Credits.

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3413. Evolution of the Human Brain. 3 Credits.

Examination of how the human brain is unique in comparison to other animals, with an emphasis on understanding our species' distinctive neurobiology in terms of the evolution of cognitive abilities such as language, social comprehension, tool making, and abstract thinking.

ANTH 3491. Topics in Biological Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. Instructors are drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Prerequisite: ANTH 1001.

ANTH 3501. Anthropology of Development. 3 Credits.

The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3502. Cultural Ecology. 3 Credits.

Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W or permission of the instructor.

ANTH 3503. Psychological Anthropology. 3 Credits.

The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisites: ANTH 1002 or permission of the instructor.

ANTH 3504. Illness, Healing, and Culture. 3 Credits.

Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; and the role of medical anthropology in health care and international development. Prerequisites: ANTH 1002 or permission of the instructor.

ANTH 3506. Politics, Ethnicity, and Nationalism. 3 Credits.

Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, and political ritual. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W; or permission of the instructor.

ANTH 3507. Kinship, Family, and Community. 3 Credits.

Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms. Prerequisites: ANTH 1002 or permission of the instructor.

ANTH 3508. Art and Culture. 3 Credits.

The role of art in culture, with emphasis on small-scale societies. Influences upon the artist, and beliefs and practices associated with art production. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W; or permission of the instructor.

ANTH 3513. Anthropology of Human Rights. 3 Credits.

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W; or permission of the instructor.

ANTH 3513W. Anthropology of Human Rights. 3 Credits.

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3521. Visual Anthropology and the Social Lives of Images. 3 Credits.

Exploration of what still and moving images do in different cultural contexts, their social lives as they circulate, and how they are transformed as objects and a technology in diverse settings. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3531. Methods in Sociocultural Anthropology. 3 Credits.

Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students design and carry out their own field projects in the Washington area. Prerequisite: ANTH 1002.

ANTH 3601. Language, Culture, and Cognition. 3 Credits.

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Same as LING 3601. Prerequisite: ANTH 1004. Laboratory fee.

ANTH 3602. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004. (Same as LING 3602).

ANTH 3602W. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1004.

ANTH 3603. Psycholinguistics. 3 Credits.

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as LING 3603.

ANTH 3625. Ethnographic and Historical Perspectives on Data Ethics. 3 Credits.

An introduction to ethics of data sciences from two disparate perspectives: historical and ethnographic. For students in all fields interested in understanding and evaluating the ethical implications of data and algorithms. Same As: AMST 3625.

ANTH 3691. Special Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ANTH 1004 or permission of the instructor. (Same as LING 3691).

ANTH 3701. Native Peoples - North America. 3 Credits.

Comparative study of Indian groups representative of the different culture areas of the United States and Canada. Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3702. Anthropology of Latin America. 3 Credits.

Culture history and ways of life in a selected region of Central or South America. Regional focus to be announced in the Schedule of Classes. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3703. Cultures of the Pacific. 3 Credits.

Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisites: ANTH 1002 or ANTH 1004.

ANTH 3704. Cultures of Southeast Asia. 3 Credits.

Anthropological introduction to the cultures of Southeast Asia; the role of biocultural evolution, political economy, gender, colonialism, nationalism, and globalization, particularly in Vietnam, Myanmar, Thailand, Malaysia, Indonesia, and the Philippines.

ANTH 3705. Anthropology of East Asia. 3 Credits.

Intensive study of the culture and history of selected peoples of East or Central Asia. Specific area to be announced in the Schedule of Classes. May be repeated for credit. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3707. Anthropology of the Middle East. 3 Credits.

Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Middle East; emphasis on the Arab world. Prerequisites: ANTH 1002 or ANTH 1004.

ANTH 3708. Anthropology of Africa. 3 Credits.

Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisites: ANTH 1002 or ANTH 1004.

ANTH 3709. Japanese Culture Through Film. 3 Credits.

Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. Same as JAPN 3162.

ANTH 3710. Latin America Cinema, Indigenous Media, and Social Movements. 3 Credits.

Major topics in Latin American film and media studies. Political, economic, social, and cultural forces that have shaped Latin American cinema. The role indigenous artists, activists, and social organizations play in shaping Latin American cinema. Same As: ANTH 6710.

ANTH 3791. Topics in Regional Anthropology. 3-4 Credits.

Culture, history, and ways of life in a selected region of the world. Topics vary. Consult the Schedule of Classes for more details. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3801. African Roots from Australopithecus to Zimbabwe. 3 Credits.

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisites: ANTH 1003 or permission of the instructor.

ANTH 3801W. African Roots from Australopithecus to Zimbabwe. 3 Credits.

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3802. Human Cultural Beginnings. 3 Credits.

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3802W. Human Cultural Beginnings. 3 Credits.

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3803. Old World Prehistory: First Farmers to First Cities. 3 Credits.

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003.

ANTH 3803W. Old World Prehistory: First Farmers to First Cities. 3 Credits.

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3804. Origins of the State and Urban Society. 3 Credits.

Emergence of urbanism and the state in the prehistory of various world regions. Regions covered might include India, China, Mexico, and the Pacific, among others. Prerequisites: ANTH 1003.

ANTH 3805. Archaeology of Israel and Neighboring Lands. 3 Credits.

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 3106.

ANTH 3806. Art and Archaeology of the Aegean Bronze Age. 3 Credits.

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700–1200 B.C.) Same as AH 3104.

ANTH 3808. Archaeology and the Celts. 3 Credits.

The archaeology and history of the Celtic peoples, particularly how ethnicities and identities are defined and how these can be recovered from material culture; how archaeological ideas of the Celts have informed modern group identities
Prerequisites: ANTH 1003.

ANTH 3811. Historical Archaeology. 3 Credits.

Survey of the basic data and methods of research in the material culture of recent history. Same as AmSt 3811.

ANTH 3812. The Aztec Empire. 3 Credits.

Using archaeology, art, and ethnohistoric documents, this course focuses on the importance of power in Aztec society and how the normalization of violence created a form of social cohesion central to the state. Prerequisite: ANTH 1003. (Same as AH 3116, CAH 3116).

ANTH 3813. Archaeology of North America. 3 Credits.

History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: ANTH 1003.

ANTH 3814. Ancient Mexican Civilizations. 3 Credits.

Cultural history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter-gatherers and first farmers to the Aztec Empire. Prerequisite: ANTH 1003. (Same as AH 3107, CAH 3107).

ANTH 3823. Archaeology of Ritual and Religion. 3 Credits.

Archaeological and ethnographic examples from around the world are used to critically evaluate how archaeologists make inferences about ritual practices and the religious lives of past peoples. Issues include the origins of symbolic behavior, sacred landscapes, shamanism, ancestor veneration, and sorcery/witchcraft.

ANTH 3831. Paleoanthropological Field Program. 0 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Departmental approval required. Restricted to fellowship students. Credit cannot be earned for this course and ANTH 3832.

ANTH 3832. Paleoanthropological Field Program. 4 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 3833. Field Research: New World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at localities in North or South America. See Schedule of Classes for details.

ANTH 3834. Field Research: Old World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at Neolithic or later localities in Eurasia, Africa, or Oceania. See Schedule of Classes for details.

ANTH 3835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 3835.

ANTH 3836. Koobi Fora Field School (Fellowship). 0 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Visits to comparative sites and collections in the region. Instructor approval required. Restricted to fellowship students.

ANTH 3838. Theory and Practice in Archaeology. 3 Credits.

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: ANTH 1003.

ANTH 3838W. Theory and Practice in Archaeology. 3 Credits.

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3839. Lab Research Methods in Archaeology. 3 Credits.

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Prerequisite: ANTH 1003.

ANTH 3891. Special Topics in Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ANTH 1003 or permission of the instructor.

ANTH 3991. Special Topics. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3991W. Special Topics. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AMST 2490W.

ANTH 3995. Undergraduate Research. 1-12 Credits.

Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Permission of the instructor required prior to enrollment.

ANTH 4008. Seminar: Contemporary Anthropological Theory. 3 Credits.

The development of major trends in anthropological theory. How anthropologists from the four fields—sociocultural, linguistic, biological, and archaeology—have deployed and developed the ideas of theorists in their own empirical research and theorizing about specific processes. Prerequisite: ANTH 2008.

ANTH 4008W. Seminar: Contemporary Anthropological Theory. 3 Credits.

The development of major trends in anthropological theory. How anthropologists from the four fields -- sociocultural, linguistic, biological, and archaeology -- have deployed and developed the ideas of theorists in their own empirical research and theorizing about specific processes. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ANTH 2008 or ANTH 2008W.

ANTH 5099. Variable Topics. 1-99 Credits.

ANTH 6101. Proseminar in Biological Anthropology. 3 Credits.

Comprehensive overview of theory and practice in biological anthropology.

ANTH 6102. Proseminar in Sociocultural Anthropology. 3 Credits.

Comprehensive overview of theory and practice in sociocultural anthropology.

ANTH 6103. Proseminar in Archaeology. 3 Credits.

Survey of the most recent archaeological techniques and theoretical approaches to reconstructing and interpreting the cultures of the past.

ANTH 6104. Proseminar in Linguistic Anthropology. 3 Credits.

Contemporary anthropological studies of language in biological, social, and historical perspectives.

ANTH 6200. Museum Anthropology. 3 Credits.

How anthropological collections take shape in the past and carry meaning in the present. Critical examination of artifacts and forms of documentation. Application of material culture theory to museum records, collected objects, the changing meaning given to objects, and the context of collecting.

ANTH 6201. Methods in Museum Anthropology. 3 Credits.

How anthropological collections take shape in the past and carry meaning in the present. Research and analysis of existing collections; issues in museum anthropology.

ANTH 6203. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as MSTD 6203/ AH 6286.

ANTH 6204. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as MSTD 6204/ AH 6287.

ANTH 6205. Problems in Conservation. 3 Credits.

Individual conservation projects to determine composition, construction, decomposition of materials, and possible stabilization techniques. Conservation laboratory experience. AH 6286 or ANTH 6203 may be taken as a corequisite. Prerequisites: AH 6286 or ANTH 6203.

ANTH 6230. Internship in Museum Anthropology. 1-6 Credits.

Supervised individual research and/or field work at the Smithsonian Institution or other area museums, arranged in consultation with the museum and the Anthropology Department. Admission by arrangement with the department chair or museum training advisor. May be repeated for credit up to a maximum of 6 credits.

ANTH 6291. Special Topics in Museum Anthropology. 3 Credits.

The social context and changing meaning of selected cultural processes or aspects of material culture that are represented in museums or public monuments. Topics vary by semester. See department for more details.

ANTH 6301. The Anthropology of Development. 3 Credits.

Theoretical perspectives that distinguish the contribution of anthropology to understanding processes of change in the Third World. Focus on health, population, environment, gender, and tourism issues. The role of anthropology in planning and implementing projects and policy.

ANTH 6302. Issues in Development. 3 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6330. Internship in Development Anthropology. 3 Credits.

Supervised participation in a selected development agency or other relevant organization. Opportunity to observe agency procedures and gain practical experience. Admission by permission of instructor or department chair.

ANTH 6331. Research Methods in Development Anthropology. 3 Credits.

Anthropologists' roles in research-related activities, such as feasibility studies, social soundness analysis, and evaluations. Innovative research techniques, such as interactive data gathering, team survey methods, and rapid rural appraisal. Admission by permission of instructor.

ANTH 6391. Anthropology and Contemporary Problems. 3 Credits.

Exploration of anthropological perspectives on a current issue, such as refugees, ethnic violence, national mythologies, and women's health in developing countries. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6401. Human Functional Anatomy. 3 Credits.

Growth and function of the musculoskeletal system, including the development, anatomy, and histology of bone, biomechanics of muscle and skeletal tissue, craniofacial and dental growth and morphology, and locomotion. No prior knowledge of anatomy required. Laboratory fee.

ANTH 6403. Primate Behavior. 3 Credits.

Behavioral diversity and trends found in primates, both within and between primate species. How ecology relates to behavior, biology, and individual fitness. Presents pertinent theoretical models and draws from non-primate examples as appropriate. Restricted to Students in the MS and PhD in human paleobiology and MA and PhD in anthropology programs (other graduate students and undergraduates with the permission of the instructor).

ANTH 6404. The Evolution of Primate Life Histories. 3 Credits.

Recent developments in the study of human and non-human life histories. Life history theory. Life history traits compared among primate groups in order to determine how selective pressures have shaped extant primate life history patterns. Laboratory fee.

ANTH 6406. Human Genetic Variation. 3 Credits.

The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as FORS 6246.

ANTH 6407. Anthropological Genetics. 3 Credits.

Molecular approaches to understanding human evolution and diversity; current research findings and new methodologies; social and ethical issues, including commercial DNA testing and ownership of biological samples.

ANTH 6412. Paleoanthropology. 1-3 Credits.

Survey of current research in hominid and hominoid evolution, focusing on the integrated nature of the field. Contributions from the geological and biological sciences are stressed, together with innovative geochemical techniques for establishing chronological sequences. Prerequisites: ANTH 3412 or BISC 2450.

ANTH 6413. Analytical Methods in Human Evolutionary Studies. 3 Credits.

A survey of methods and approaches for data collection and analysis in human evolutionary biology research. Topics include comparative methods and basic and multivariate statistics.

ANTH 6491. Topics in Biological Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. Instructors are drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Credit cannot be earned for this course and FORS 6290.

ANTH 6501. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender; postcolonialism, sexuality, and literary representations of gender. Same as WGSS 6257.

ANTH 6504. Social Study of Science and Technology. 3 Credits.

Concepts, theories, and cases in contemporary science and technology studies with an emphasis on the public and policy relevance of theory. Ethnographic material includes studies of laboratories, technomedicine, and environmental controversies.

ANTH 6505. Medical Anthropology. 3 Credits.

Concepts and theories in contemporary medical anthropology, including "critical" versus "conventional" medical anthropology, changes in approaches since the mid-twentieth century; structural and cultural construction of illness and suffering; ethnographic and epidemiological perspectives.

ANTH 6506. Topics in Medical Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6507. Nationalism and Ethnicity. 3 Credits.

Major theoretical and ethnographic issues in the study of nationalism worldwide. Explores how ethnic groups emerge in colonial and contemporary plural societies and how states attempt to integrate ethnic groups into nations.

ANTH 6508. Ethics and Cultural Property. 3 Credits.

Survey of ethical issues in anthropology, focusing on cultural property and repatriation; the epistemological, ethical, and political dilemmas of excavating, collecting, and owning cultural artifacts.

ANTH 6510. War and Memory. 3 Credits.

The lived experiences of violent conflict through an anthropological lens. Focus on war's toll and theories of memory; witnessing and reckoning with genocide; diasporic memory; memorials, monuments, and the missing. Restricted to graduate students.

ANTH 6531. Methods in Sociocultural Anthropology. 3 Credits.

Epistemology; the definition of research problems; selection of research subjects and sites; techniques of data collection (e.g., surveys, interviews); data management and organization; ethical protocols; issues of safety; grant writing and funding.

ANTH 6561. American Folklife. 3 Credits.

The materials of American folk culture, concentrating on folk architecture, crafts, and art. Major organizing themes are regionalism and the use of objects as indicators of cultural intention. Same as AMST 6561.

ANTH 6562. Folklore Theory. 3 Credits.

An intellectual history of American folklore research; analysis of particular theories and methods. Same as AMST 6562.

ANTH 6591. Topics in Sociocultural Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies. Credit cannot be earned for this course and AMST 6190.

ANTH 6691. Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6702. Issues in Latin American Anthropology. 3 Credits.

Intensive study of a selected topic in the anthropology of Central and/or South America. Topic to be announced.

ANTH 6707. Issues in Middle East Anthropology. 3 Credits.

Selected topics in the anthropology of the Middle East. Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6710. Latin America Cinema, Indigenous Media, and Social Movements. 3 Credits.

Major topics in Latin American film and media studies. Political, economic, social, and cultural forces that have shaped Latin American cinema. The role indigenous artists, activists, and social organizations play in shaping Latin American cinema. Same As: ANTH 3710.

ANTH 6801. Paleolithic Archaeology. 3 Credits.

Current problems relating to materials from the Old World.

ANTH 6802. Problems in Eurasian and African Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. Topics may include Bronze Age conflict, the Celts, etc. May be repeated for credit.

ANTH 6803. Problems in New World Archaeology. 3 Credits.

Current archaeological problems relating to the origin and development of aboriginal cultures. Specific topic to be announced in the Schedule of Classes. May be repeated for credit.

ANTH 6804. Problems in Mesoamerican Archaeology. 3 Credits.

Topics range from specific civilizations, such as the Olmec, to pan-Mesoamerican topics, such as religion and exchange. May be repeated for credit.

ANTH 6806. Technology. 3 Credits.

Cross-cultural examination of the form, function, meaning, and use of material culture (such as ceramics or stone tools) and the behavior patterns involved in its production. Topic vary by semester. Consult the Schedule of Classes for more details.

ANTH 6807. Public Archaeology. 3 Credits.

The use and creation of the past and the relationship between archaeologists and different publics.

ANTH 6832. Paleoanthropological Field Program. 4 Credits.

Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 6833. Field Research: New World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at localities in North or South America. Consult the Schedule of Classes for more details.

ANTH 6835. Historical Archaeology Field Program. 3-6 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 6835.

ANTH 6836. Koobi Fora Field School (Fellowship). 0 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Visits to comparative sites and collections in the region. Instructor approval required. Restricted to fellowship students.

ANTH 6838. Archaeological Theory. 3 Credits.

Overview of major theories and positions in American archaeology; examination of new issues and directions in which the field appears to be moving.

ANTH 6839. Lab Research Methods in Archaeology. 3,4 Credits.

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Laboratory fee.

ANTH 6891. Topics in Archaeology. 3 Credits.

Major issues related to the theory and practice of archaeology. Topic announced in the Schedule of Classes.

ANTH 6995. Research. 1-12 Credits.

May be repeated for credit.

ANTH 6998. Thesis Research. 3 Credits.**ANTH 6999. Thesis Research. 3-9 Credits.**

Development of a thesis project and accompanying research.

ANTH 8695. Linguistic Field Methods. 3 Credits.

The relationship between language and thought in dialogue with the study of a particular foreign language. Ethnographic study of language and cognition and the application of linguistic theory and method to anthropological research. Methods of elicitation and textual analysis, and technologies used for storing and analyzing linguistic data. Restricted to graduate students.

ANTH 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ANTH 8999. Dissertation Research. 3-12 Credits.
May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

The following curriculum requirements:

Code	Title	Credits
Prerequisite courses:		
ANTH 1001	Biological Anthropology	
ANTH 1002	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	

Code	Title	Credits
Required courses in other areas:		
Two-year proficiency in a single foreign language, as demonstrated by completion of four semesters of college-level language study or the equivalent		

6-12 credits of coursework in related departments approved by the advisor. Recommended for sociocultural emphasis are courses in economics, history, political science, psychology, religion, and sociology; for archaeological emphasis, courses in American studies, art history, geography, geological sciences, and history; for emphasis in biological anthropology, courses in anatomy, biological sciences, chemistry, and physical geography; for emphasis in linguistic anthropology, courses in linguistics and in speech and hearing science. Courses in statistics are strongly recommended for all anthropology majors

Requirements for the major:		
In addition to the four prerequisite courses, 24-36 credits in anthropology courses, including:		
ANTH 2008	Foundations of Anthropological Thought	

At least one course from three of the following four categories:

Sociocultural anthropology (ANTH 2500s, 2700s, 3500s, and 3700s)		
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Linguistics (ANTH/LING 3600s)

Biological anthropology (ANTH 2400s and 3400s)		
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Archaeology (ANTH 3800s)

An approved methods course in any category, including but not limited to the courses listed below. (Methods courses can be double-counted as courses in their subject categories.)		
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ANTH 3406	Advanced Human Osteology
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3602	Ethnographic Analysis of Speech
ANTH 3832	Paleoanthropological Field Program
ANTH 3833	Field Research: New World
ANTH 3834	Field Research: Old World
ANTH 3835	Historical Archaeology Field Program
ANTH 3839	Lab Research Methods in Archaeology
ANTH 6806	Technology

In addition, a senior capstone experience is required; it may be met by taking ANTH 4008, ANTH 3995 (for 3 credits), or an approved 6000-level course. Qualified seniors may enroll in graduate-level courses with the permission of the instructor.		
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GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.

- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in anthropology, archaeology, or biological anthropology, students must have a grade-point average of 3.5 or better in courses required for the major, register for 3 credits of ANTH 3995 Undergraduate Research, and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

BACHELOR OF ARTS WITH A MAJOR IN ARCHAEOLOGY

REQUIREMENTS

The bachelor of arts with a major in archaeology is an interdepartmental program offered by the Department of Anthropology (<http://anthropology.columbian.gwu.edu/>) in cooperation with the Department of Arts and Art History (<http://art.gwu.edu/>) and the Department of Classical and Near Eastern Languages and Civilizations (<http://departments.columbian.gwu.edu/cnelc/>).

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Additional curriculum requirements:

Code	Title	Credits
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Language requirement

Students must complete 12 credits or demonstrate equivalent skill in French, Spanish, German, Italian, Arabic, Hebrew, Latin, or Greek.

Students whose preparation allows them to waive this requirement are encouraged to begin study of a second language. Graduate study in archaeology usually requires knowledge of two or more languages besides English, and students intending advanced study should consult with an advisor early in their program.

Course requirements

Core courses

ANTH 1002	Sociocultural Anthropology
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ANTH 1003	Archaeology
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ANTH 3838	Theory and Practice in Archaeology
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or ANTH 3838W	Theory and Practice in Archaeology
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Field and laboratory work

One or two courses (3 or 6 credits) from the following:

ANTH 3832	Paleoanthropological Field Program
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ANTH 3833	Field Research: New World
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ANTH 3834	Field Research: Old World
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ANTH 3835	Historical Archaeology Field Program
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ANTH 3839	Lab Research Methods in Archaeology
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ANTH 3995	Undergraduate Research (With the advisor's approval.) *
ANTH 6806	Technology (Qualified juniors and seniors with departmental approval.)
Anthropological archaeology	
Four or five courses (12 or 15 credits) selected from the following. Students must take at least one course marked by an asterisk. A course taken toward this requirement cannot also count toward the "ancient civilizations" requirement, below. Either ANTH 2821 or ANTH 2822 and either ANTH 3812 or ANTH 3814 may count toward this requirement, but not both.	
ANTH 2821	Myths and Mysteries in Archaeology
ANTH 2822	Archaeology in Film and Television
ANTH 3801	African Roots from Australopithecus to Zimbabwe
or ANTH 3801W	African Roots from Australopithecus to Zimbabwe
ANTH 3802	Human Cultural Beginnings
or ANTH 3802W	Human Cultural Beginnings
ANTH 3803	Old World Prehistory: First Farmers to First Cities
or ANTH 3803W	Old World Prehistory: First Farmers to First Cities
ANTH 3805	Archaeology of Israel and Neighboring Lands *
or AH 3106	Art and Archaeology of Israel and Neighboring Lands
ANTH 3806	Art and Archaeology of the Aegean Bronze Age *
or AH 3104	Art and Archaeology of the Aegean Bronze Age
ANTH 3808	Archaeology and the Celts *
or AH 3104	Art and Archaeology of the Aegean Bronze Age
ANTH 3811	Historical Archaeology
ANTH 3812	The Aztec Empire *
or AH 3116	The Aztec Empire
ANTH 3813	Archaeology of North America *
ANTH 3814	Ancient Mexican Civilizations *

or AH 3107	Ancient Mexican Civilizations
ANTH 3823	Archaeology of Ritual and Religion
ANTH 3891	Special Topics in Archaeology
Ancient civilizations	
Five courses (15 credits) from the following, including at least one in each category below. Courses marked with an asterisk can count in only one category.	
Art history	
AH 3101	Ancient Art of the Bronze Age and Greece
AH 3102	Ancient Art of the Roman Empire
AH 3103	Art and Archaeology of Egypt and the Near East
AH 3104	Art and Archaeology of the Aegean Bronze Age
or ANTH 3806	Art and Archaeology of the Aegean Bronze Age
AH 3105	Topics in Ancient Art and Archaeology *
or CLAS 3115	Topics in Ancient Art and Archaeology
AH 3106	Art and Archaeology of Israel and Neighboring Lands *
or ANTH 3805	Archaeology of Israel and Neighboring Lands
AH 3107	Ancient Mexican Civilizations
AH 3117	Special Topics in Precolumbian Art and Archaeology *
or ANTH 3891	Special Topics in Archaeology
Classics	
CLAS 2105	Special Topics
CLAS 2106	Mythology of the Classical World
CLAS 2107	Greek and Roman Drama
CLAS 3114	Topics in Ancient Literatures and Cultures
CLAS 3115	Topics in Ancient Art and Archaeology *
or AH 3105	Topics in Ancient Art and Archaeology
History	
HIST 2112	History of Ancient Greece

or CLAS 2112	History of Ancient Greece
HIST 2113	The Roman World to 337 A.D.
or CLAS 2113	The Roman World to 337 A.D.
HIST 2803	The Ancient Near East and Egypt to 322 B.C.
or CLAS 2803	The Ancient Near East and Egypt to 322 B.C.
HIST 2804	History of Ancient Israel
or CLAS 2804	History of Ancient Israel
HIST 3111	Topics in Ancient History
Archaeology of ancient civilizations	
ANTH 2821	Myths and Mysteries in Archaeology
ANTH 3804	Origins of the State and Urban Society
ANTH 3805	Archaeology of Israel and Neighboring Lands *
or AH 3106	Art and Archaeology of Israel and Neighboring Lands
ANTH 3806	Art and Archaeology of the Aegean Bronze Age *
or AH 3104	Art and Archaeology of the Aegean Bronze Age
ANTH 3808	Archaeology and the Celts *
or AH 3116	The Aztec Empire
ANTH 3812	The Aztec Empire *
ANTH 3813	Archaeology of North America *
ANTH 3814	Ancient Mexican Civilizations *
or AH 3107	Ancient Mexican Civilizations
ANTH 3891	Special Topics in Archaeology *
or AH 3117	Special Topics in Precolumbian Art and Archaeology

No course may count toward more than one requirement for the major.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the

liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW

courses that have been approved by the University and the College.

SPECIAL HONORS

For Special Honors in anthropology, archaeology, or biological anthropology, a major must meet the special honors requirements stated under University Regulations (<http://bulletin.gwu.edu/university-regulations/>), have a grade-point average of 3.5 or better in courses required for the major, register for 3 credits of ANTH 3995 Undergraduate Research and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGICAL ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
Introductory courses (21 credits)		
ANTH 1001	Biological Anthropology	
ANTH 1002	Sociocultural Anthropology	
or ANTH 1002W	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
Code	Title	Credits
Required		
12 credits from the following courses:		
ANTH 2406	Human Evolutionary Genetics	
ANTH 3401	Human Functional Anatomy	

ANTH 3402	Human Evolutionary Anatomy
ANTH 3403	Forensic Anthropology Laboratory
ANTH 3404	Human Variation
ANTH 3406	Advanced Human Osteology
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior
ANTH 3408	The Evolution of Human Families
ANTH 3409	Evolution of Primate Life Histories
ANTH 3411	Primatology
ANTH 3412	Hominin Evolution
or ANTH 3412W	Hominin Evolution
ANTH 3413	Evolution of the Human Brain
ANTH 3491	Topics in Biological Anthropology
ANTH 3802	Human Cultural Beginnings
or ANTH 3802W	Human Cultural Beginnings
ANTH 3832	Paleoanthropological Field Program
9 credits in biology (BISC) courses numbered 2000 or above, including at least one course from each of the following categories:	
Cell/molecular biology	
BISC 2202	Cell Biology
BISC 2207	Genetics
BISC 2208	Genetics Laboratory
BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology
BISC 2220	Developmental Neurobiology
BISC 3209	Molecular Biology
BISC 3210	Nanobiotechnology
BISC 3211	Nanobiotechnology Laboratory
BISC 3212	Immunology
BISC 3261	Introductory Medical Biochemistry
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
Organismal/sub-organismal biology	

BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
BISC 2332	Comparative Vertebrate Anatomy
BISC 2333	Evolution and Extinction of Dinosaurs
BISC 2334W	Integrative Biology of Fishes
BISC 2337	Introductory Microbiology Laboratory
or BISC 2337W	Introductory Microbiology
BISC 2339	Parasitology
BISC 3320	Human Neurobiology
Ecology/evolution	
BISC 2581	Human Gross Anatomy
BISC 2450	Organic Evolution
BISC 2451	History of Life
BISC 2452	Animal Behavior
BISC 2454	General Ecology
BISC 3458	Plant Comparative Structure and Function
BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3462	Plant-Animal Interactions Laboratory
BISC 3463	Ecological and Evolutionary Genetics
BISC 3464	Ecology and Evolution of Societies
One course from the following:	
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2085	Environmental Chemistry
CHEM 3140	Geochemistry
or GEOL 3140	Geochemistry
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 3112	Psychology of Adolescence

PSYC 3118	Neuropsychology
BISC 1005	The Biology of Nutrition and Health
or BISC 1007	Food, Nutrition, and Service
BISC 1006	The Ecology and Evolution of Organisms
or BISC 1008	Understanding Organisms through Service Learning
GEOL 1001	Physical Geology
or GEOL 1005	Environmental Geology
GEOL 1002	Historical Geology
STAT 1127	Statistics for the Biological Sciences

And 6 credits in anthropology (ANTH) courses numbered 2000 or above, excluding courses in the 3400-3499 or the 3802 or 3832 range

Note: The major in biological anthropology may not be pursued in conjunction with the major in anthropology.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in anthropology, archaeology, or biological anthropology, a major have a grade-point average of 3.5 or better in courses required for the major, register for 3 credits of ANTH 3995 Undergraduate Research, and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

DUAL BACHELOR OF ARTS WITH A MAJOR IN ANTHROPOLOGY AND MASTER OF ARTS IN THE FIELD OF ANTHROPOLOGY

The Department of Anthropology offers a dual bachelor of arts with a major in anthropology (p. 118) and master of arts in the field of anthropology (p. 128) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the

number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the combined program should confer with their major advisor regarding the details of their course of study. Visit the program website (<https://anthropology.columbian.gwu.edu/combined-bachelorsmasters-programs/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN ARCHAEOLOGY AND MASTER OF ARTS IN THE FIELD OF ANTHROPOLOGY

The Department of Anthropology offers a dual bachelor of arts with a major in archaeology (p. 119) and master of arts in the field of anthropology (p. 128) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the combined program should confer with their major advisor regarding the details of their course of study. Visit the program website (<https://anthropology.columbian.gwu.edu/combined-bachelorsmasters-programs/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGICAL ANTHROPOLOGY AND MASTER OF ARTS IN THE FIELD OF ANTHROPOLOGY

The Department of Anthropology offers a dual bachelor of science with a major in biological anthropology (p. 122) and master of arts in the field of anthropology (p. 128) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the combined program should confer with their major advisor regarding the details of their course of study. Visit the program website (<https://anthropology.columbian.gwu.edu/combined-bachelorsmasters-programs/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGICAL ANTHROPOLOGY AND A MASTER OF SCIENCE IN THE FIELD OF HUMAN PALEOBIOLOGY

The Department of Anthropology offers a dual bachelor of science with a major in biological anthropology (p. 122) and master of science in the field of human paleobiology (p. 315) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the combined program should confer with their major advisor regarding the details of their course of study. Visit the program website (<https://anthropology.columbian.gwu.edu/combined-bachelorsmasters-programs/>) for additional information.

MINOR IN ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 12 credits in required courses and 9 credits in additional ANTH courses.

Code	Title	Credits
Required		
ANTH 1001	Biological Anthropology	
ANTH 1002	Sociocultural Anthropology	
ANTH 1003	Archaeology	
ANTH 1004	Language in Culture and Society	
Three additional anthropology (ANTH) courses, which must be taken in different subdisciplines. For the purposes of this minor, ANTH courses may be divided into subdisciplines as follows:		
Biological anthropology—courses in the 3400s and ANTH 1005.		
Archaeology—courses in the 3800s.		
Anthropological linguistics—courses in the 2600s and 3600s.		
Sociocultural anthropology—all other upper-division courses, with the exception of ANTH 3995.		

MINOR IN ARCHAEOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ANTH 1003	Archaeology	
ANTH 3838	Theory and Practice in Archaeology	
Four courses from the following. An independent study course in archaeology or an approved art history course may be substituted for one of the four courses.		
ANTH 2821	Myths and Mysteries in Archaeology	
ANTH 2822	Archaeology in Film and Television	
ANTH 3801	African Roots from Australopithecus to Zimbabwe	
ANTH 3801W	African Roots from Australopithecus to Zimbabwe	
ANTH 3802	Human Cultural Beginnings	
ANTH 3802W	Human Cultural Beginnings	
ANTH 3803	Old World Prehistory: First Farmers to First Cities	
ANTH 3803W	Old World Prehistory: First Farmers to First Cities	
ANTH 3804	Origins of the State and Urban Society	
ANTH 3805	Archaeology of Israel and Neighboring Lands	
ANTH 3806	Art and Archaeology of the Aegean Bronze Age	
ANTH 3808	Archaeology and the Celts	
ANTH 3811	Historical Archaeology	
ANTH 3812	The Aztec Empire	
ANTH 3813	Archaeology of North America	
ANTH 3814	Ancient Mexican Civilizations	
ANTH 3823	Archaeology of Ritual and Religion	
ANTH 3832	Paleoanthropological Field Program	
ANTH 3833	Field Research: New World	

ANTH 3834	Field Research: Old World
ANTH 3835	Historical Archaeology Field Program
ANTH 3838W	Theory and Practice in Archaeology
ANTH 3839	Lab Research Methods in Archaeology
ANTH 3891	Special Topics in Archaeology

MINOR IN BIOLOGICAL ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 16 credits in required courses.

Code	Title	Credits
Required		
ANTH 1001	Biological Anthropology	
At least four additional upper-level courses totaling at least 12 credits from the following:		
ANTH 2406	Human Evolutionary Genetics	
ANTH 3401	Human Functional Anatomy	
ANTH 3402	Human Evolutionary Anatomy	
ANTH 3403	Forensic Anthropology Laboratory	
ANTH 3404	Human Variation	
ANTH 3406	Advanced Human Osteology	
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior	
ANTH 3408	The Evolution of Human Families	
ANTH 3409	Evolution of Primate Life Histories	
ANTH 3411	Primatology	
ANTH 3412	Hominin Evolution	
or ANTH 3412W	Hominin Evolution	
ANTH 3412W	Hominin Evolution	
ANTH 3413	Evolution of the Human Brain	
ANTH 3491	Topics in Biological Anthropology	
ANTH 3802	Human Cultural Beginnings	
or ANTH 3802W	Human Cultural Beginnings	

Students also must take at least one approved field experience, which may be ANTH 3832 or ANTH 3839 or, with prior approval of the undergraduate advisor, a course in a related field, such as biological sciences, geology, psychology, or statistics:

ANTH 3832	Paleoanthropological Field Program
ANTH 3839	Lab Research Methods in Archaeology
BISC 1005	The Biology of Nutrition and Health
BISC 1006	The Ecology and Evolution of Organisms
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
GEOL 1001	Physical Geology
GEOL 1002	Historical Geology
GEOL 1005	Environmental Geology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 3112	Psychology of Adolescence
PSYC 3118	Neuropsychology
PSYC 3122	Cognitive Neuroscience
STAT 1127	Statistics for the Biological Sciences

MINOR IN CROSS-CULTURAL COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ANTH 1002	Sociocultural Anthropology	
ANTH 1004	Language in Culture and Society	
Two courses (6 credits) from the following, at least one of which must be ANTH 3601 or ANTH 3602/ANTH 3602W:		
ANTH 3601	Language, Culture, and Cognition	

ANTH 3602	Ethnographic Analysis of Speech
or ANTH 3602W	Ethnographic Analysis of Speech
ANTH 3603	Psycholinguistics
ANTH 3691	Special Topics in Linguistic Anthropology

One course (3 credits) from the following:

ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds
ANTH 2505	Introduction to Ethnomusicology
ANTH 2506	Religion, Myth, and Magic
or REL 2506	Religion, Myth, and Magic
ANTH 2533	Material Culture in America
or AMST 2533	Material Culture in America
ANTH 3501	Anthropology of Development
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
ANTH 3521	Visual Anthropology and the Social Lives of Images
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3991	Special Topics

One course (3 credits) from the following:

ANTH 3701	Native Peoples - North America
ANTH 3702	Anthropology of Latin America
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia

ANTH 3707	Anthropology of the Middle East
ANTH 3708	Anthropology of Africa
ANTH 3709	Japanese Culture Through Film
or JAPN 3162	Japanese Culture Through Film

MINOR IN SOCIOCULTURAL ANTHROPOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
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Required introductory course (3 credits):

ANTH 1002	Sociocultural Anthropology
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Five courses (15 credits) from the following:

ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
or WGSS 2121	The Anthropology of Gender: Cross-Cultural Perspectives
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds
ANTH 2505	Introduction to Ethnomusicology
or MUS 2105	Introduction to Ethnomusicology
or MUS 2105W	Introduction to Ethnomusicology
ANTH 2506	Religion, Myth, and Magic
or REL 2506	Religion, Myth, and Magic
ANTH 2533	Material Culture in America
or AMST 2533	Material Culture in America
ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
ANTH 3501	Anthropology of Development
ANTH 3502	Cultural Ecology

ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513 or ANTH 3513W	Anthropology of Human Rights Anthropology of Human Rights
ANTH 3521	Visual Anthropology and the Social Lives of Images
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3701	Native Peoples - North America
ANTH 3702	Anthropology of Latin America
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3707	Anthropology of the Middle East
ANTH 3708	Anthropology of Africa
ANTH 3709 or JAPN 3162	Japanese Culture Through Film Japanese Culture Through Film
ANTH 3991	Special Topics

MASTER OF ARTS IN THE FIELD OF ANTHROPOLOGY

Anthropology is the study of human difference and diversity in the present and the past. In its broad focus on humanity, anthropology brings together the humanities, natural sciences, and social sciences.

GW's anthropology program is committed to integrating humanistic and scientific perspectives while pursuing advanced research of the highest quality. The master of arts (MA) in anthropology signals that the holder can synthesize diverse data about human beings, a skill increasingly valued in a variety of professions and academic settings.

The graduate programs in anthropology take advantage of the resources available in the nation's capital, including the University's 120-year-old relationship with the Smithsonian Institution. This location puts students in a prime position for studying and collaborating with refugee and immigrant communities, policymakers, nongovernmental organizations,

the news media, and numerous scientific and educational organizations.

The MA in anthropology is offered with three optional concentrations:

- The international development concentration provides an understanding of world problems such as hunger, health, and economic change, thus preparing students for work in development projects. This non-thesis program normally is completed in two years.
- The museum training concentration prepares students for research and careers in the scholarly and curatorial aspects of museum work. In this concentration, 12 to 15 credits derive from museum-related courses, including internships.
- The health, science, and society concentration focuses on cross-cultural patterns of health, illness, and healing within the context of cultural change. Students take at least 15 credits of courses related to medical anthropology and public health.

Students interested in biological anthropology are encouraged to consider the master of science program in human paleobiology.

Visit the program website (<https://anthropology.columbian.gwu.edu/ma-anthropology/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Code	Title	Credits
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The minimum requirement consists of:

36 credits of approved graduate coursework including the following:

At least three of the following four proseminars:

ANTH 6101	Proseminar in Biological Anthropology
ANTH 6102	Proseminar in Sociocultural Anthropology
ANTH 6103	Proseminar in Archaeology
ANTH 6104	Proseminar in Linguistic Anthropology

Students with significant background in a field, as determined by evaluation of a petition to the proseminar instructor, may waive one proseminar. Those who are permitted to waive a proseminar must take two courses from the following:

ANTH 6101	Proseminar in Biological Anthropology
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or ANTH 6103 Proseminar in Archaeology

ANTH 6102 Proseminar in Sociocultural
 Anthropology

or ANTH 6104 Proseminar in Linguistic Anthropology

An approved methods course.

In addition to 30 to 33 credits of approved graduate-level coursework, 3 to 6 credits of research for a thesis or other culminating project.

Students with fewer than four undergraduate semesters of a major foreign language must demonstrate a reading knowledge of an approved language before beginning the third semester of graduate work.

Museum training concentration

The program of study is the same as that described above for the general degree, but must include 12 to 15 credits of work in museum-related courses, 6 credits of which may be in an internship. Students whose primary interest is in museum techniques, rather than anthropology, are advised to apply to the master's program in museum studies (see Master of Arts in the field of museum studies in this Bulletin). Note that a program in museum education is also available through the Graduate School of Education and Human Development.

International development concentration

The program is designed to improve the student's understanding of development problems, such as economic change, population, health, education, migration, and ecology, within an anthropological framework. Note that the Elliott School of International Affairs offers a program in international development studies with a disciplinary specialization in anthropology.

The program of study is the same as that described above for the general degree, but must include the following:

ANTH 6301 The Anthropology of Development

ANTH 6331 Research Methods in Development
 Anthropology

Two courses from the following:

ANTH 6302 Issues in Development

ANTH 6330 Internship in Development
 Anthropology

ANTH 6391 Anthropology and Contemporary
 Problems

ANTH 6501 Gender and Sexuality

ANTH 6507 Nationalism and Ethnicity

One approved graduate-level course in quantitative analysis.

Health, science, and society concentration

The program of study is the same as that described for the general degree, but must include:

One course from the following:

ANTH 6504 Social Study of Science and Technology

ANTH 6505 Medical Anthropology

Two courses from the following:

ANTH 6302 Issues in Development

ANTH 6391 Anthropology and Contemporary
 Problems

ANTH 6501 Gender and Sexuality

ANTH 6506 Topics in Medical Anthropology

One of the following research methods options:

Option A

ANTH 6331 Research Methods in Development
 Anthropology

PUBH 6003 Principles and Practices of
 Epidemiology

Option B

Two courses from the following:

PUBH 6410 Global Health Study Design

PUBH 6411 Global Health Qualitative Research
 Methods

PUBH 6412 Global Health Quantitative Research
 Methods

DOCTOR OF PHILOSOPHY IN THE FIELD OF ANTHROPOLOGY

Anthropology is the study of human difference and diversity in the present and the past. In its broad focus on humanity, anthropology brings together the humanities, natural sciences and social sciences.

GW anthropology is committed to integrating humanistic and scientific perspectives while pursuing advanced research of the highest quality. Our graduate programs in anthropology take advantage of the resources available in the nation's capital, including our 120-year-old relationship with the Smithsonian Institution. Our location places us in a prime position for studying and collaborating with refugee and immigrant communities, policymakers, nongovernmental organizations,

the news media and numerous scientific and educational organizations.

THE PhD program trains students in the four fields of sociocultural anthropology, archaeology, linguistic anthropology, and biological anthropology while providing training in areas of more specialized interest. Students pursue independent research in preparation to become practicing anthropologists. The curriculum develops intellectual creativity, effective communication skills, and rigorous scholarship with a focus on applying anthropological theory and method to the study of contemporary social problems.

All students are strongly encouraged to complete an internship where they communicate anthropology to a general public. Students admitted to the program receive a fellowship and may take advantage of GW's partnerships with the Smithsonian Institution and Washington, D.C.'s archival collections and policy-making institutions. All PhD candidates must complete a dissertation that demonstrates their ability to do original research.

There are two separate PhD programs affiliated with the Anthropology department (Anthropology and Human Paleobiology), with separate admissions procedures. Please be sure that you are submitting your application to the correct program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

72 credits.

Requirements for the first phase of the program

Code	Title	Credits
Required		
Core proseminars		
Students are expected to take three of the four offered proseminars; however, students with significant background in a field, as determined through petition to the instructor, may waive one proseminar.		
ANTH 6101	Proseminar in Biological Anthropology	
ANTH 6102	Proseminar in Sociocultural Anthropology	
ANTH 6103	Proseminar in Archaeology	

ANTH 6104

Proseminar in Linguistic Anthropology

One research methods seminar

One professional skills and ethics seminar

Elective courses

All students must demonstrate proficiency in one foreign language; an additional language may be required if it is needed for fieldwork or archival research. An internship in anthropology and public life at an institution responsible for communicating anthropological knowledge to diverse audiences is recommended.

Requirements for the second phase of the program

In the second phase, students prepare a research proposal that meets funding agency guidelines and take the general examination in at least three major areas (e.g., a general field in anthropological theory, a geographic area, and a thematically defined field). Following successful completion of the general examination, an oral defense of the student's research proposal is held. Those who pass advance to candidacy for the PhD and engage in completion and defense of the dissertation.

ART THERAPY

The graduate program in art therapy trains highly skilled therapists whose professional practice is grounded in a broad understanding of current clinical art therapy, counseling, and trauma theories. Students are taught the application of effective research and evaluation methodologies, clinical skills, and studio expertise, within a diverse, integrative, and culturally-responsive format. The program's student-focused approach allows each student to cultivate a unique identity as an art therapist.

Visit the department website (<https://arttherapy.columbian.gwu.edu/>) for more information.

GRADUATE

Master's program

- Master of Arts in the field of art therapy (p. 133)

FACULTY

Associate Professors H. Bardot (*Director*), D. Betts

Assistant Professors L. Garlock, J. Potash, T. Tripp (*Teaching*).

Professorial Lecturers R. Albert, K. Baasch, J. Baldwin, D. Brancheau, D. Bunkley, T. Council, A. Di Maria, A. Herrera, P. Howie, C. Knebel, O. Kraybill, L. Milofsky, L. Mowry-Hesler, S. Nelson, D. Preston-Dillon, M.E. Ruff, D. Sabados, M. Scher-Phillips, A. VanBrunt, J. Wager, A. Zurayk.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: The following courses are open to non-art therapy students:

ARTH 6201 Survey of Art Therapy

ARTH 5099. Variable Topics. 1-99 Credits.

ARTH 6201. Survey of Art Therapy. 3 Credits.

The use of the visual arts to enhance personal development and growth; illustrated lectures, readings, discussion, and studio work presented by experts in the field. Instruction is delivered online via Blackboard. No previous art experience is necessary.

ARTH 6205. History and Theory of Art Therapy. 2 Credits.

Art therapy history and theory, milestones and practitioners. The development of art therapy as a distinct therapeutic practice. Overview of psychotherapy theories relevant to art therapy. Open only to art therapy students.

ARTH 6206. Human Development and Art Therapy. 3 Credits.

Psychological and artistic development across the life span; theories of personality development; cultural and environmental influences; and human behavior, including developmental crises, disability, exceptional behavior, and addictive behavior. Restricted to students in the art therapy program.

ARTH 6207. Human Development and Art Therapy I: Child and Adolescent. 2 Credits.

Practical and developmental considerations when working with adults and senior adults in art therapy; psychological, cultural, environmental, and artistic influences and expectations; life span impacts of human behavior, developmental crises, disability, and exceptional behavior. Restricted to students in the art therapy program.

ARTH 6208. Human Development and Art Therapy II: Adults and Senior Adults. 2 Credits.

Practical and developmental considerations when working with adults and senior adults in art therapy; psychological, cultural, environmental, and artistic influences and expectations; life span impacts of human behavior, developmental crises, disability, and exceptional behavior. Restricted to students in the art therapy program. Prerequisite: ARTH 6207.

ARTH 6210. Counseling/Art Therapy Process. 3 Credits.

Theoretical and clinical dimensions of counseling and art therapy explored through study of current research concerning the diverse elements affecting the therapeutic process. The goals of each phase of treatment; development of the therapeutic alliance; assessment of client readiness; therapeutic techniques and interventions as practiced in short- and long-term treatment.

ARTH 6211. Process of Counseling and Art Therapy: Theory. 3 Credits.

Major theories in counseling and art psychotherapy through the lens of the creative process and other aspects of clinical practice; the influence of multicultural issues, contemporary and evidence-based practices, and various settings on art-making and the therapeutic encounter. Restricted to students in the art therapy program. Prerequisite: ARTH 6210.

ARTH 6212. Creativity, Symbolism, and Metaphor. 2 Credits.

Theories of creative development, aesthetics, and art interpretive strategies for engaging metaphor, symbolism, and personal association to client artwork; integrating personal, familial, cultural, and social meanings for insight and revelation. Restricted to students in the art therapy program.

ARTH 6221. Studio/Technique of Art Therapy. 3 Credits.

Direct experience of the therapeutic utility and psychological influence of art processes and materials. Identifying the effect of art-making leading to assessment and intervention strategies. Open only to art therapy students.

ARTH 6231. Child Art Therapy. 2 Credits.

Practical, theoretical, and ethical considerations involved in treating children in clinical, community, and educational settings; application of art therapy and counseling principles and practices for diverse child populations; development of interventions for varied DSM diagnoses. Restricted to graduate students in the art therapy program.

ARTH 6232. Art Therapy with Adolescents. 2 Credits.

Practical, theoretical, and ethical considerations in treating adolescents in clinical, community and educational settings. Assessment and treatment issues in art therapy. Application of art therapy and counseling principles and practices for diverse adolescent populations. Development of interventions for varied DSM diagnoses. Restricted to art therapy students. Restricted to students in the art therapy program.

ARTH 6233. Marital and Family Art Therapy/Counseling. 3 Credits.

Principles of working with families and couples, including an overview of systems theories and stages of family life cycle development; art techniques for evaluating of family dynamics; intervention strategies and cultural and ethical considerations. Restricted to art therapy students. Restricted to students in the art therapy program.

ARTH 6234. Group Process. 3 Credits.

Theoretical and experiential understanding of group art therapy and counseling methods and skills. Principles of group dynamics, therapeutic factors, member roles and behaviors, leadership styles and approaches, selection criteria, and short- and long-term group process.

ARTH 6235. Social and Cultural Diversity. 3 Credits.

Exploration of the therapist's heritage, expectations, worldview and values; racial/cultural identity development; skills for multicultural counseling. Stereotypes and biases that interfere with effective treatment of culturally different clients. The role of the art therapist or counselor in conflict resolution, advocacy, and social justice. May be repeated for credit if taken through the study abroad course option. Restricted to art therapy students.

ARTH 6241. Assessment Procedures. 3 Credits.

Instruments and procedures used in assessment of psychological health and psychopathology; diagnostic and developmental criteria as manifested in artwork and art-making; statistical concepts, including reliability and validity; selection and administration of assessment tools; treatment planning; report writing. Restricted to students in the art therapy program.

ARTH 6242. Psychopathology: Art and Diagnosis. 3 Credits.

Criteria of psychiatric diagnoses, such as the Diagnostic and Statistical Manual multiaxial system, theories of psychopathology, and relevant literature evaluation of potential indicators of functional and organic disorders in behavior and artwork of clients; ethical issues; cultural and environmental influences on diagnostic categorization; basic introduction to psychopharmacology. Restricted to students in the art therapy program or with permission of the instructor.

ARTH 6243. Substance Abuse and Addictions. 3 Credits.

Overview of substance abuse and addictions for art therapy and counseling, including theory and treatment applications; screening and assessment tools; treatment models specific to the field of addictions; art therapy techniques in the treatment of substance abuse for adolescents and adults in a variety of treatment settings. Restricted to students in the art therapy program.

ARTH 6251. Research Methods. 3 Credits.

Planning, conducting, and evaluating relevant methodologies, including qualitative and quantitative approaches and basic statistics; the importance of research in the psychotherapy professions; ethical and legal considerations; and the use of research to assess effectiveness of mental health and art therapy services. Restricted to graduate students in the art therapy program.

ARTH 6261. Ethics and Professionalism. 3 Credits.

Professional identity and the role of the therapist; the ethical practice of counseling and art therapy, including familiarity with ethical standards of various professional organizations; credentialing and licensure; public policy and advocacy for patients and for the profession. Restricted to graduate students in the art therapy program.

ARTH 6262. Career Counseling and Art Therapy. 3 Credits.

Theoretical foundation and practical experience necessary to understand and support career development needs for diverse individual clients and groups; career development over the lifespan; assessments, tools, and resources; occupational and labor market trends and resources; specific art therapy techniques applicable to career counseling in educational and work settings. Restricted to students in the art therapy program.

ARTH 6263. Ethics and Professionalism I: Principles. 1 Credit.

The ethical standards of art therapy, counseling and related mental health professions. Restricted to students in the art therapy program.

ARTH 6264. Ethics and Professionalism II: Applications. 2 Credits.

Applying ethical principles and values for professional identity and the role of the therapist; credentialing and licensure; public policy and advocacy for patients and for the profession. Restricted to students in the art therapy program. Prerequisite: ARTH 6263.

ARTH 6265. Advanced Issues in Psychotherapy and Art Therapy. 1-3 Credits.

Overview and application of one or more treatment models or theories to various mental and emotional disorders. Connections between the practice of art therapy and the techniques of other disciplines.

ARTH 6271. Art Psychotherapy and Trauma I: Theory and Approaches to Treatment. 3 Credits.

Introduction and overview of theory, practice, and treatment related to complex, trauma-related problems; psychobiology of traumatic stress, impact of traumatic stress on individuals, and specific treatment modalities in clinical setting; somatic (body-based) and nonverbal (art and image-based) treatment modalities. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to art therapy students. Restricted to students in the art therapy program.

ARTH 6272. Art Psychotherapy and Trauma II: Loss, Countertransference, and Resiliency. 3 Credits.

Multi-modal treatment of acute, serial, or complex trauma; theoretical, practical, moral, cross cultural, and personal aspects as seen through an art therapy and counseling lens. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to students in the art therapy program. Prerequisite: ARTH 6271.

ARTH 6281. Practicum in Art Therapy. 1-2 Credits.

Supervised clinical experience with clients or patients in psychiatric, rehabilitation, and education settings with children, adolescents, and adults. On-site individual supervision by clinical instructors; on-campus group supervision by faculty. A total of six semesters of practicum are required while completing 900 internship hours, 400 of which must be direct client contact. Restricted to graduate students in the art therapy program.

ARTH 6292. Special Projects in Art Therapy. 1-12 Credits.

Individual work based on research. Empirical, clinical, and library research may be undertaken, as well as the development of new procedures. Details to be worked out with each student. May be repeated for credit with advisor's approval. Open only to art therapy students.

ARTH 6998. Thesis Research. 3 Credits.

ARTH 6999. Thesis Research. 3 Credits.

MASTER OF ARTS IN THE FIELD OF ART THERAPY

Students in the Master of Arts in art therapy program are prepared for careers in schools, healthcare institutions, research centers, and more. Under the mentorship of faculty who are credentialed art therapists, students explore their artistic identity as well as the varying aspects of art therapy, trauma training, diagnosis, and assessment. The curriculum also builds a theoretical foundation in individual, family and group counseling, psychopathology, and human development.

By the end of the program, students complete nearly 1,000 hours of required internship, and they have the option to deepen their focus on an area with a thesis. Graduates leave prepared to earn professional licensure in art therapy and counseling.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

61 credits including 900 internship hours.

Code	Title	Credits
Required		
ARTH 6205	History and Theory of Art Therapy	
ARTH 6207	Human Development and Art Therapy I: Child and Adolescent	
ARTH 6208	Human Development and Art Therapy II: Adults and Senior Adults	
ARTH 6210	Counseling/Art Therapy Process	
ARTH 6211	Process of Counseling and Art Therapy: Theory	
ARTH 6212	Creativity, Symbolism, and Metaphor	
ARTH 6221	Studio/Technique of Art Therapy	
ARTH 6233	Marital and Family Art Therapy/ Counseling	
ARTH 6234	Group Process	
ARTH 6235	Social and Cultural Diversity	
ARTH 6241	Assessment Procedures	
ARTH 6242	Psychopathology: Art and Diagnosis	
ARTH 6243	Substance Abuse and Addictions	
ARTH 6251	Research Methods	
ARTH 6262	Career Counseling and Art Therapy	
ARTH 6263	Ethics and Professionalism I: Principles	
ARTH 6264	Ethics and Professionalism II: Applications	
ARTH 6265	Advanced Issues in Psychotherapy and Art Therapy (taken four times for 1 credit for a total of 4 credits)	
ARTH 6271	Art Psychotherapy and Trauma I: Theory and Approaches to Treatment (taken for 3 credits)	
ARTH 6272	Art Psychotherapy and Trauma II: Loss, Countertransference, and Resiliency	
ARTH 6281	Practicum in Art Therapy (taken six times for 1 credit for a total of 6 credits)	
ARTH 6292	Special Projects in Art Therapy (taken for 1 credit)	

BIOCHEMISTRY AND MOLECULAR MEDICINE

GRADUATE

Master's program

- Master of Science in the field of bioinformatics and molecular biochemistry (p. 136)

FACULTY

University Professor F. Murad

Professors P. Berg, V. Hu, A. Kumar, R. Kumar (*Chair*), Z. Lu (*Research*), W. Niernan, M. Sharma (*Research*), J. Vanderhoek (*Director of MS program*), G. Walker, W. Weglicki

Associate Professors K. Bian (*Research*), G. Dimri, M. Elliott, Z. Han, J. Kramer (*Research*), I.T. Mak (*Research*), R. Mazumder

Assistant Professors J. Chmielinska (*Research*), M. Dimri (*Research*), J.-H. Kim, A. Kots (*Research*), K. Ohshiro (*Research*), M.-Y. Wu (*Research*), R.-C. Wu, J. Zhou (*Research*), W. Zhu

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOC 1099. Variable Topics. 1-36 Credits.

BIOC 3099. Variable Topics. 1-12 Credits.

BIOC 3261. Introductory Medical Biochemistry. 4 Credits.

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. (Same as BISC 3261, CHEM 3165).

BIOC 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BISC 3262 and CHEM 3262. Laboratory fee. Prerequisites: BIOC 3261 or BISC 3261.

BIOC 3263. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Prerequisites: BIOC 3261 or BISC 3261. (Same as BISC 3263).

BIOC 3263W. Special Topics in Biochemistry. 2 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BIOC 3560. Diet, Health, and Longevity. 3 Credits.

Biochemical and molecular explanations of how calorie intake affects health; scientific principles of dieting. Prerequisites: BISC 1005 or BIOC 3261.

BIOC 3564. Lipid Biotechnology. 2 Credits.

Same as BISC 3564 and CHEM 3564. Laboratory fee. Prerequisites: BIOC 3261 or BISC 3261.

BIOC 3820. Bioinformatics and Computational Biochemistry. 2 Credits.

How biomedical researchers integrate information from molecular biology resources for analysis and testing of hypotheses. Prerequisites: BISC 1111 and STAT 1127.

BIOC 3821. Projects in Biomedical Informatics. 1-2 Credits.

BIOC 4195. Undergraduate Research. 1 Credit.

Research conducted under a mentor who is a member of the department. May be repeated for credit (only 1 credit may count toward the minor). Permission of the instructor required prior to enrollment.

BIOC 4701. Science and Medicine. 4 Credits.

A broad overview of several biomedical discoveries made in the twentieth century and the often profound influence they have had on medical technology and on new directions in science and medicine, science administration, politics, ethics, and philosophy.

BIOC 5099. Variable Topics. 1-99 Credits.

BIOC 6201. Medical Biochemistry. 7 Credits.

Required for medical students. Lecture and laboratory; emphasis on basic principles and their relation to medicine.

BIOC 6209. Research Elective in Medical Biochemistry. 1-12 Credits.

BIOC 6211. Biochemistry-Health Science Students. 3,4 Credits.

Basic concepts of biochemistry and their relation to health sciences.

BIOC 6221. Proteins, Pathways, and Human Health. 4 Credits.

A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisites: CHEM 2152 and CHEM 2154.

BIOC 6222. Biochemical Genetics and Medicine. 3 Credits.

Continuation of BIOC 6221. A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisites: CHEM 2152 and CHEM 2154.

BIOC 6223. Bioinformatics. 2 Credits.

The application of bioinformatics concepts and methods through the use of molecular biology databases and tools, covering molecular evolution, and protein sequence, structural, functional analysis. Recommended background: Prior completion of an undergraduate course in biochemistry.

BIOC 6224. Molecular Biology and Protein Methods. 3 Credits.

Common laboratory techniques used in life science laboratories to separate and characterize proteins, including chromatography, gel electrophoresis, immunoassays, spectroscopy, and centrifugation. Corequisite: BIOC 6221. Laboratory fee.

BIOC 6227. Biochemistry Seminar. 1 Credit.

Current literature in biochemistry. May be repeated for credit. Restricted to graduate students in the biochemistry and molecular medicine program.

BIOC 6230. New Technologies in Scientific Research. 2 Credits.

New technologies for conducting meaningful scientific inquiry and research. How such technologies have evolved and become essential to investigative research. Prerequisites: BIOC 6221. Corequisites: BIOC 6222.

BIOC 6234. Biochemical and Bioinformatic Approaches to Protein Structure and Function. 3 Credits.

Molecular biological, biophysical, chemical, and bioinformatic approaches to understanding protein structure and function. Protein folding, interactions, and ligand binding.

BIOC 6235. Seminar in Genomics, Proteomics, and Bioinformatics. 1 Credit.**BIOC 6236. Medical Genomics. 2 Credits.**

The structure and function of genes and genomes; genomic theories, methods, and data analysis including bioinformatics and database mining. BIOC 6221 and BIOC 6222 may be taken as corequisites. Prerequisites: BIOC 6221 and BIOC 6222.

BIOC 6237. Proteomics and Biomarkers. 2 Credits.

Experimental proteomics, protein/proteome analysis, bioinformatics of proteomics, systems biology and structural genomics. Prerequisite: BIOC 6236.

BIOC 6238. Experimental Genomics Lab. 3 Credits.

Research applications of knowledge in genomics and proteomics. Prerequisite: BIOC 6236. Laboratory fee.

BIOC 6240. Next Generation Sequencing. 2 Credits.**BIOC 6242. Bioscience Big Data Statistics. 2 Credits.**

Modern bioscience big data from generation to analysis and interpretation; data structures and data types and objects; and challenges in big data storage, access, and computation.

BIOC 6250. Molecular Biology. 3 Credits.

Content includes the organization and replication of genetic material, transcriptional and translational machinery, regulation of eukaryotic gene expression, and other special topics. BIOC 6221 and BIOC 6222 may be taken as corequisites. Prerequisites: BIOC 6221 and BIOC 6222.

BIOC 6252. Current Laboratory Methods in Molecular Biology. 3 Credits.

Corequisite: BIOC 6221. Laboratory fee.

BIOC 6254. Fundamentals of Molecular Biology. 3 Credits.

An intermediate-level molecular biology survey course. Prerequisite: BIOC 6221.

BIOC 6260. Analytic Methods for Lipids and Carbohydrates. 3 Credits.

Basic techniques in the biotechnology of lipids and carbohydrates. Prerequisite: BIOC 6221.

BIOC 6262. Genes, Diets, and Aging. 3 Credits.

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BIOC 6264. Membrane-Associated Complex Lipids. 1 Credit.

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BIOC 6281. Topics. 1,2 Credit.

Directed readings in biochemistry, molecular biology, and genetics. May be repeated for credit. Restricted to graduate students in the biochemistry and molecular medicine program.

BIOC 6290. Extramural Biochemistry Elective. 1-12 Credits.**BIOC 6291. Extramural Biochemistry Elective. 1-12 Credits.****BIOC 6295. Research. 1-12 Credits.**

Participation in a project under investigation or in a field suggested by the student and approved by the staff. May be repeated for credit. Laboratory fee.

BIOC 6298. Advanced Reading. 1-6 Credits.

Advanced reading in biochemistry. Restricted to students in the MS in molecular biochemistry and bioinformatics program.

BIOC 6998. Thesis Research. 3 Credits.**BIOC 6999. Thesis Research. 3 Credits.****BIOC 8225. Metabolism. 4 Credits.**

Metabolic pathways and integration of metabolic processes. Limited to PhD students in the Institute for Biomedical Sciences.

BIOC 8231. Biochemical Basis of Human Diseases. 3 Credits.

Biochemical perspectives on disorders involving metabolic alterations, immunological dysregulation, problems of environmental/toxicological etiology, genetic/epigenetic dysfunction, neglected tropical diseases. Prerequisites: BMSC 8210 and BMSC 8212.

BIOC 8232. Molecular and Cellular Signaling. 3 Credits.

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BIOC 8501. Issues in Clinical Nutrition. 3 Credits.

BIOC 8502. Molecular Biology of Oncogenes. 1-12 Credits.

BIOC 8503. Readings in Immunology. 3 Credits.

BIOC 8800. Summer Remedial Biochemistry. 8 Credits.

MASTER OF SCIENCE IN THE FIELD OF BIOINFORMATICS AND MOLECULAR BIOCHEMISTRY

The curriculum is designed to provide students with advanced skills in either Molecular Biochemistry or Bioinformatics. Since the complete sequencing of the human genome, the health science discipline of genomics/proteomics has unfolded and evolved, increasingly improving the diagnosis and treatment of human diseases. Emerging in tandem with genomics is the field of bioinformatics, associated with massive databases of gene and protein sequences and other biological information. Modern science utilizes bioinformatics not only to process and mine the data, but also to generate new testable hypotheses.

The curriculum is designed to provide students with advanced skills in either Molecular Biochemistry or Bioinformatics. Since the complete sequencing of the human genome, the health science discipline of genomics/proteomics has unfolded and evolved, increasingly improving the diagnosis and treatment of human diseases. Emerging in tandem with genomics is the field of bioinformatics, associated with massive databases of gene and protein sequences and other biological information. Modern science utilizes bioinformatics not only to process and mine the data, but also to generate new testable hypotheses.

Master's Degree

Students in this program can choose to follow either a Molecular Biochemistry track or a Bioinformatics path. Students following the Biochemistry option take advanced biochemistry and molecular medicine courses as well as several hands-on laboratory techniques classes and gain exposure to a myriad of laboratories and research initiatives. Students selecting the Bioinformatics track, one of the first in the United States devoted exclusively to teaching important genome-wide approaches to medicine and biology, will focus on the use of current bioinformatics technologies for analyzing high-throughput data from genomics and proteomics experiments. Course topics include leveraging Big Data for biomarker discovery in the era of personalized medicine, role of statistics in bioinformatics, gene function prediction, algorithm and software development.

Each track offers the option of preparing a thesis by completing research at GW Medical Center, NIH, FDA or the Children's National Medical Center. Alternatively, the non-thesis program requires a hands-on practicum at participating institutions. Upon graduation, students are aptly prepared for careers in any field from advanced biomedical research, genomics, bioinformatics, medicine, public health to law and policy.

This is a STEM-designated degree program.

Visit the School of Medicine and Health Sciences website for more information regarding the biochemistry (<https://smhs.gwu.edu/biochemistry-molecular-medicine/educational-programs/ms-biochemistry-track/>) and bioinformatics tracks (<https://smhs.gwu.edu/biochemistry-molecular-medicine/educational-programs/ms-bioinformatics-track/>).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

Code	Title	Credits
Required		
BIOC 6221	Proteins, Pathways, and Human Health	
BIOC 6222	Biochemical Genetics and Medicine	
BIOC 6223	Bioinformatics	
BIOC 6227	Biochemistry Seminar (taken twice for a total of 2 credits)	
Required for bioinformatics track		
BIOC 6236	Medical Genomics	
BIOC 6237	Proteomics and Biomarkers	
BIOC 6240	Next Generation Sequencing	
Required for biochemistry track		
BIOC 6224	Molecular Biology and Protein Methods	
BIOC 6260	Analytic Methods for Lipids and Carbohydrates	
Thesis option		
Required for students selecting the thesis option:		
BIOC 6998	Thesis Research	
BIOC 6999	Thesis Research	
Electives		
Non-thesis option: 13 credits in elective courses.		
Thesis option: 7 credits in elective courses.		
Comprehensive examination		

All students must pass, or be exempted from, a comprehensive examination.

Students who wish to pursue the thesis option should contact the department for details.

BIOLOGICAL SCIENCES

Biological sciences explore the science of life, from biomolecules to ecosystems. Courses and ongoing research programs are focused in three general areas: cell and molecular biology, ecology, and evolution and systematics. In research laboratories, students and faculty members work together on projects that range from dinosaur evolution through an investigation of how misfolded proteins interfere with insulin production. Many departmental faculty members have working relationships with scientists in surrounding education and federal institutions, and the program has a collaboration of more than 100 years standing with the Smithsonian Institution National Museum of Natural History.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in biology (p. 145)
- Bachelor of Science with a major in biology (p. 148)
- Bachelor of Science with a major in neuroscience (p. 151)

Combined Program

- Dual Bachelor of Science with a major in biology and Master of Science in the field of biological sciences (p. 153)
- Dual Bachelor of Science with a major in neuroscience and Master of Science in the field of biological sciences (p. 153)

Minor

- Minor in biology (p. 153)

GRADUATE

Master's program

- Master of Science in the field of biological sciences (p. 153)

Doctoral program

- Doctor of Philosophy in the field of biological sciences (p. 154)

FACULTY

Professors J.M. Clark, K.A. Crandall, C.A. Forster, P. Hernandez, G. Hormiga, J.T. Lill, G. Ortí, L.C. Smith, R.P. Tollo

Associate Professors I. Eleftherianos, A. Jeremic, D. O'Halloran, S. Powell, R.A. Pyron, A. Smith, A. Zanne

Assistant Professors H.G. Döebel, K. Gedan, L. Grayfer, L. Hammond, C. Jordan, S. Kawano, A. Martin, M. Manier, J. Saw, T. Scully

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: BISC 1115 Introductory Biology: Cells and Molecules and BISC 1125 Introduction to Cells and Molecules Laboratory, and BISC 1116 Introductory Biology: The Biology of Organisms and BISC 1126 Introduction to Organisms Laboratory or equivalent are prerequisite to all upper-division biological sciences courses except by permission of the instructor.

BISC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

BISC 1001. Departmental Seminar. 0 Credits.

BISC 1005. The Biology of Nutrition and Health. 3 Credits.

A study of the human body and food-related health issues through the examination of the nutritional needs of the human body, digestion, genetics, and life experiences/exposures. Laboratory fee. Credit cannot be earned for both BISC 1005 and BISC 1007. Credit cannot be earned for this course and BISC 1007.

BISC 1006. The Ecology and Evolution of Organisms. 3 Credits.

Introduction to ecology and evolution, including human being's impact on other plants and animals, and an overview of Earth's biodiversity. For non-majors. Credit may not be earned for both BISC 1006 and BISC 1008. Credit cannot be earned for this course and BISC 1008.

BISC 1007. Food, Nutrition, and Service. 3 Credits.

A study of biology and nutrition that uses service learning to reinforce course concepts. Topics include the need for humans to consume other organisms, processing of consumed nutrients, unexpected effects of nutritional consumption, and measures to improve nutrition. Credit cannot be earned for both BISC 1007 and BISC 1005. Credit cannot be earned for this course and BISC 1005.

BISC 1008. Understanding Organisms through Service Learning. 3 Credits.

The evolution of life on earth; the value of other organisms, their role in our world, and how humans can cause harm to this infrastructure. Students work with a community partner to perform activities that assist the partner while reinforcing course concepts. Credit may not be earned for both BISC 1008 and BISC 1006. Credit cannot be earned for this course and BISC 1006.

BISC 1099. Variable Topics. 1-36 Credits.

BISC 1111. Introductory Biology: Cells and Molecules. 4 Credits.

Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals. BISC 1111 is equivalent to the combination of BISC 1115 and its lab component BISC 1125. Same As: BISC 1115. Credit cannot be earned for this course and BISC 1125.

BISC 1112. Introductory Biology: The Biology of Organisms. 4 Credits.

Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Restricted to students in the Women's Leadership Program if registering for BISC 1112W. Same As: BISC 1112W.

BISC 1112W. Introductory Biology: The Biology of Organisms. 4 Credits.

Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. BISC 1112 is equivalent to the combination of BISC 1116 and its lab component BISC 1126. Restricted to students in the Women's Leadership Program if registering for BISC 1112W. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 1112.

BISC 1115. Introductory Biology: Cells and Molecules. 3 Credits.

Structures and functional interactions of biomolecules and cells in microorganisms, animals, and plants. BISC 1115 and its lab component, BISC 1125, together are equivalent to BISC 1111.

BISC 1116. Introductory Biology: The Biology of Organisms. 3 Credits.

Concepts and methods in the study of whole organisms; evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. BISC 1116 and its lab component, BISC 1126, together are equivalent to BISC 1112.

BISC 1120. Laboratory Introduction to Biomolecular Research. 2 Credits.

Research methods in the study of proteins and DNA; focus on preparation for working with faculty members on their research. Permission of the instructor required prior to enrollment. Prerequisites: BISC 1111. Credit cannot be earned for this course and BISC 1115, BISC 1125, HONR 1120.

BISC 1125. Introduction to Cells and Molecules Laboratory. 1 Credit.

Laboratory associated with BISC 1115. Experimental methods in the study of cells and molecules, proteins, enzymes, DNA, and molecular genetics. BISC 1115 and BISC 1125 together are equivalent to BISC 1111. Prerequisite: BISC 1115.

BISC 1126. Introduction to Organisms Laboratory. 1 Credit.

Laboratory associated with BISC 1116. Experimental methods in the study of whole organisms; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. BISC 1116 and BISC 1126 together are equivalent to BISC 1112. Prerequisite: BISC 1116.

BISC 2000. The Wonder of Life: Biodiversity studies in a changing planet. 3 Credits.

Topics in biological diversity from the perspective of species and within the conceptual framework of evolutionary biology; the explanatory power, simplicity, and grandeur of evolution and its products; how questions and hypotheses are empirically addressed. Topic subject to change. Prerequisites: BISC 1111 and BISC 1112.

BISC 2010. Global Change Biology. 3 Credits.

The impacts and implications of global climate change on biological systems; affected biological processes and their basic underlying physical and chemical principles. Focus on organismal physiological adaptations in aquatic and terrestrial ecosystems and ecological consequences. Prerequisites: BISC 1111 and BISC 1112.

BISC 2194. The Hidden Life of the Chesapeake Bay. 3 Credits.

The rise and fall of populations in the bay. Physiological adaptations of organisms; ecological interactions and trophic relationships; physiogeography and anthropogeography of the bay; and environmental concerns and human impacts. Credit cannot be earned for this course and GEOG 3194.

BISC 2202. Cell Biology. 3 Credits.

Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisites: BISC 1111, BISC 1112, and CHEM 2151.

BISC 2207. Genetics. 3 Credits.

Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology. Prerequisites: BISC 1111 and BISC 1112.

BISC 2208. Genetics Laboratory. 1 Credit.

Study of genetic principles and genetic and molecular techniques in *Drosophila* and *E. coli*. Benchwork and comparative genomics using bioinformatics. Prerequisites: BISC 1111, BISC 1112, and BISC 2207. Corequisites: BISC 2207 may be taken concurrently.

BISC 2213. Biology of Cancer. 3 Credits.

Cancer is a complex category of diseases caused in large part by genetic or genomic, transcriptomic, and epigenomics alterations leading to abnormal cell proliferation. This course will provide a basic overview of cancer biology including cellular and molecular basis of cancer, cancer development and progression as well as a brief overview of cancer diagnostics and therapy. Prerequisites: BISC 2202 or BISC 2207.

BISC 2214. Developmental Biology. 3 Credits.

The molecular processes and cellular phenomena that result in the formation of organized tissues and functional organisms; formation of early body plan, cell type determination, organogenesis, morphogenesis, stem cells, cloning, and issues in human development. Prerequisites: BISC; BISC 1112; and BISC 2202 or BISC 2207 or BISC 2213.

BISC 2215. Genome Editing Laboratory. 1 Credit.

Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Students undertake individual research projects involving CRISPR. In addition to the stated prerequisites, prior or concurrent enrollment in BISC 2214 required. Laboratory fee. Prerequisites: BISC 1111; BISC 1112.

BISC 2216. Scanning Electron Microscopy Laboratory. 1 Credit.

Practical training in scanning electron microscopy (SEM), from specimen preparation and mounting to SEM imaging and interpretation and presentation of data. Each student is assigned an independent research project and after receiving SEM training. Prerequisites: BISC 1111 and BISC 1112.

BISC 2220. Developmental Neurobiology. 3 Credits.

The molecular mechanisms that guide neural development: events surrounding the birth of neurons, how specific neurons are determined, how neurons find the correct targets, how cell death guides proper neural development, and how synapses are formed and maintained. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126.

BISC 2305. Plant Biology. 3 Credits.

Plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisites: BISC 1111; and BISC 1112; CHEM 1111 and CHEM 1112; or permission of the instructor.

BISC 2320. Neural Circuits and Behavior. 3 Credits.

The cellular and molecular properties of neural circuits that form the basis of behavior. Circuit properties and behaviors across a variety of invertebrate and vertebrate taxa. Individual neuronal units, the organizational principles and emergent properties of neural circuits, and how these neuronal ensembles influence behavior. Instructor's permission may be substituted for prerequisites. Prerequisites: BISC 1111; and BISC 1112.

BISC 2322. Human Physiology. 3 Credits.

Introduction to the function of organ systems of the human body. Prerequisites: CHEM 1111 and CHEM 1112; and BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126.

BISC 2331. Insect Biology. 3 Credits.

Overview of the class Insecta, focusing on insect external and internal morphology, classification, ecology/behavior, collection, and specimen preparation. Prerequisites: BISC 1111 and BISC 1112.

BISC 2332. Comparative Vertebrate Anatomy. 4 Credits.

BISC 2332 provides a thorough introduction into the study of functional vertebrate anatomy. Lectures combined with intensive laboratory assignments will introduce students to the structure and function of most vertebrate organ systems. Prerequisites: BISC 1111; and BISC 1112; or permission of the instructor.

BISC 2333. Evolution and Extinction of Dinosaurs. 3 Credits.

The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125, and BISC 1112 or BISC 1116 and BISC 1126; or GEOL 1001 and GEOL 1002; or GEOL 1002 and GEOL 1005. Credit cannot be earned for this course and GEOL 2333.

BISC 2334W. Integrative Biology of Fishes. 3 Credits.

Concepts in anatomy, biomechanics, physiology, developmental biology, biomechanics and hydrodynamics, adaptive radiation, evolutionary biology, and ecology using fish as model organisms. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126.

BISC 2335. Insect Biology Lab. 1 Credit.

An overview of insects, with an emphasis on ecology, behavior, economic importance, and the key adaptations that characterize the evolution of this diverse group. This lab teaches basic internal and external anatomy, field collection methods, insect identification, and discussion of the primary literature. BISC 2331 Insect Biology must be taken either prior or concurrently with BISC 2335 Insect Biology Lab. Laboratory fee. Prerequisite: BISC 2331.

BISC 2336. Introductory Microbiology. 3 Credits.

Lecture. Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, evolution, pathogenesis, and biotechnology. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; BISC 1112 or BISC 1116 and BISC 1126; and CHEM 1111 and CHEM 1112. Same As: BISC 2337W.

BISC 2337. Introductory Microbiology Laboratory. 1 Credit.

Laboratory associated with BISC 2336. Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, evolution, pathogenesis, and biotechnology. Prerequisites: BISC 1111; BISC 1112; CHEM 1111 and CHEM 1112; and BISC 2336. Credit cannot be earned for this course and BISC 2337W.

BISC 2337W. Introductory Microbiology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Laboratory fee. Prerequisites: BISC 1111; and BISC 1112; and CHEM 1111 and CHEM 1112. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and BISC 2337.

BISC 2339. Parasitology. 4 Credits.

Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Prerequisites: BISC 1111; and BISC 1112.

BISC 2401. Biodiversity in A Changing World. 3 Credits.

Topics on biological diversity from the perspective of species and within the conceptual framework of evolutionary biology. The explanatory power, simplicity, and grandeur of evolution and its products. Consideration of how questions and hypotheses are empirically addressed. Prerequisites: BISC 1111 and BISC 1112. Credit cannot be earned for this course and BISC 2000.

BISC 2450. Organic Evolution. 3 Credits.

Synthetic theory of organic evolution, including population biology, speciation, adaptation, macroevolution, systematics, biogeography, and the geologic record. Prerequisites: BISC 1111; and BISC 1112.

BISC 2451. History of Life. 3 Credits.

Overview of life through time; the origin of life, evolution of major groups of organisms, and important methodologies used in paleontology. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126; or permission of the instructor. (Same as GEOL 2151).

BISC 2452. Animal Behavior. 3 Credits.

An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. Prerequisites: BISC 1111 and BISC 1112; or permission of the instructor.

BISC 2453. Animal Behavior Lab. 1 Credit.

Methods used in the study of animal behavior; observation, basic statistical analysis, and experimental design; review and evaluation research materials. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior or concurrent enrollment in BISC 2452.

BISC 2454. General Ecology. 3 Credits.

The core concepts of the field of ecology across different hierarchical scales of ecological systems. Prerequisites: BISC 1111 and BISC 1112; or permission of the instructor.

BISC 2456. General Ecology Laboratory. 1 Credit.

Practical exercises and field-trips are used to explore the core concepts of the field of ecology across different hierarchical scales of ecological systems. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112; and BISC 2454 taken previously or concurrently.

BISC 2581. Human Gross Anatomy. 3 Credits.

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisites: BISC 1111 and BISC 1112; except by permission of the instructor. Same As: ANAT 2181.

BISC 2583. Biology of Proteins. 3 Credits.

About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Laboratory fee. Prerequisite: AP or IB Biology or Chemistry.

BISC 2584. Introduction to Bioinformatics. 3 Credits.

The use of computational techniques in molecular biology, genetics, and evolution; techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126. (Same as CSCI 3571).

BISC 2585. Biometry. 3 Credits.

The application of statistics to problems in biology, including experimental and field work and environmental science and biometry. Designed for program majors. Prerequisites: MATH 1220. Recommended background: Familiarity with basic command-line applications and introductory calculus.

BISC 3099. Variable Topics. 1-12 Credits.**BISC 3122. Human Physiology. 3 Credits.**

Introduction to the function of organ systems of the body. Prerequisites: CHEM 1111 and CHEM 1112; and BISC 2202 or BISC 2207.

BISC 3123. Human Physiology Lab. 1 Credit.

Basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112.

BISC 3165. Biochemistry I. 3 Credits.

Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126, CHEM 2151 and CHEM 2152; course equivalents may be substituted for BISC 1115 and 1125; and BISC 1116 and BISC 1126 at the discretion of the instructor. (Same as CHEM 3165).

BISC 3166. Biochemistry II. 3 Credits.**BISC 3208. Molecular Biology Laboratory. 1 Credit.**

Techniques in molecular biology; traditional and modern methods in recombinant DNA technology, gene and protein characterization methods. Prerequisites: BISC 1111; BISC 1112; and CHEM 1111 and CHEM 1112.

BISC 3209. Molecular Biology. 3 Credits.

Theories and concepts in molecular biology; biosynthesis and structure of DNA, RNA, and proteins, relationships among gene function and expression; transcription and translation; regulation of gene expression in prokaryotes and eukaryotes; theory of traditional and modern methods in recombinant DNA technology, gene and protein characterization methods. Prerequisites: BISC 1111; BISC 1112; and CHEM 1111 and CHEM 1112.

BISC 3210. Nanobiotechnology. 3 Credits.

Theory and application of nanotechnologies in biology and medicine. Strategies for studying the organization, function, and complexity of biological systems at nanometer scale. Several areas of research are covered, including high-resolution cellular and molecular imaging, spectroscopy, and optical tweezers. Prerequisites: BISC 2202 or BISC 3261.

BISC 3211. Nanobiotechnology Laboratory. 1 Credit.

Modern instrumental techniques for analyzing biological structures and processes at the nanometer level; combining nano- and conventional techniques to answer scientific questions. Students formulate, design, and implement a research project. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126.

BISC 3212. Immunology. 3 Credits.

Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Prerequisites: BISC 1111; BISC 1112; BISC 2202 or BISC 2207; and CHEM 1111 and CHEM 1112. Recommended background: prior completion of CHEM 2151 and CHEM 2153.

BISC 3214. Developmental Biology. 3 Credits.

The molecular processes and cellular phenomena that result in the formation of organized tissues and functional organisms; formation of early body plan, cell type determination, organogenesis, morphogenesis, stem cells, cloning, and issues in human development. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; BISC 1112 or BISC 1116 and BISC 1126; and BISC 2202 or BISC 2207 or BISC 2213. Same As: BISC 2214.

BISC 3215. Genome Editing Laboratory. 1 Credit.

Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Students undertake individual research projects involving CRISPR. Prerequisites: BISC 1111 and BISC 1112; and BISC 2202 or BISC 2207. Same As: BISC 3215W. Credit cannot be earned for this course and BISC 2215.

BISC 3215W. Genome Editing Laboratory. 1 Credit.

Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Students undertake individual research projects involving CRISPR. Prerequisites: BISC 1111 and BISC 1112; and BISC 2202 or BISC 2207. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 3215. Credit cannot be earned for this course and BISC 2215.

BISC 3261. Introductory Medical Biochemistry. 4 Credits.

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Prerequisites: CHEM 2151 and CHEM 2152. (Same as BIOC 3261, CHEM 3165).

BISC 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: BISC 1115 and BISC 1125; BISC 1116 and BISC 1126; and BISC 3261. Same As: BIOC 3262, CHEM 3262.

BISC 3263. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation, and nutrition. Topics vary by semester. May be repeated for credits provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: BISC 1111; BISC 1112; and BISC 3261. Credit cannot be earned for this course and BIOC 3263.

BISC 3270. Developmental Neurobiology. 3 Credits.

Fundamental principles of neural development organized by ontogeny, from early neural development to patterning, axonal targeting, and synapse formation. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126. Same As: BISC 2220.

BISC 3320. Human Neurobiology. 3 Credits.

Introduction to the function of the human nervous system, gross and microscopic structure, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. Prerequisites: BISC 2202 or BISC 3261.

BISC 3450. Evolutionary Medicine. 3 Credits.

The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450. Same As: BISC 3450W.

BISC 3450W. Evolutionary Medicine. 3 Credits.

The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 3450.

BISC 3453. Plant Comparative Structure and Function Lab. 2 Credits.

Core concepts and techniques in comparative plant structure and function. Prerequisites: BISC 2454. Recommended background: Concurrent enrollment in BISC 3458.

BISC 3454. Marine Ecology. 3 Credits.

Abiotic and biotic factors in marine environments in general and ecological theory behind how they shape communities, biomes, and patterns in marine biodiversity; major marine habitats and the important organisms, physical environment, and major interactions in each; threats to marine environments and effective conservation strategies.

BISC 3455. Marine Ecology Laboratory. 1 Credit.

Study of marine ecology through experiential learning and an introduction to ecological research in the marine environment and using large datasets collected by marine scientists. By visiting marine ecosystems, students learn about marine resource use and conservation strategies in the coastal zone.

BISC 3458. Plant Comparative Structure and Function. 3 Credits.

Fundamental principles of how organisms are built, investigating trade-offs and coordination in design, how variation in structure influences physiological function in different ecological settings, and how relations among plants shape structure and function and responses to ecological gradients. Prerequisites: BISC 1111; BISC 1112; or permission of instructor. Recommended background: BISC 2454 General Ecology.

BISC 3459. Field Biology. 4 Credits.

Overview of the approaches and techniques used by contemporary field biologists for cataloging, quantifying, and comparing patterns of biodiversity across plants, animals, and fungi at multiple spatial and temporal scales. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior completion of BISC 2454.

BISC 3460. Conservation Biology. 3 Credits.

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisites: BISC 1111; BISC 1112.

BISC 3460W. Conservation Biology. 3 Credits.

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126. Same As: BISC 3460.

BISC 3461. Plant-Animal Interactions. 3 Credits.

Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. Prerequisites: BISC 1111; BISC 1112; or permission of the instructor. Recommended background: BISC 2450 or BISC 2454.

BISC 3462. Plant-Animal Interactions Laboratory. 1 Credit.

Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. The stated prerequisites may be taken as corequisites; consult the instructor. Laboratory fee. Prerequisites: BISC 1111; BISC 1112; and BISC 3461.

BISC 3463. Ecological and Evolutionary Genetics. 3 Credits.

An analysis of the ecological and genetic basis of evolutionary change. Topics include the organization and maintenance of genetic variation within and among natural populations, the genetic basis of complex traits, molecular ecology analyses, and genotype by environment interactions. Prerequisites: BISC 2450 or permission of instructor; BISC 1111; BISC 1112; except by permission of the instructor.

BISC 3464. Ecology and Evolution of Societies. 3 Credits.

Study of broadly important ecological and evolutionary patterns and processes exemplified by organisms that have undergone the major evolutionary transition to living in societies. Prerequisites: BISC 1111; BISC 1112. Recommended background: Prior completion of BISC 2454.

BISC 3565. Plant Ecology and Evolution. 3 Credits.

How plants are built; how this construction shapes their physiological function in different ecological settings; how plants are related revolutionarily, and how these relations shape their structure, function, and responses to their environment. Prior completion of BISC 2454 is recommended. Prerequisites: BISC 1111; BISC 1112; or permission of the instructor.

BISC 3584. Introduction to Bioinformatics. 3 Credits.

The use of computational techniques in molecular biology, genetics, and evolution; techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Prerequisites: BISC 1115 and 1125; and BISC 1116 and BISC 1126. Same As: CSCI 3571.

BISC 4132. Advanced Cellular-Molecular Biology. 3 Credits.

Advanced cell biology with emphasis on biochemistry and molecular biology; illustrations are drawn from different organisms and human biology. For upper-level undergraduates and beginning graduate students. Permission of the instructor required prior to enrollment. Prerequisite: BISC 3209. Recommended background: Six credits in the Cellular and Molecular category.

BISC 4171. Undergraduate Research. 1-12 Credits.

Admission by permission of the staff member concerned. May be repeated for credit. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112 except by permission of the instructor; 16 credits in biological science courses.

BISC 4171W. Undergraduate Research. 1-12 Credits.

Admission by permission of the staff member concerned. May be repeated for credit. Laboratory fee. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126; and CHEM 2152 except by permission of the instructor; 16 credits in biological science courses.

BISC 4172. Independent Study. 1-3 Credits.

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisites: BISC 1111; and BISC 1112; and permission of the instructor.

BISC 4180. Undergraduate Research Seminar. 1 Credit.

Preparation for writing in diverse areas of modern biology; development of the skills needed to effectively communicate findings, publish research, and successfully obtain research funding. Same As: BISC 4180W.

BISC 4180W. Undergraduate Research Seminar. 1 Credit.

Preparation for writing in diverse areas of modern biology; development of the skills needed to effectively communicate findings, publish research, and successfully obtain research funding. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 4180.

BISC 4212. Virology and Antiviral Immunity. 3 Credits.

Comprehensive overview of the infection, replication, and immune evasion strategies of distinct classes of viruses; hands-on survey into the molecular techniques in virology. Prerequisites: BISC 2202 or BISC 2207 or BISC 3209 or BISC 3212. Credit cannot be earned for this course and BISC 6212.

BISC 4213. Virology and Antiviral Immunity Lab. 1 Credit.

Lab component designed to familiarize students with the current experimental approaches in molecular biology used to study host immune interactions with viral pathogens. Course equivalents to stated prerequisite may be permitted by the instructor. Prerequisites: BISC 2202 or BISC 2207; and BISC 3209 and BISC 3212.

BISC 4219. Host-Microbe Interactions. 3 Credits.

Overview of the molecular, genetic, cellular and physiological basis of symbiotic and pathogenic interactions between plants, invertebrate and vertebrate animals with various microbial organisms including bacteria, fungi, viruses as well prokaryotic and eukaryotic parasites. Prerequisites: BISC 2202 and BISC 2337. Credit cannot be earned for this course and BISC 6219.

BISC 4234. Microbial Genomics Laboratory. 3 Credits.

Development of computational skills needed to analyze microbial genomes and metagenomes. In addition to the prerequisite course, either basic understanding of Unix/Linux commands or permission of the instructor is prior to enrollment. Prerequisites: BISC 2336. Same As: BISC 6234.

BISC 5099. Variable Topics. 1-99 Credits.**BISC 6101. Responsible Research. 1 Credit.**

This course provides an introduction to the ethical, social, and legal foundations of scientific practice. It is intended to provide a forum for graduate students and postdocs to discuss almost every aspect of the academic life of a scientist, except specific disciplinary topics that are treated in regular courses. Ensuring ethical conduct is an essential part of basic, applied, and clinical research, especially in the context of competitive, collaborative, and international settings so common nowadays. Students are exposed to case studies typifying complex social, ethical, and legal dilemmas that may arise in the conduct of research.

BISC 6102. Scientific Presentation. 1 Credit.

This course allows students to perfect their Scientific Presentation skills. In this course, students present, in front of peers and faculty, their current research projects and plans for future work leading towards a complete thesis or dissertation. Student presentations are designed to address a general audience of biologists, containing sufficient background information to provide perspective insights into the fundamental questions being asked, and at the same time providing enough detail on technical issues and analytical procedures to allow evaluation of potential outcomes. The class provides a friendly forum for students to collect feedback and comments, to discuss project design, content, and general significance of their research.

BISC 6132. Advanced Cellular-Molecular Biology. 3 Credits.

Advanced cellular biology for upper-level undergraduates and beginning graduate students; emphasis on biochemistry and molecular biology; organisms and human biology with emphasis on oral and written analysis of research literature. Permission of the instructor required prior to enrollment. Restricted to students who have completed 16 credits of 2000-4000 level biology courses, including 6 credits in the cell and molecular category. Prerequisites: Graduate standing or undergraduates with 16 credits of 2000-4000 level biology courses, including 6 credits in the Cell and Molecular category and permission of instructor. Recommended background: 4 to 6 upper level biology courses, including 2 cell and molecular courses. Credit cannot be earned for this course and BISC 4132.

BISC 6205. Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic. 1-2 Credits.

May be repeated for credit. Prerequisite: BISC 2202 or BISC 3209.

BISC 6206. Current Topics in Evolutionary Ecology. 1-2 Credits.

May be repeated for credit.

BISC 6207. Seminar: Current Topics in Systematic Biology. 1-2 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Prerequisite: BISC 6210.

BISC 6210. Methods of Study of Evolution. 4 Credits.

A rigorous and up-to-date treatment of the theory and methods of systematics, including phylogenetic inference and its applications in evolutionary biology. Laboratory fee. Prerequisite: BISC 2450 .

BISC 6211. Biogeography and Speciation. 3 Credits.

Survey of methods, techniques, and theory in biogeography. Geological and paleontological aspects of biogeography; large-scale biogeographic patterns; speciation and phylogeography. Prerequisites: BISC 2451 or BISC 2452.

BISC 6212. Virology and Antiviral Immunity. 3 Credits.

Overview of the infection, replication, and immune evasion strategies of distinct classes of viruses, as well the host antiviral immune responses to these pathogens. Credit cannot be earned for this course and BISC 4212.

BISC 6213. Descriptive Systematics: Documenting Biodiversity. 3 Credits.

Study of those aspects of systematic biology concerned with description and inventory of biodiversity. Prerequisite: BISC 6210.

BISC 6214. The Phylogenetic Basis of Comparative Biology. 3 Credits.

The use of phylogenetic hypotheses to study questions in evolutionary biology and ecology. Prerequisites: BISC 6210 and STAT 1127.

BISC 6215. Vertebrate Phylogeny. 4 Credits.

A survey of vertebrate diversity, emphasizing evolutionary relationships and adaptations of the major groups. Prerequisite: BISC 2450. Recommended background: BISC 2332.

BISC 6216. Morphological Systematics. 3 Credits.

Methods of studying organismal morphology as a means of inferring phylogeny, emphasizing the concept of homology. Prerequisite: BISC 6210.

BISC 6218. Innate Immunity. 3 Credits.

Discussion of innate immune systems in a wide variety of organisms; from sponges to vertebrates plus higher plants. Prerequisite: BISC 3212. Recommended background: BISC 2202, BISC 2207, BISC 3209 and BISC 2330.

BISC 6219. Host-Microbe Interactions. 3 Credits.

Overview of the molecular, genetic, cellular, and physiological basis of symbiotic and pathogenic interactions between plants, invertebrate, and vertebrate animals with various microbial organisms including bacteria, fungi, viruses as well prokaryotic and eukaryotic parasites. Prerequisites: BISC 2202 and BISC 2337.

BISC 6224. Molecular Evolution. 3 Credits.**BISC 6225. Molecular Phylogenetics. 4 Credits.**

Review of molecular phylogenetic methods including data recovery, alignment, weighting, character optimization, and phylogenetic inference methods. Prerequisites: BISC 2207, BISC 2450 and BISC 6210.

BISC 6227. Seminar: Genetics. 3 Credits.

Review of selected topics in genetics, with emphasis on current literature; topics of special interest to participants encouraged. May be repeated for credit. Prerequisite: BISC 2207.

BISC 6228. Population Genetics. 3 Credits.

Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as FORS 6247. Prerequisite: BISC 2207.

BISC 6230. Human Genetics. 3 Credits.

Genetic mechanisms of transmission and expression of human traits, with emphasis on biochemical and cytogenetic aspects. Prerequisite: BISC 2207. Recommended background: Previous coursework in cell biology or cell biochemistry.

BISC 6234. Microbial Genomics Laboratory. 3 Credits.

Development of computational skills needed to analyze microbial genomes and metagenomes. In addition to the prerequisite course, either basic understanding of Unix/Linux commands or permission of the instructor is prior to enrollment. Prerequisites: BISC 2336. Same As: BISC 4234.

BISC 6243. Seminar: Ecology. 3 Credits.

In-depth study of selected topics, including reports on original publications. May be repeated for credit. Prerequisite: BISC 2454.

BISC 6249. Seminar: Developmental Biology. 3 Credits.

Discussion and reports on recent research on the endocrinological, genetic, and biochemical aspects of animal development. Prerequisite: a course in developmental biology or cell biology.

BISC 6251. Evolutionary Developmental Biology. 3 Credits.

Developmental mechanisms involved in the morphological changes that occur during the course of evolution.

BISC 6252. Seminar: Neurobiology. 3 Credits.

Study of current publications in functional neurobiology. May be repeated for credit with instructor's permission.

BISC 6274. Gene Regulation and Genetic Engineering. 3 Credits.

The control of gene expression as illustrated by several prokaryotic and eukaryotic model systems: discussions of recombinant DNA techniques. Prerequisite: BISC 2207.

BISC 6275. Introduction to Recombinant DNA Techniques. 3 Credits.

Lecture, 1 hour; laboratory, 4 hours. Basic techniques of genetic manipulation: cloning of genes, transformation of bacteria, PCR procedures, DNA sequencing, and other techniques. Prerequisite: BISC 2202 or BISC 2207 or BISC 2337 and permission of instructor. Laboratory fee.

BISC 6276. Foundations in Evolution. 3 Credits.

Rigorous introduction to the major conceptual area within micro- and macroevolution. Prerequisites: BISC 2450 for undergraduate students only.

BISC 6295. Research. 1-12 Credits.

Investigation of special problems. May be repeated for credit.

BISC 6998. Thesis Research. 3 Credits.**BISC 6999. Thesis Research. 3 Credits.****BISC 8998. Advanced Reading and Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BISC 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN BIOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2450	Organic Evolution	
BISC 2454	General Ecology	
or BISC 2452	Animal Behavior	
or BISC 3460	Conservation Biology	
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2151 & CHEM 2152	Organic Chemistry I and Organic Chemistry II	
CHEM 2153 & CHEM 2154	Organic Chemistry Laboratory I and Organic Chemistry Laboratory II	
CHEM 3165	Biochemistry I	
or BISC 3261	Introductory Medical Biochemistry	

Laboratory and elective course requirements

At least three courses must be a laboratory or have a laboratory component. These laboratory courses must numbered at the 2000 level or above. Students who complete 1 credit of BISC 4171 or BISC 4171W may count this experience as one of their required laboratory courses. A maximum of 6 credits of BISC 4171 or BISC 4171W may count towards degree requirements.

At least one 3-credit additional course from each of the four elective categories below:

Biology electives

Code	Title	Credits
Systems category		
BISC 2208	Genetics Laboratory *	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2215	Genome Editing Laboratory	

BISC 2220	Developmental Neurobiology
BISC 2320	Neural Circuits and Behavior
BISC 3122	Human Physiology
BISC 3123	Human Physiology Lab *
BISC 3165	Biochemistry I
BISC 3208	Molecular Biology Laboratory *
BISC 3209	Molecular Biology
BISC 3210	Nanobiotechnology
BISC 3211	Nanobiotechnology Laboratory *
BISC 3212	Immunology
BISC 3262	Biochemistry Laboratory *
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
BISC 4132	Advanced Cellular-Molecular Biology
BISC 4212	Virology and Antiviral Immunity
BISC 6205	Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic
BISC 6218	Innate Immunity
BISC 6219	Host-Microbe Interactions
PUBH 3202	Introduction to Genomics
Organisms category	
BISC 2000	The Wonder of Life: Biodiversity studies in a changing planet
BISC 2305	Plant Biology
BISC 2331	Insect Biology
BISC 2335	Insect Biology Lab *
BISC 2332	Comparative Vertebrate Anatomy *
BISC 2333	Evolution and Extinction of Dinosaurs
BISC 2334W	Integrative Biology of Fishes
BISC 2336	Introductory Microbiology
BISC 2337	Introductory Microbiology Laboratory *
BISC 2339	Parasitology *
BISC 2401	Biodiversity in A Changing World

BISC 6215	Vertebrate Phylogeny *
BISC 6249	Seminar: Developmental Biology
Evolution, ecology, and environment category	
BISC 2010	Global Change Biology
BISC 2451	History of Life
BISC 2452	Animal Behavior
BISC 2453	Animal Behavior Lab *
BISC 2454	General Ecology
BISC 2456	General Ecology Laboratory **, **
BISC 3450	Evolutionary Medicine
BISC 3450W	Evolutionary Medicine
BISC 3453	Plant Comparative Structure and Function Lab **, **
BISC 3454	Marine Ecology
BISC 3455	Marine Ecology Laboratory **
BISC 3458	Plant Comparative Structure and Function
BISC 3458	Plant Comparative Structure and Function
BISC 3459	Field Biology **, **
BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3462	Plant-Animal Interactions Laboratory **, **
BISC 3464	Ecology and Evolution of Societies
BISC 6210	Methods of Study of Evolution
BISC 6211	Biogeography and Speciation
BISC 6243	Seminar: Ecology
Quantitative category	
BISC 2585	Biometry
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
PUBH 3201	Introduction to Bioinformatics

or BISC 2584	Introduction to Bioinformatics
STAT 1127	Statistics for the Biological Sciences

*Laboratory course.

**Field component.

Code	Title	Credits
Laboratory Courses		
BISC 2208	Genetics Laboratory	
BISC 2215	Genome Editing Laboratory	
BISC 2216	Scanning Electron Microscopy Laboratory	
BISC 2332	Comparative Vertebrate Anatomy	
BISC 2335	Insect Biology Lab	
BISC 2337	Introductory Microbiology Laboratory	
BISC 2339	Parasitology	
BISC 2453	Animal Behavior Lab	
BISC 2456	General Ecology Laboratory	
BISC 3123	Human Physiology Lab	
BISC 3208	Molecular Biology Laboratory	
BISC 3211	Nanobiotechnology Laboratory	
BISC 3453	Plant Comparative Structure and Function Lab	
BISC 3455	Marine Ecology Laboratory	
BISC 3459	Field Biology	
BISC 3462	Plant-Animal Interactions Laboratory	
BISC 4171	Undergraduate Research	
or BISC 4171W	Undergraduate Research	
BISC 4234	Microbial Genomics Laboratory	

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication

competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a cumulative 3.5 grade-point average in biological sciences courses and at least a 3.0 cumulative overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGY REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2450	Organic Evolution	
CHEM 1111	General Chemistry I	
BISC 2452	Animal Behavior	
or BISC 2454	General Ecology	
or BISC 3460	Conservation Biology	
CHEM 1112	General Chemistry II	
PHYS 1011	General Physics I	
or PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	

Concentration requirement

Students must fulfill the requirements of one of the three concentrations shown below. All concentrations require a minimum of 18 credits in upper-level Biology (BISC) courses.

Laboratory course requirements*

At least three BISC courses numbered 2000 or above must have a laboratory component, either built into the course or as a separate course number. Students who complete 1 credit of BISC 4171 or BISC 4171W, Undergraduate Research, may count this experience toward one of their laboratory requirements. A maximum of 6 credits of BISC 4171 or BISC 4171W may be applied toward degree requirements.

Honors thesis

Students who qualify based on academic performance are strongly encouraged to develop an honors thesis based on their research experience.

Code	Title	Credits
Laboratory Courses		
BISC 2208	Genetics Laboratory	
BISC 2215	Genome Editing Laboratory	
BISC 2216	Scanning Electron Microscopy Laboratory	
BISC 2332	Comparative Vertebrate Anatomy	
BISC 2335	Insect Biology Lab	
BISC 2337	Introductory Microbiology Laboratory	
BISC 2339	Parasitology	
BISC 2453	Animal Behavior Lab	
BISC 2456	General Ecology Laboratory	
BISC 3123	Human Physiology Lab	
BISC 3208	Molecular Biology Laboratory	
BISC 3211	Nanobiotechnology Laboratory	
BISC 3453	Plant Comparative Structure and Function Lab	
BISC 3455	Marine Ecology Laboratory	
BISC 3459	Field Biology	
BISC 3462	Plant-Animal Interactions Laboratory	
BISC 4171	Undergraduate Research	
or BISC 4171W	Undergraduate Research	
BISC 4234	Microbial Genomics Laboratory	

Biology electives

Code	Title	Credits
Systems category		
BISC 2208	Genetics Laboratory *	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2215	Genome Editing Laboratory	
BISC 2220	Developmental Neurobiology	
BISC 2320	Neural Circuits and Behavior	
BISC 3122	Human Physiology	
BISC 3123	Human Physiology Lab *	
BISC 3165	Biochemistry I	
BISC 3208	Molecular Biology Laboratory *	
BISC 3209	Molecular Biology	
BISC 3210	Nanobiotechnology	
BISC 3211	Nanobiotechnology Laboratory *	
BISC 3212	Immunology	
BISC 3262	Biochemistry Laboratory *	
BISC 3263	Special Topics in Biochemistry	
BISC 3320	Human Neurobiology	
BISC 4132	Advanced Cellular-Molecular Biology	
BISC 4212	Virology and Antiviral Immunity	
BISC 6205	Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic	
BISC 6218	Innate Immunity	
BISC 6219	Host-Microbe Interactions	
PUBH 3202	Introduction to Genomics	
Organisms category		
BISC 2000	The Wonder of Life: Biodiversity studies in a changing planet	
BISC 2305	Plant Biology	
BISC 2331	Insect Biology	
BISC 2335	Insect Biology Lab *	

BISC 2332	Comparative Vertebrate Anatomy *
BISC 2333	Evolution and Extinction of Dinosaurs
BISC 2334W	Integrative Biology of Fishes
BISC 2336	Introductory Microbiology
BISC 2337	Introductory Microbiology Laboratory *
BISC 2339	Parasitology *
BISC 2401	Biodiversity in A Changing World
BISC 6215	Vertebrate Phylogeny *
BISC 6249	Seminar: Developmental Biology
Evolution, ecology, and environment category	
BISC 2010	Global Change Biology
BISC 2451	History of Life
BISC 2452	Animal Behavior
BISC 2453	Animal Behavior Lab *
BISC 2454	General Ecology
BISC 2456	General Ecology Laboratory *,**
BISC 3450	Evolutionary Medicine
BISC 3450W	Evolutionary Medicine
BISC 3453	Plant Comparative Structure and Function Lab **,***
BISC 3454	Marine Ecology
BISC 3455	Marine Ecology Laboratory **
BISC 3458	Plant Comparative Structure and Function
BISC 3458	Plant Comparative Structure and Function
BISC 3459	Field Biology *,**
BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3462	Plant-Animal Interactions Laboratory *,***
BISC 3464	Ecology and Evolution of Societies
BISC 6210	Methods of Study of Evolution
BISC 6211	Biogeography and Speciation
BISC 6243	Seminar: Ecology

Quantitative category

BISC 2585	Biometry
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
PUBH 3201	Introduction to Bioinformatics
or BISC 2584	Introduction to Bioinformatics
STAT 1127	Statistics for the Biological Sciences

*Laboratory course.

**Field component.

Concentrations

General Biology Concentration

Code	Title	Credits
Required		
CHEM 2151 & CHEM 2152	Organic Chemistry I and Organic Chemistry II	
CHEM 2153 & CHEM 2154	Organic Chemistry Laboratory I and Organic Chemistry Laboratory II	
CHEM 3165	Biochemistry I	
or BISC 3261	Introductory Medical Biochemistry	

Electives

At least one 3-credit course from each of the four elective category listed below for a total of 12 credits, in addition to the courses satisfying the core course requirements. These 12 credits count toward the 18 required upper-level biology credits.

Cellular and Molecular Biology Concentration

Code	Title	Credits
Required		
BISC 3209 & BISC 3208	Molecular Biology and Molecular Biology Laboratory	
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
BISC 3261	Introductory Medical Biochemistry	
or CHEM 3165	Biochemistry I	

Electives

In addition to the courses satisfying the core course requirements, at least one 3-credit course from each of the four elective categories listed below for a total of 12 credits. These 12 credits count toward the 18 required upper-level biology credits.

Ecology, Evolution, and Environment Concentration

Code	Title	Credits
Required		

In addition to the courses satisfying the core course requirements, at least one 3-credit course from both the systems electives and organism electives lists; at least 6 credits from the evolution, ecology, and environment electives list, including one course with a field component; and 6 credits from the quantitative electives list, including at least one statistics course.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with special honors, a student must maintain a cumulative 3.5 grade-point average in biological sciences courses and at least a 3.0 cumulative overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

BACHELOR OF SCIENCE WITH A MAJOR IN NEUROSCIENCE REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
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Required

Eleven basic science courses (41 credits):

BISC 1111	Introductory Biology: Cells and Molecules
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BISC 1112	Introductory Biology: The Biology of Organisms
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BISC 2207	Genetics *
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or BISC 2202	Cell Biology
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CHEM 1111	General Chemistry I
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CHEM 1112	General Chemistry II
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CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I
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CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II
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PHYS 1025	University Physics I with Biological Applications
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or PHYS 1011	General Physics I
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or PHYS 1021	University Physics I
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PHYS 1026	University Physics II with Biological Applications
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or PHYS 1012	General Physics II
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or PHYS 1022	University Physics II
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MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II
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or MATH 1231	Single-Variable Calculus I
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Two courses in quantitative methods (6 credits) from the following:

BISC 2584	Introduction to Bioinformatics
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CSCI 1012	Introduction to Programming with Python
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STAT 1127	Statistics for the Biological Sciences *
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Three gateway courses (9 credits) that introduce core neuroscience concepts, from the following:

ANAT 2160	Human Functional Neuroanatomy
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or SPHR 2106	Neural Substrates of Speech, Language, and Hearing
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BISC 2320	Neural Circuits and Behavior
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BISC 3320	Human Neurobiology
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PSYC 2015	Biological Psychology
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Five advanced content courses from the following. These must include two courses in cellular/molecular/systems neuroscience (6 credits), two courses in cognitive neuroscience (6 credits) and one course in advanced biochemistry (3 to 4 credits).

Cellular/molecular/systems neuroscience

ANTH 3413 Evolution of the Human Brain

BISC 2220 Developmental Neurobiology

BISC 3320 Human Neurobiology

PSYC 3199 Current Topics in Psychology

Cognitive neuroscience

PSYC 3118 Neuropsychology

PSYC 3121 Memory and Cognition

PSYC 3122 Cognitive Neuroscience

PSYC 3124 Visual Perception

SPHR 2133 Autism

SPHR 3116 Brain and Language

Advanced biochemistry

BISC 3261 Introductory Medical Biochemistry

CHEM 3165 Biochemistry I *

CHEM 3166 Biochemistry II

One research/laboratory experience course (3 to 4 credits).

This may be one semester of guided or independent research in ANTH, CHEM, PHIL, PSYC, or SPHR**, or one of the following options:

Laboratory experience

BISC 2452 & BISC 2453 Animal Behavior and Animal Behavior Lab

PSYC 4107W Research Lab in Cognitive Neuroscience

BISC 4171 Undergraduate Research

BISC 4171W Undergraduate Research

BISC 4172 Independent Study

BISC 4180 Undergraduate Research Seminar

* Recommended for premed students. In addition, premed students are advised to take SOC 1001 Introduction to

Sociology, BISC 2322 Human Physiology, and BISC 2337 Introductory Microbiology Laboratory.

** For SPHR, available only to students with a minimum 3.5 GPA in major courses and/or the permission of the instructor.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in

addition to the one course in this category required by the University General Education Requirement.

- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a cumulative 3.5 grade-point average in biological sciences courses and at least a 3.0 cumulative overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN BIOLOGY AND MASTER OF SCIENCE IN THE FIELD OF BIOLOGICAL SCIENCES

The Department of Biological Sciences offers a dual bachelor of science with a major in biology (p. 148) and master of science in the field of biological sciences (p. 153) degree program. 6 credits may be shared between programs, thereby decreasing the total number of credits normally required. All requirements for both programs must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate advisor early in their junior year. Visit the program website (<https://biology.columbian.gwu.edu/undergraduate-degree-programs/>) for additional information.

DUAL BS IN NEUROSCIENCE AND MS IN BIOLOGICAL SCIENCES

The Department of Biological Sciences offers a dual bachelor of science with a major in neuroscience (p. 151) and master of science in the field of biological sciences (p. 153) degree program. The program allows students to take 6 graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Students interested in the dual degree program should confer with the department's graduate advisor early in their junior year. Visit the program website (<https://biology.columbian.gwu.edu/undergraduate-degree-programs/>) for additional information.

biology.columbian.gwu.edu/undergraduate-degree-programs/) for additional information.

MINOR IN BIOLOGY REQUIREMENTS

The following requirements must be fulfilled: 20 credits, including 8 credits in prerequisite courses and 12 credits in elective courses.

Code	Title	Credits
Prerequisites		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
Electives		
12 credits in biological sciences (BISC) courses taken at the 2000 to 4000 levels and/or from the following approved non-BISC courses:		
BIOC 3261	Introductory Medical Biochemistry	
BIOC 3262	Biochemistry Laboratory	
BIOC 3263	Special Topics in Biochemistry	
BIOC 3564	Lipid Biotechnology	
CHEM 3165	Biochemistry I	
CHEM 3166W	Biochemistry II	
CHEM 3262	Biochemistry Laboratory	
CHEM 3564	Lipid Biotechnology	
GEOL 2151	Introduction to Paleontology	

*Honors Program students and those who have been invited to join the Scholars in Quantitative and Natural Sciences (SQNS) Program take BISC 1120 instead of BISC 1125 for the lab component.

MASTER OF SCIENCE IN THE FIELD OF BIOLOGICAL SCIENCES

Our departmental graduate program is highly interactive in which students move easily among disciplines within the department and interact with other programs and institutions. Graduate research is generally in one of two areas 1) cell and molecular biology, and 2) systematics, evolution, and ecology. Students in the program often take advantage of other researchers, faculty, and facilities at GW and elsewhere in the Washington area. These include the National Institutes of

Health (NIH) and the Smithsonian Institution's National Museum of Natural History.

A strong background in cell and molecular biology is essential for many competitive careers. Graduate students in this area conduct research on both well-studied model systems and non-model organisms, and often use comparative approaches. Common research themes among department faculty include cell signaling processes, and the genetic and cellular mechanisms governing virulence, behavior, immune responses, neurobiology, development, and the phenotypic expression of a variety of morphological traits. Students are trained in both experimental and comparative approaches and use a diverse array of modern research methods, ranging from precision imaging to gene editing to the assembly and analysis of genomes/proteomes/metabolomes.

Amid increasing concern about global change and biodiversity decline, expertise in systematics and ecology is more important than ever. GW's Systematics, Evolution, and Ecology (SEE) program is one of the few in the world specializing in the principles and methods of phylogenetic analysis and comparative biology, putting the university at the forefront of biodiversity studies. Departmental research in evolution and ecology spans a wide array of taxa and study systems, including both vertebrate (amphibians, reptiles, fishes) and invertebrate (social and non-social insects, arachnids, oysters) animals, plants, fungi, and bacteria. In addition to systematics, students can join labs conducting research on behavioral, ecosystem, community, and population ecology as well as ecomorphology and biomechanics.

To complement their classroom education, students can get involved in ongoing field research at both terrestrial and aquatic field sites around the world. Recent graduate students have studied termites and wood decomposition in Australian rainforests, collected ants in Brazilian savannas, discovered new reptiles and amphibians in Sri Lanka, and unearthed rare dinosaur fossils in the Gobi Desert of China.

The department regularly supports graduate student attendance at graduate short courses offered around the US and abroad, including those available through our membership in the Organization for Tropical Studies as well as regularly offered short courses at Friday Harbor, Southwestern Research Station, and Woods Hole.

The MS program has a thesis or non-thesis option, allowing students to pursue laboratory or classwork-only research in one of the two areas described above.

The MS is a STEM-designated programs.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits: Thesis option—24 credits in approved elective courses and 6 credits in thesis; non-thesis option—with departmental approval, 36 credits in approved elective courses; for all students—successful completion of a master's comprehensive examination.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOLOGICAL SCIENCES

Our departmental graduate program is highly interactive in which students move easily among disciplines within the department and interact with other programs and institutions. Graduate research is generally in one of two areas 1) cell and molecular biology, and 2) systematics, evolution, and ecology. Students in the program often take advantage of other researchers, faculty, and facilities at GW and elsewhere in the Washington area. These include the National Institutes of Health (NIH) and the Smithsonian Institution's National Museum of Natural History.

A strong background in cell and molecular biology is essential for many competitive careers. Graduate students in this area conduct research on both well-studied model systems and non-model organisms, and often use comparative approaches. Common research themes among department faculty include cell signaling processes, and the genetic and cellular mechanisms governing virulence, behavior, immune responses, neurobiology, development, and the phenotypic expression of a variety of morphological traits. Students are trained in both experimental and comparative approaches and use a diverse array of modern research methods, ranging from precision imaging to gene editing to the assembly and analysis of genomes/proteomes/metabolomes.

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To complement their classroom education, students can get involved in ongoing field research at both terrestrial and aquatic field sites around the world. Recent graduate students have studied termites and wood decomposition in Australian rainforests, collected ants in Brazilian savannas, discovered new reptiles and amphibians in Sri Lanka, and unearthed rare dinosaur fossils in the Gobi Desert of China.

The department regularly supports graduate student attendance at graduate short courses offered around the US and abroad, including those available through our membership in the Organization for Tropical Studies (OTS) as well as regularly offered short courses at Friday Harbor, Southwestern Research Station, and Woods Hole.

The M.S. program has a thesis or non-thesis option, allowing students to pursue laboratory or classwork-only research in one of the two areas described above.

The Ph.D. and M.S. in Biological Sciences are STEM-designated programs.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

The required curriculum and program requirements as outlined below:

Code	Title	Credits
Requirements for students entering with a bachelor's degree:		
	72 credits prior to graduation.	
	48 credits of approved graduate-level coursework to be advanced to candidacy.	
	6 to 24 credits of dissertation research (BISC 8999).	
	Successful completion of a general examination, comprising both written and oral examinations, to be advanced to candidacy.	
Requirements for students entering with a master's degree:		
	72 credits prior to graduation.	
	48 credits of approved graduate-level coursework to be advanced to candidacy (includes up to 30 credits transferred from the master's degree).	
	6 to 24 credits of dissertation research (BISC 8999).	
	Successful completion of a general examination, comprising both written and oral examinations, to be advanced to candidacy.	

The program of study and fields of study are determined in consultation with an advisory committee appointed for each candidate.

- Major research fields**
- Cell and molecular biology
 - Systematics
 - Evolution
 - Ecology

BIOMEDICAL SCIENCES

The interdisciplinary doctoral programs in the biomedical sciences are organized within GW's Institute for Biomedical Sciences (<https://smhs.gwu.edu/ibs/>). The first full year of study toward the PhD programs in biochemistry and systems biology, microbiology and immunology, and molecular medicine is offered through the Institute. All programs are taken on a full-time basis. Faculty are drawn from the Columbian College of Arts and Sciences and the School of Medicine and Health Sciences, including scientists from the Children's Research Institute of Children's National Health System.

Students are admitted directly into the Institute for Biomedical Sciences through the Columbian College of Arts and Sciences. At the end of the first year of study, students select one of the five PhD fields— cancer biology, genomics and bioinformatics, microbiology and immunology, neuroscience, and pharmacology and physiology—and complete remaining degree requirements in the selected program.

Visit the Institute for Biomedical Sciences website (<https://smhs.gwu.edu/ibs/>) for additional information.

GRADUATE

Master's Program

- Master of Science in the field of bioinformatics and molecular biochemistry (p. 136)

Doctoral Programs

- Doctor of Philosophy in the field of cancer biology (p. 156)
- Doctor of Philosophy in the field of genomics and bioinformatics (p. 157)
- Doctor of Philosophy in the field of microbiology and immunology (p. 159)
- Doctor of Philosophy in the field of neuroscience (p. 160)
- Doctor of Philosophy in the field of pharmacology and physiology (p. 162)

FACULTY

Committee on Biomedical Sciences L. Werling (*Director*), L. Caldovic, A. Chiaramello, A. Colberg-Poley, R.P. Donaldson, V. Gallo, A. Jeremic, D. Mendelowitz, N. Lee, D. Leitenberg, E. Villain.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Biomedical Sciences (BMSC) (p. 1442)
- Microbiology (MICR) (p. 1704)
- Molecular Medicine (MMED) (p. 1705)
- Pharmacology (PHAR) (p. 1719)

DOCTOR OF PHILOSOPHY IN THE FIELD OF CANCER BIOLOGY

The PhD in the field of cancer biology program focuses on the disease of cancer, ranging from molecular signaling underlying carcinogenesis to cancer genomics for improving detection, diagnosis, and treatment. While the training of cancer researchers has historically been accomplished by individual investigators in the traditional departments, the rapidly expanding knowledge base and complexity of modern genetic and molecular approaches necessitate an approach that is both broader-based, with respect to scientific discipline, and more focused, with respect to this disease entity.

The program begins with interdisciplinary coursework in genes, cells and systems in biomedical sciences, professional development in scientific communication and science careers, and laboratory rotations offered through GW's Institute for Biomedical Sciences. After the first year of study, students work with their research advisor to complete remaining degree requirements, including the dissertation.

Program faculty are drawn largely from the GW School of Medicine and Health Sciences, including scientists from Children's Research Institute of Children's National Health System.

Students have access to extensive research facilities and libraries on campus and in the greater Washington, DC. This include the School of Medical and Health Sciences, GW's Gelman Library and Himmelfarb Health Sciences Library, Children's Research Institute, the National Institutes of Health, and numerous other research institutions.

The PhD in cancer biology is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

72 credits, including required core, dissertation, and elective coursework. Successful completion of a grant-style qualifier examination is required for advancement to candidacy. In addition, students perform full-time research in faculty laboratories for the duration of their program. In GW laboratories, they are hired as paid research assistants/associates in the third year and beyond of the program.

Students are advised to complete up to 48 credits comprising required interdisciplinary core courses, required cancer biology core courses, electives, and advanced readings and research in the first two years of PhD study. Upon successful completion of a grant-style qualifier, students then register for up to 24 credits of dissertation research through completion and successful oral defense of a written dissertation.

Code	Title	Credits
Required interdisciplinary core*		
BMSC 8210	Genes to Cells	
BMSC 8212	Systems Physiology	
BMSC 8215	Lab Rotations	
BMSC 8216	Scientific Writing, Presentation Skills, and Seminar Planning	
BMSC 8217	Ethics and Grant Writing	
BMSC 8218	Career Options in the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8235	Applied Biostatistics for Basic Research	
Required cancer biology core*		
CANC 8214	Cancer Biology Seminar	
CANC 8221	The Basic Science of Oncology	
CANC 8222	Molecular Oncology and Cancer Epigenetics	
CANC 8223	Immunology and Immunotherapy of Cancer	
Dissertation Research		

CANC 8999	Dissertation Research
Elective options	
15 credits elective courses selected in consultation with graduate program advisor:	
ANAT 6130	Clinically Oriented Human Embryology
ANAT 6150	Clinically Oriented Human Microscopic Anatomy
ANAT 6160	Human Clinical Neuroanatomy
ANAT 6182	Fundamentals of Translational Science
ANAT 6275	Advanced Studies in Translational Sciences
ANAT 6292	Projects in Anatomical Sciences: Introduction to Neuroradiology
BIOC 6240	Next Generation Sequencing
BIOC 6242	Bioscience Big Data Statistics
BIOC 6281	Topics
BIOC 8225	Metabolism
BIOC 8232	Molecular and Cellular Signaling
BMSC 8219	Writing the Grant-Style Qualifier
CANC 8998	Advanced Reading and Research
GENO 6223	Bioinformatics
GENO 6236	Medical Genomics
GENO 6237	Proteomics and Biomarkers
GENO 8231	Introduction to Genomics, Proteomics, and Bioinformatics
MICR 6292	Tropical Infectious Diseases
MICR 8210	Infection and Immunity
MICR 8230	Molecular and Cellular Immunology
MICR 8270	Advanced Topics in Immunology
NRSC 8284	Foundations of Experimental Neuroscience I
NRSC 8285	Foundations of Experimental Neuroscience II
PHAR 6116	Pharmacogenomics and Personalized Medicine
PHAR 6205	Pharmacology

PHAR 6206	Advanced Pharmacology
PHAR 6322	Advanced Professional and Communication Skills
PHAR 8211	Physiology
PHAR 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
PUBH 6276	Public Health Microbiology
PUBH 6278	Public Health Virology
PUBH 6861	Public Health Genomics

*Required courses may be waived at the discretion of the graduate program director based on written documentation of prior equivalent coursework. Any waiver increases the number of elective courses required by the number of credits waived.

DOCTOR OF PHILOSOPHY IN THE FIELD OF GENOMICS AND BIOINFORMATICS

The PhD in genomics and bioinformatics program is designed to develop research scientists in areas where the principles and methods of cell and systems biology, biochemistry and genetics are applied to the study of human diseases.

Investigators in the program use the latest technologies in genomics, proteomics, high-resolution imaging, bioinformatics and pre-clinical (murine) trials. The training program includes research opportunities in autism spectrum disorders, muscular dystrophies, biomarkers, asthma, airway diseases, brain tumors, microRNA processing, dysregulation of mitochondrial functions and protein trafficking.

The program begins with interdisciplinary coursework in genes, cells and systems in biomedical sciences, professional development in scientific communication and science careers, and laboratory rotations offered through GW's Institute for Biomedical Sciences. After the first year of study, students work with their research advisor to complete remaining degree requirements, including the dissertation.

Program faculty are drawn largely from the GW School of Medicine and Health Sciences, including scientists from Children's Research Institute of Children's National Health System.

Students have access to extensive research facilities and libraries on campus and in the greater Washington, DC. This include the School of Medical and Health Sciences, GW's Gelman Library and Himmelfarb Health Sciences Library, Children's Research Institute, the National Institutes of Health, and numerous other research institutions.

The PhD in genomics and bioinformatics is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the doctor of Philosophy Program (p. 87).

72 credits, including required core and elective courses. Successful completion of a grant-style qualifier examination is required for advancement to candidacy. In addition, students perform full-time research in faculty laboratories for the duration of their program. In GW laboratories, they are hired as paid research assistants/associates in the third year and beyond of the program.

Students are advised to complete up to 48 credits comprising required interdisciplinary core courses, required genomics core courses, electives, and advanced readings and research in the first two years of PhD study. Upon successful completion of a grant-style qualifier, students register for up to 24 credits of dissertation research through completion and successful oral defense of a written dissertation.

Code	Title	Credits
Required interdisciplinary core		
BMSC 8210	Genes to Cells	
BMSC 8212	Systems Physiology	
BMSC 8215	Lab Rotations	
BMSC 8216	Scientific Writing, Presentation Skills, and Seminar Planning	
BMSC 8217	Ethics and Grant Writing	
BMSC 8218	Career Options in the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8235	Applied Biostatistics for Basic Research	
Required genomics core		
GENO 8231	Introduction to Genomics, Proteomics, and Bioinformatics	
Electives		
24 credits elective courses selected in consultation with graduate program advisor:		
ANAT 6130	Clinically Oriented Human Embryology	

ANAT 6150	Clinically Oriented Human Microscopic Anatomy
ANAT 6160	Human Clinical Neuroanatomy
ANAT 6182	Fundamentals of Translational Science
ANAT 6275	Advanced Studies in Translational Sciences
ANAT 6292	Projects in Anatomical Sciences: Introduction to Neuroradiology
BIOC 6240	Next Generation Sequencing
BIOC 6242	Bioscience Big Data Statistics
BIOC 6281	Topics
BIOC 8225	Metabolism
BIOC 8232	Molecular and Cellular Signaling
BMSC 8219	Writing the Grant-Style Qualifier
CANC 8221	The Basic Science of Oncology
CANC 8222	Molecular Oncology and Cancer Epigenetics
CANC 8223	Immunology and Immunotherapy of Cancer
GENO 6223	Bioinformatics
GENO 6236	Medical Genomics
GENO 6237	Proteomics and Biomarkers
GENO 8234	Genomics and Precision Medicine Seminar
GENO 8998	Advanced Readings and Research
MICR 6292	Tropical Infectious Diseases
MICR 8210	Infection and Immunity
MICR 8230	Molecular and Cellular Immunology
MICR 8270	Advanced Topics in Immunology
NRSC 8284	Foundations of Experimental Neuroscience I
NRSC 8285	Foundations of Experimental Neuroscience II
PHAR 6116	Pharmacogenomics and Personalized Medicine
PHAR 6205	Pharmacology

PHAR 6206	Advanced Pharmacology
PHAR 6322	Advanced Professional and Communication Skills
PHAR 8211	Physiology
PHAR 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
PUBH 6276	Public Health Microbiology
PUBH 6278	Public Health Virology
PUBH 6861	Public Health Genomics

Dissertation research

GENO 8999	Dissertation Research
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Required courses may be waived at the discretion of the graduate program director based on written documentation of prior equivalent coursework. Any waiver increases the number of electives required, by the number of credits waived.

DOCTOR OF PHILOSOPHY IN THE FIELD OF MICROBIOLOGY AND IMMUNOLOGY

OVERVIEW

The PhD in microbiology and immunology program provides flexible, rigorous training that prepares students to become independent research scientists in the areas of molecular virology, molecular parasitology, and immunology.

The program begins with interdisciplinary coursework in genes, cells and systems in biomedical sciences, professional development in scientific communication and science careers, and laboratory rotations offered through GW's Institute for Biomedical Sciences. After the first year of study, students work with their research advisor to complete remaining degree requirements, including the dissertation.

Faculty are drawn largely from the GW School of Medicine and Health Sciences, including scientists from Children's Research Institute of Children's National Health System. Research strengths and training opportunities include the study of host-pathogen relationships, inflammation, vaccine development, T lymphocyte activation, cancer immunology, molecular parasitology, molecular retrovirology (HIV/AIDS), and microbial genomics and proteomics.

Students have access to extensive research facilities and libraries on campus and in the greater Washington, DC. This include the School of Medical and Health Sciences, GW's Gelman Library and Himmelfarb Health Sciences Library,

Children's Research Institute, the National Institutes of Health, and numerous other research institutions.

The PhD in microbiology and immunology is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Program-specific curriculum:

Code	Title	Credits
Required Courses*		
Interdisciplinary core		
BMSC 8210	Genes to Cells	
BMSC 8212	Systems Physiology	
BMSC 8215	Lab Rotations	
BMSC 8216	Scientific Writing, Presentation Skills, and Seminar Planning	
BMSC 8217	Ethics and Grant Writing	
BMSC 8218	Career Options in the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8235	Applied Biostatistics for Basic Research	
Microbiology core		
MICR 8210	Infection and Immunity	
MICR 8214	Microbiology and Immunology Seminar	
MICR 8230	Molecular and Cellular Immunology	
Electives		
20 credits in elective courses selected from the following in consultation with graduate program advisor:		
ANAT 6130	Clinically Oriented Human Embryology	
ANAT 6150	Clinically Oriented Human Microscopic Anatomy	
ANAT 6160	Human Clinical Neuroanatomy	
ANAT 6182	Fundamentals of Translational Science	

ANAT 6275	Advanced Studies in Translational Sciences
ANAT 6292	Projects in Anatomical Sciences: Introduction to Neuroradiology
BIOC 6236	Medical Genomics
BIOC 6240	Next Generation Sequencing
BIOC 6242	Bioscience Big Data Statistics
BIOC 6281	Topics
BIOC 8225	Metabolism
BIOC 8232	Molecular and Cellular Signaling
BMSC 8219	Writing the Grant-Style Qualifier
CANC 8221	The Basic Science of Oncology
CANC 8222	Molecular Oncology and Cancer Epigenetics
CANC 8223	Immunology and Immunotherapy of Cancer
GENO 6223	Bioinformatics
GENO 6236	Medical Genomics
GENO 6237	Proteomics and Biomarkers
GENO 8231	Introduction to Genomics, Proteomics, and Bioinformatics
MICR 6220	Biology of Parasitism: Parasite Strategies of Infection, Survival, and Transmission
MICR 6236	Fundamentals in Geonomics and Proteomics I
MICR 6292	Tropical Infectious Diseases
MICR 8270	Advanced Topics in Immunology
MICR 8998	Advanced Reading and Research
NRSC 8284	Foundations of Experimental Neuroscience I
NRSC 8285	Foundations of Experimental Neuroscience II
PHAR 6205	Pharmacology
PHAR 6206	Advanced Pharmacology
PHAR 6116	Pharmacogenomics and Personalized Medicine

PHAR 6322 Advanced Professional and Communication Skills

PHAR 8211 Physiology

PHAR 8281 Molecular Pharmacology and Neurobiology of Excitable Tissues

PUBH 6276 Public Health Microbiology

PUBH 6278 Public Health Virology

PUBH 6861 Public Health Genomics

Dissertation Research

MICR 8999 Dissertation Research

*Required courses may be waived at the discretion of the graduate program director based on written documentation of prior equivalent coursework. Any waiver increases the number of electives required, by the number of credits waived.

Visit the program website (<https://smhs.gwu.edu/microbiology/education/programs/>) for additional information.

DOCTOR OF PHILOSOPHY IN THE FIELD OF NEUROSCIENCE

Neuroscience uses tools in a wide variety of disciplines—psychology, anatomy, electrophysiology, molecular biology, medicine, pharmacology, and biochemistry—to provide critical scientific breakthroughs for the millions of individuals affected by neurologic illnesses.

In the PhD in neuroscience program, the principal areas of research training include developmental neurobiology, molecular mechanisms of action of drugs of abuse, neural transplant, neurotransmitter systems, and the psychobiology of learning, memory, and communication.

The program begins with interdisciplinary coursework in genes, cells and systems in biomedical sciences, professional development in scientific communication and science careers, and laboratory rotations offered through GW's Institute for Biomedical Sciences (<https://smhs.gwu.edu/ibs/>). After the first year of study, students work with their research advisor to complete remaining degree requirements, including the dissertation.

Program faculty are drawn largely from the GW School of Medicine and Health Sciences, including scientists from Children's Research Institute of Children's National Health System.

Students have access to extensive research facilities and libraries on campus and in the greater Washington, DC. This include the School of Medical and Health Sciences, GW's Gelman Library and Himmelfarb Health Sciences Library,

Children's Research Institute, the National Institutes of Health, and numerous other research institutions.

The PhD in neuroscience is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

The requirements for the Doctor of Philosophy program (<http://bulletin.gwu.edu/arts-sciences/#doctoraltext>).

72 credits, including required core and elective courses. Successful completion of a grant-style qualifier examination is required for advancement to candidacy. In addition, students perform full-time research in faculty laboratories for the duration of their program. In GW laboratories, they are hired as paid research assistants/associates in the third year and beyond of the program.

Students are advised to complete up to 48 credits comprising required interdisciplinary core courses, required neuroscience core courses, electives, and advanced readings and research in the first two years of PhD study. Upon successful completion of a grant-style qualifier, students register for up to 24 credits of dissertation research through completion and successful oral defense of a written dissertation.

Code	Title	Credits
Required courses*		
Interdisciplinary core		
BMSC 8210	Genes to Cells	
BMSC 8212	Systems Physiology	
BMSC 8215	Lab Rotations	
BMSC 8216	Scientific Writing, Presentation Skills, and Seminar Planning	
BMSC 8217	Ethics and Grant Writing	
BMSC 8218	Career Options in the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8235	Applied Biostatistics for Basic Research	
Neuroscience core		
NRSC 8283	Current Topics in Neuroscience	
NRSC 8284	Foundations of Experimental Neuroscience I	

Electives

18 credits in elective courses selected in consultation with graduate program advisor:

ANAT 6130	Clinically Oriented Human Embryology
ANAT 6150	Clinically Oriented Human Microscopic Anatomy
ANAT 6160	Human Clinical Neuroanatomy
ANAT 6182	Fundamentals of Translational Science
ANAT 6275	Advanced Studies in Translational Sciences
BIOC 6240	Next Generation Sequencing
BIOC 6242	Bioscience Big Data Statistics
BIOC 6281	Topics
BIOC 8225	Metabolism
BIOC 8232	Molecular and Cellular Signaling
BMSC 8219	Writing the Grant-Style Qualifier
CANC 8221	The Basic Science of Oncology
CANC 8222	Molecular Oncology and Cancer Epigenetics
CANC 8223	Immunology and Immunotherapy of Cancer
GENO 6223	Bioinformatics
GENO 6236	Medical Genomics
GENO 6237	Proteomics and Biomarkers
GENO 8231	Introduction to Genomics, Proteomics, and Bioinformatics
MICR 8210	Infection and Immunity
MICR 8230	Molecular and Cellular Immunology
MICR 8270	Advanced Topics in Immunology
NRSC 8285	Foundations of Experimental Neuroscience II
NRSC 8998	Advanced Reading and Research
PHAR 6205	Pharmacology
PHAR 6206	Advanced Pharmacology
PHAR 6116	Pharmacogenomics and Personalized Medicine

PHAR 6322	Advanced Professional and Communication Skills
PHAR 8211	Physiology
PHAR 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues
PUBH 6276	Public Health Microbiology
PUBH 6278	Public Health Virology
Dissertation research	
NRSC 8999	Dissertation research

*Required courses may be waived at the discretion of the graduate program director based on written documentation of prior equivalent coursework. Any waiver increases the number of electives required, by the number of credits waived.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PHARMACOLOGY AND PHYSIOLOGY

The PhD in pharmacology and physiology program centers on biological systems, including the interaction of molecules (drugs), function integration of organ systems and how cells regulate ionic metabolic fluxes under normal and pathophysiological states.

The program begins with interdisciplinary coursework in genes, cells and systems in biomedical sciences, professional development in scientific communication and science careers, and laboratory rotations offered through GW's Institute for Biomedical Sciences. After the first year of study, students work with their research advisor to complete remaining degree requirements, including the dissertation.

Program faculty are drawn largely from the GW School of Medicine and Health Sciences, including scientists from Children's Research Institute of Children's National Health System.

Students have access to extensive research facilities and libraries on campus and in the greater Washington, DC. This include the School of Medical and Health Sciences, GW's Gelman Library and Himmelfarb Health Sciences Library, Children's Research Institute, the National Institutes of Health, and numerous other research institutions.

The PhD in pharmacology and physiology is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext>).

The requirements for the Doctor of Philosophy program (<http://bulletin.gwu.edu/arts-sciences/#doctoralstext>).

72 credits, including required core and elective courses. Successful completion of a grant-style qualifier examination is required for advancement to candidacy. In addition, students perform full-time research in faculty laboratories for the duration of their program. In GW laboratories, they are hired as paid research assistants/associates in the third year and beyond of the program.

Students are advised to complete up to 48 credits comprising required interdisciplinary core courses, required pharmacology and physiology core courses, electives, and advanced readings and research in the first two years of PhD study. Upon successful completion of a grant-style qualifier, students register for up to 24 credits in dissertation research through completion and successful oral defense of a written dissertation.

Code	Title	Credits
Required courses*		
Interdisciplinary core		
BMSC 8210	Genes to Cells	
BMSC 8212	Systems Physiology	
BMSC 8215	Lab Rotations	
BMSC 8216	Scientific Writing, Presentation Skills, and Seminar Planning	
BMSC 8217	Ethics and Grant Writing	
BMSC 8218	Career Options in the Biomedical Sciences	
BMSC 8230	Molecular Basis of Human Disease	
BMSC 8235	Applied Biostatistics for Basic Research	
Pharmacology and physiology core		
PHAR 6205	Pharmacology	
PHAR 6116	Pharmacogenomics and Personalized Medicine	
PHAR 8211	Physiology	
PHAR 8214	Physiology and Pharmacology Seminar	
PHAR 8281	Molecular Pharmacology and Neurobiology of Excitable Tissues	

Electives

12 credits in elective courses selected from the following in consultation with graduate program advisor:

ANAT 6130 Clinically Oriented Human Embryology

ANAT 6150 Clinically Oriented Human Microscopic Anatomy

ANAT 6160 Human Clinical Neuroanatomy

ANAT 6182 Fundamentals of Translational Science

ANAT 6275 Advanced Studies in Translational Sciences

ANAT 6292 Projects in Anatomical Sciences: Introduction to Neuroradiology

BIOC 6240 Next Generation Sequencing

BIOC 6242 Bioscience Big Data Statistics

BIOC 8225 Metabolism

BIOC 8232 Molecular and Cellular Signaling

BMSC 8219 Writing the Grant-Style Qualifier

CANC 8221 The Basic Science of Oncology

CANC 8222 Molecular Oncology and Cancer Epigenetics

CANC 8223 Immunology and Immunotherapy of Cancer

GENO 6223 Bioinformatics

GENO 6236 Medical Genomics

GENO 6237 Proteomics and Biomarkers

GENO 8231 Introduction to Genomics, Proteomics, and Bioinformatics

MICR 8210 Infection and Immunity

MICR 8230 Molecular and Cellular Immunology

MICR 8270 Advanced Topics in Immunology

NRSC 8284 Foundations of Experimental Neuroscience I

NRSC 8285 Foundations of Experimental Neuroscience II

PHAR 6206 Advanced Pharmacology

PHAR 6208 Pharmacology in Disease Pathophysiology For Health Sciences Students

PHAR 6322 Advanced Professional and Communication Skills

PHAR 8998 Advanced Reading and Research

PUBH 6276 Public Health Microbiology

PUBH 6278 Public Health Virology

PUBH 6861 Public Health Genomics

Dissertation research

PHAR 8999 Dissertation research

*Required courses may be waived at the discretion of the graduate program director based on written documentation of prior equivalent coursework. Any waiver increases the number of electives required, by the number of credits waived.

BIOSTATISTICS

The Columbian College of Arts and Sciences (CCAS) offers the degrees of master of science and doctor of philosophy in the field of biostatistics. These degree programs are a collaboration between CCAS's Department of Statistics (<https://statistics.columbian.gwu.edu/>) and the Milken Institute School of Public Health's Department of Epidemiology (<http://publichealth.gwu.edu/departments/epidemiology-and-biostatistics/>) and Biostatistics Center (<http://www.bsc.gwu.edu/bsc/>).

Visit the Department of Epidemiology and Biostatistics website (<https://publichealth.gwu.edu/departments/epidemiology-and-biostatistics/>) for additional information.

GRADUATE

Programs are administered jointly by the Department of Statistics (<https://statistics.columbian.gwu.edu/>) in the Columbian College of Arts and Sciences and the Department of Epidemiology and Biostatistics (<http://publichealth.gwu.edu/departments/epidemiology-and-biostatistics/>) in the Milken Institute School of Public Health.

Master's program

- Master of Science in the field of biostatistics (p. 166)

Doctoral program

- Doctor of Philosophy in the field of biostatistics (p. 164)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOS 5099. Variable Topics. 1-99 Credits.

BIOS 6295. Reading and Research. 1-12 Credits.

May be repeated for credit.

BIOS 6998. Thesis Research. 3 Credits.

BIOS 6999. Thesis Research. 3 Credits.

BIOS 8998. Advanced Reading and Research. 1-12 Credits.

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BIOS 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIostatISTICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Required preparatory courses

Code	Title	Credits
Undergraduate course requirements (or equivalents to these GW courses) for admission consideration:		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	
MATH 2233	Multivariable Calculus	

Code	Title	Credits
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Additional course requirements* (or equivalents to these GW courses):

MATH 2184	Linear Algebra I	
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One of the following courses:

PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis	
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STAT 2183	Intermediate Statistics Lab/Packages	
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*Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72-credit graduation requirement nor are grades earned in additional courses reflected in the overall grade-point average.

Doctoral program requirements

The following requirements must be fulfilled: 72 credits, including a minimum of 51 credits in required and elective courses and a minimum of 12 credits in dissertation research; successful completion of the general and final examinations; and completion of the professional enhancement requirement. See below for additional information.

Code	Title	Credits
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Required

Statistics core		
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STAT 6201	Mathematical Statistics I	
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STAT 6202	Mathematical Statistics II (* Comprehensive Exam)	
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STAT 6210	Data Analysis	
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STAT 6213	Intermediate Probability and Stochastic Processes (* Comprehensive Exam)	
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PUBH 8365	Design of Medical Studies	
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PUBH 8366	Biostatistical Methods (* Comprehensive Exam)	
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STAT 8226	Advanced Biostatistical Methods	
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STAT 6227	Survival Analysis	
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STAT 8263	Advanced Statistical Theory I	
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STAT 6218	Linear Models	
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Public health core

PUBH 6003	Principles and Practices of Epidemiology
One of the following:	
PUBH 6247	Design of Health Studies
PUBH 6299	Topics in Epidemiology
PUBH 6007	Social and Behavioral Approaches to Public Health
or PUBH 6006	

Electives

9 credits in electives from the following approved lists of STAT and PUBH courses.

Approved statistics electives (at least 3 credits must be selected from among the first three courses below):

STAT 6231	Categorical Data Analysis
STAT 8262	Nonparametric Inference
STAT 6214	Applied Linear Models
STAT 6207	Methods of Statistical Computing I
STAT 6208	Methods of Statistical Computing II
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6242	Modern Regression Analysis
STAT 6287	Sample Surveys
STAT 6289	Topics in Statistics
STAT 8257	Probability
STAT 8258	Distribution Theory
STAT 8263	Advanced Statistical Theory I
STAT 8264	Advanced Statistical Theory II
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
STAT 8281	Advanced Time Series Analysis

STAT 8288	Topics in Sample Surveys
BIOS 8998	Advanced Reading and Research (see advisor)
Approved public health electives:	
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research (recommended)
PUBH 6244	Cancer Epidemiology
PUBH 6245	Infectious Disease Epidemiology
PUBH 8419	Measurement in Public Health and Health Services

Consulting

Consulting courses may be waived by the Biostatistics Program Director, based on written documentation of prior equivalent coursework or relevant work experience. Waiver of the consulting course increases the total number of elective to be taken by the number of consulting credits waived.

PUBH 8283	Doctoral Biostatistics Consulting Practicum
PUBH 6258	Principles of Biostatistical Consulting

Dissertation research

BIOS 8999	Dissertation Research (taken for 6 to 24 credits)
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General and final examinations

The general examination is given in two parts:

- Part I is the qualifying exam, a written comprehensive examination based on the course content of STAT 6201, STAT 6202 (administered by faculty of the Department of Statistics), and PUBH 8366 (administered by the faculty of the Department of Epidemiology and Biostatistics).
- The qualifying examination is given over a two-day period in the beginning of the fall semester of every academic year and consists of one four-hour theory exam and one two-hour biostatistical methods/applications exam. Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat the examination the following year. Failure on the second attempt results in termination from the PhD program.
- All examination questions focus on material that a person seeking a PhD in biostatistics is expected to know, regardless of subsequent specialization. The examination encompasses material in core mathematical statistics –STAT 6201 and STAT 6202–and biostatistical methods

courses—PUBH 8366—in the PhD program in biostatistics. Specifically,

1. The theory portion of the exam—STAT 6201 and STAT 6202—is based on the first 10 chapters of Casella G and Berger RL (1990). *Statistical Inference*. Second Edition, Duxbury Press.
 2. The biostatistical methods portion of the exam—PUBH 8366—is based on chapters 1 to 8 of Lachin J.M. (2010) *Biostatistical Methods: The Assessment of Relative Risks*, 2nd Edition, Wiley.
- Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student makes an oral presentation of their proposal to the Committee. The Committee determines the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation-level research.

Upon successful completion of the required coursework and both parts of the general examination, the candidate is generally recommended to the Associate Dean for Graduate Affairs of the Columbian College of Arts and Sciences (CCAS) for promotion to PhD candidacy—the dissertation research. A candidate must file an approved dissertation research plan with CCAS before being admitted to PhD candidacy. Prior to completion of the general examination, a student may register for at most 6 credits of BIOS 8999.

Consult with the Biostatistics Program Director or academic advisor for dissertation guidelines.

Professional enhancement requirement: 8 hours

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student's specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at the Milken Institute School of Public Health (SPH) and in the metropolitan Washington, DC, area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer's Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through the department or the biostatistics academic advisor.

Students must submit documentation of professional enhancement activities to the biostatistics academic advisor, which includes a **prior** approval, a description of the program agenda, and proof of attendance before applying for graduation.

MASTER OF SCIENCE IN THE FIELD OF BIOSTATISTICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

33 credits, including 27 credits in required courses and 6 credits in elective courses, and successful completion of a master's comprehensive examination.

Admission Considerations

The courses listed below (or equivalents) are prerequisites for admission consideration and must appear on the student's transcript. Students may apply to the program only after they have fulfilled this requirement:

Code	Title	Credits
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	

Applicants lacking the courses listed below (or equivalents) are considered for admission; however, if admitted, the student is required to complete these courses within two semesters of matriculation in the program. Credit earned in these courses does not count toward the 33 credits required for the degree and grades earned are not reflected in the overall grade-point average.

Code	Title	Credits
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	

One of the following:

PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis *	
STAT 2183	Intermediate Statistics Lab/Packages	

*Previously PUBH 6249.

Degree Requirements

Code	Title	Credits
Required statistics courses		
PUBH 6266	Biostatistical Methods	
or PUBH 8877	Generalized Linear Models in Biostatistics	
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
STAT 6210	Data Analysis	
STAT 6227	Survival Analysis	
STAT 6255	Clinical Trials	
or PUBH 6866	Principles of Clinical Trials	
Public health courses		
PUBH 6003	Principles and Practices of Epidemiology	
2 credits (two courses) selected from the following:		
PUBH 6262	Introduction to Geographic Information Systems	
PUBH 6263	Advanced GIS	
PUBH 6850	Introduction to SAS for Public Health Research	
PUBH 6851	Introduction to R for Public Health Research	
PUBH 6852	Introduction to Python for Public Health Research	
PUBH 6856	Advanced SAS for Public Health Research	
2 additional credits in any PUBH course(s) in the 6800 range.		
Approved Electives		
6 credits in elective courses selected from the following:		
PUBH 6854	Applied Computing in Health Data Science	
PUBH 6859	High Performance and Cloud Computing	
PUBH 6860	Principles of Bioinformatics	
PUBH 6861	Public Health Genomics	
PUBH 6862	Applied Linear Regression Analysis for Public Health Research	

PUBH 6863	Applied Meta-Analysis
PUBH 6865	Applied Categorical Data Analysis
PUBH 6879	Propensity Score Methods for Causal Inference in Observational Studies
PUBH 6884	Bioinformatics Algorithms and Data Structures
PUBH 6886	Statistical and Machine Learning for Public Health Research
PUBH 6887	Applied Longitudinal Data Analysis for Public Health Research
STAT 3187	Introduction to Sampling
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Statistics Inference
STAT 6197	Fundamentals of SAS Programming for Data Management
STAT 6214	Applied Linear Models
STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6225	Longitudinal Data Analysis
STAT 6231	Categorical Data Analysis
STAT 6240	Statistical Data Mining
STAT 6242	Modern Regression Analysis
STAT 6252	Statistical Methods in Bioinformatics and Computational Biology
STAT 6254	Statistical Genetics
STAT 6287	Sample Surveys
STAT 6289	Topics in Statistics
STAT 8226	Advanced Biostatistical Methods
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8281	Advanced Time Series Analysis
STAT 8288	Topics in Sample Surveys

Consulting

PUBH 6883	Biostatistics Consulting Practicum
PUBH 6869	Principles of Biostatistical Consulting

Master's Comprehensive Examination

Students must successfully complete a master's comprehensive examination, a written examination in the field of biostatistics and is based on the material covered in PUBH 6266 or PUBH 8877. The examination is administered by the faculty of the Department of Biostatistics and Bioinformatics in the Milken Institute School of Public Health.

Visit the program website (<https://publichealth.gwu.edu/programs/biostatistics-ms/>) for additional information.

CHEMISTRY

Part of the Columbian College of Arts and Sciences, the Department of Chemistry has a history that traces back to the very founding of the University. Bridging the sciences of biology, geology, and physics, chemistry is the central science that studies the composition, structure, properties, and behavior of matter at a molecular level. Students and faculty engage in a collaborative setting to address research problems of contemporary importance, focusing on biomolecular chemistry, energy and the environment, and materials chemistry.

Visit the Department of Chemistry website (<https://chemistry.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in chemistry (p. 173)
- Bachelor of Science with a major in chemistry (p. 174)

Combined programs

- Dual Bachelor of Science with a major in chemistry/Master of Forensic Sciences with a concentration in forensic chemistry (p. 173)
- Dual Bachelor of Science with a major in chemistry/Master of Science in the field of environmental and green chemistry (p. 181)

Minor

- Minor in chemistry (p. 183)

GRADUATE

Master's programs

- Master of Science in the field of chemistry (p. 181)
- Master of Science in the field of environmental and green chemistry (p. 182) (p. 181)

Doctoral program

- Doctor of Philosophy in the field of chemistry (p. 180)

FACULTY

Professors C.L. Cahill (*Chair*), C.S. Dowd, S. Licht, J.H. Miller, M. Schofield (*Research*), A. Vertes

Professor Emeritus M. King

Associate Professors S. Boyes, M.A. Massiah, V. Sadtschenko, A.M. Voutchkova, M.J. Wagner, M.G. Zysmilich (*Deputy Chair*)

Assistant Professors C. Besson, G. Clements (*Teaching*), L. Hao, J. Kostal, L.M. McClary, J. Meisel, E. Rodriguez,

Visiting Assistant Professor T. Razunguzwa

Professorial Lecturers E. Libelo

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHEM 1000. Dean's Seminar. 3 Credits.

Contemporary topics in chemistry.

CHEM 1003. Contemporary Science for Nonscience Majors. 3 Credits.

Contemporary topics in physical, biological, and medical science. CHEM 1003 is not a prerequisite to CHEM 1004. Laboratory fee.

CHEM 1004. Contemporary Science for Nonscience Majors. 3 Credits.

Continuation of CHEM 1003. Contemporary topics in physical, biological, and medical science. CHEM 1003 is not a prerequisite to CHEM 1004. Laboratory fee.

CHEM 1099. Variable Topics. 1-36 Credits.**CHEM 1110. Fundamentals of Chemistry. 2 Credits.**

Central concepts of chemistry including the metric system, unit conversions, classification of matter, periodicity, atomic structure, chemical bonding, chemical reactions, stoichiometry, and chemical equilibrium. Emphasis on mathematical and analytical skills required for effective problem solving. Restricted to students who successfully completed high school algebra prior to matriculation and have completed the ALEKS chemistry preparatory course at GW without achieving at least 95 percent mastery.

CHEM 1111. General Chemistry I. 4 Credits.

Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Restricted to students who have successfully completed high school algebra prior to matriculation and have completed the ALEKS chemistry preparatory course at GW and achieved at least 95 percent mastery.

CHEM 1112. General Chemistry II. 4 Credits.

Continuation of CHEM 1111. Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Laboratory fee. Prerequisite: CHEM 1111.

CHEM 1113. General Chemistry for Engineers. 4 Credits.

Basic quantitative chemistry concepts, atomic and molecular structure, chemical kinetics, chemical equilibrium, acid-base chemistry, electrochemistry, thermodynamics and nuclear chemistry. Restricted to Students in applied science and technology, biomedical engineering, environmental engineering, or pre-med track should take CHEM 1111 and CHEM 1112 in lieu of this course. Recommended background: High-school algebra and at least 95 percent (learned and mastered) in the department's ALEKS chemistry prep course.

CHEM 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

CHEM 2010. History of Chemistry. 2,3 Credits.**CHEM 2085. Environmental Chemistry. 3 Credits.**

Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations.

CHEM 2118W. Practicing Science Communications. 3 Credits.

Development of science communications methods through frequent practice with instructor and peer feedback: presentations, video, policy briefings, editorial, and short review articles. Tips for different audience types, from experts to public. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHEM 2122. Introductory Quantitative Analysis. 3 Credits.

Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. CHEM 2123 may be taken as a corequisite. Prerequisite: CHEM 1112.

CHEM 2123. Introductory Quantitative Analysis Laboratory. 1 Credit.

Laboratory complement to CHEM 2122. Laboratory fee. CHEM 2122 may be taken as a corequisite. Prerequisite: CHEM 2122.

CHEM 2123W. Introductory Quantitative Analysis Laboratory. 1 Credit.

Laboratory complement to CHEM 2122. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. CHEM 2122 may be taken as a corequisite. Prerequisite: CHEM 2122.

CHEM 2151. Organic Chemistry I. 3 Credits.

Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite: CHEM 1112.

CHEM 2152. Organic Chemistry II. 3 Credits.

Continuation of CHEM 2151. Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite: CHEM 2151.

CHEM 2153. Organic Chemistry Laboratory I. 1 Credit.

Laboratory component of CHEM 2151. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. CHEM 2151 may be taken as a corequisite. Laboratory fee. Prerequisite: CHEM 2151.

CHEM 2154. Organic Chemistry Laboratory II. 1 Credit.

Continuation of CHEM 2153. Laboratory component of CHEM 2152. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. CHEM 2152 may be taken as a corequisite. Laboratory fee. Prerequisites: CHEM 2152 and CHEM 2153.

CHEM 3099. Variable Topics. 1-12 Credits.

CHEM 3140. Geochemistry. 3 Credits.

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Prerequisites: GEOL 1001 or GEOL 1005; and CHEM 1111 and CHEM 1112. Same As: GEOL 3140.

CHEM 3165. Biochemistry I. 3 Credits.

Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Credit toward the degree cannot be earned for both CHEM 3165 and BIOC 3261 or BISC 3261. Prerequisites: CHEM 2151 and CHEM 2152. Same As: BISC 3165. Credit cannot be earned for this course and BIOC 3261, BISC 3261.

CHEM 3166. Biochemistry II. 3 Credits.

Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Credit toward the degree cannot be earned for both CHEM 3166 and BIOC 3263/BISC 3263. Prerequisite: CHEM 3165.

CHEM 3166W. Biochemistry II. 3 Credits.

Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit toward the degree cannot be earned for both CHEM 3166W and BIOC 3263/BISC 3263. Prerequisite: CHEM 3165.

CHEM 3170. Introduction to Physical Chemistry. 3 Credits.

Thermodynamics, chemical and physical equilibria, kinetics, and spectroscopy. Examples taken from biological systems. May not be taken for credit by students who have received credit for CHEM 3171 and CHEM 3172 or an equivalent course. Restricted to non-chemistry majors. Prerequisites: CHEM 1111 and CHEM 1112; and MATH 1231; and PHYS 1012 or PHYS 1022 or PHYS 1026; or permission of the instructor. Credit cannot be earned for this course and CHEM 3171, CHEM 3172.

CHEM 3171. Physical Chemistry I. 3 Credits.

Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisites: CHEM 1112, MATH 1231 and PHYS 1022; or permission of the instructor.

CHEM 3172. Physical Chemistry II. 3 Credits.

Continuation of CHEM 3171. Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 3171.

CHEM 3173. Physical Chemistry Laboratory. 2 Credits.

Laboratory complement to CHEM 3171 and CHEM 3172. Exploration of molecular structure and bonding as revealed through observation. CHEM 2123 and CHEM 3171 may be taken as a corequisite. Laboratory fee. Prerequisites: CHEM 2123 and CHEM 3171.

CHEM 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3261/ BISC 3261. Prerequisite: CHEM 3165 or BIOC 3261/ BISC 3261. Laboratory fee.

CHEM 3263W. Special Topics in Biochemistry. 2 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHEM 3564. Lipid Biotechnology. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: BIOC 3261 or BISC 3261 or CHEM 3165. (Same as BIOC 3564).

CHEM 4113. Chemical Instrumentation. 3 Credits.

Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: CHEM 3172 and CHEM 4122. Laboratory fee.

CHEM 4122. Instrumental Analytical Chemistry. 3 Credits.

Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and electroanalysis. Corequisite: CHEM 4123. CHEM 3171 may be taken as a corequisite. Prerequisites: CHEM 3171 or permission of the instructor.

CHEM 4123. Instrumental Analytical Chemistry Laboratory. 2 Credits.

Laboratory complement to CHEM 4122. CHEM 3171 and CHEM 4122 may be taken as a corequisite. Laboratory fee. Prerequisites: CHEM 3171 and CHEM 4122.

CHEM 4134. Inorganic Chemistry. 3 Credits.

Periodic trends and structure and reactivity of transitional metal complexes. Prerequisite: CHEM 2122.

CHEM 4195. Undergraduate Research. 1-3 Credits.

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 4195W. Undergraduate Research. 1-3 Credits.

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee.

CHEM 5099. Variable Topics. 1-99 Credits.**CHEM 6221. Spectrochemical Analysis. 3 Credits.**

Theory and application of recent spectrometric methods of analysis, including advances in optimization techniques, optical instrumentation, atomic spectrometry, laser-based analytical techniques, X-ray methods, and surface analysis techniques. Prerequisite: CHEM 4122.

CHEM 6222. Biomedical Mass Spectrometry. 3 Credits.

Principles, instrumentation, methods, and applications of mass spectrometry; selected state-of-the-art methods demonstrate basic principles to show how new methods of analysis are developed; typical applications highlight solutions of biomedical problems, including proteomics and metabolomics. Prerequisite: CHEM 4122.

CHEM 6233. Organometallic Chemistry and Catalysis. 3 Credits.

Transition metal organometallic chemistry, including structure and bonding, ligands, their reactivity and application to catalysis. Students design and synthesize organometallic complexes applicable to organic synthesis and industrial catalysis and evaluate improvement in efficiency and environmental impact. Prerequisites: CHEM 2151, CHEM 2152 and CHEM 4134. Recommended background: prior completion of college-level organic and inorganic chemistry.

CHEM 6235. Advanced Inorganic Chemistry I. 3 Credits.

Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisites: CHEM 3172 and CHEM 4134.

CHEM 6236. Advanced Inorganic Chemistry II. 3 Credits.

Continuation of CHEM 6235. Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisites: CHEM 3172 and CHEM 4134.

CHEM 6238. Chemistry of Inorganic Materials. 3 Credits.

Synthesis, structure, and properties of materials such as ceramics, superconductors, ionic conductors, nanomaterials, and magnetic, optical, and electronic materials. Emphasis on traditional and low-temperature routes. Prerequisites: CHEM 3171 and CHEM 3172.

CHEM 6251. Advanced Organic Chemistry I. 3 Credits.

Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 2152.

CHEM 6252. Advanced Organic Chemistry II. 3 Credits.

Continuation of CHEM 6251. Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 6251.

CHEM 6256. Medicinal Chemistry. 3 Credits.

Introduction to topics in drug design and discovery. Fundamental mechanisms of drug action, and techniques of drug design and drug development. Prerequisites: CHEM 2151 and CHEM 2152.

CHEM 6257. Physical-Organic Chemistry. 3 Credits.

The transition state theory of chemical kinetics, applications to reaction mechanisms; kinetic isotope effects, linear-free energy relationships, concentrated and "super" acids, Woodward-Hoffman rules, free radical reactions. Prerequisites: CHEM 6251 or permission of the instructor.

CHEM 6259. Polymer Chemistry. 3 Credits.

A study of the preparation, properties, and structure of macromolecules. Prerequisites: CHEM 2152 and CHEM 3170; or CHEM 3171; or permission of the instructor.

CHEM 6273. Chemical Thermodynamics. 3 Credits.

Application of thermodynamics to chemical problems. Emphasis on statistical calculation of thermodynamic properties. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6277. Chemical Bonding. 3 Credits.

Quantum mechanics, approximate methods, electron spin, Pauli principle, atomic and molecular structure. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6278. Molecular Spectroscopy. 3 Credits.

Applications of quantum mechanics and group theory to the interpretation of electronic, vibrational, rotational, and magnetic resonance spectroscopy. Prerequisite: CHEM 6277.

CHEM 6280. Energy and the Environment. 3 Credits.

Fundamentals of energy conversion in thermomechanical, thermochemical, electrochemical, and photoelectric processes in existing and future power and transportation systems, with emphasis on efficiency, environmental impact, and performance.

CHEM 6281. Environmental Chemistry: Air, Water, and Soil. 3 Credits.

Survey of the behavior, movement and impact of natural and man-made chemicals in all layers of the environment in the context of the atmosphere, hydrosphere, and lithosphere; the effects of acid rain, sewage treatment, ozone destruction, anthropogenic climate change, air pollution, and eutrophication.

CHEM 6282. Green Industrial Chemistry. 3 Credits.

Introduction to the basic design principles for greener chemical technologies; widely used practices, including catalysis, use of renewable starting materials, minimization of energy inputs, and use of greener solvents.

CHEM 6283. Chemical Toxicology and Rational Design of Safer Chemicals. 3 Credits.

Introduction to the basic tools and paradigms of toxicology in the context of chemical design for minimizing potential toxicity of commercial chemicals; computational methods for prediction of bioavailability, reactivity, bioaccumulation and different types of toxicity; application of in silico methods to the rational re-design of functional and safer chemicals.

CHEM 6284. Environmental Analytical Chemistry. 3 Credits.

Advanced analytical methodology for environmental assessment; analytical instrumentation, techniques for remote measurements, determination of trace atmospheric constituents of anthropogenic and natural origin, measurement uncertainty analysis, detection and identification of organic and inorganic pollutants in air, water, soil and biota, and the determination of heavy metals and radionuclides in the environment.

CHEM 6298. Capstone Seminar in Environmental and Green Chemistry. 3 Credits.

Group projects carried out with an external partner or client—such as a government agency, nonprofit group, or chemistry laboratory research project—that identify and solve real world scientific problems related to environmental and green chemistry.

CHEM 6314. Fundamental-Computational Chemistry. 3 Credits.

CHEM 6315. Computational Chem-Biomolecule. 3 Credits.

CHEM 6318. Science Communications in Practice. 3 Credits.

Communicating science beyond one's immediate peers can prove challenging. This course will provide examples and plenty of opportunities for students to develop (science) communications skills, including presenting to non-scientist audiences.

CHEM 6320. Selected Topics in Analytical Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of analytical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6330. Selected Topics in Inorganic Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of inorganic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6350. Selected Topics in Organic Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in organic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6358. Synthesis and Structure Determination in Organic Chemistry. 3 Credits.

The design of syntheses for complex organic molecules; survey of modern synthetic methods, including asymmetric induction; spectroscopic methods of structure determination. Prerequisites: CHEM 6251 or permission of the instructor.

CHEM 6370. Selected Topics in Physical Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of physical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6371. Physical Chemistry I. 1-3 Credits.

Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Students enrolled at the graduate level are expected to do additional work. Permission of the department required prior to enrollment.

CHEM 6372. Physical Chemistry II. 1-3 Credits.

Continuation of CHEM 6371. Basic concepts of quantum chemistry and molecular spectroscopy; application of modern physical chemistry theory to exploration of a wide range of physical properties for open and closed chemical systems in the gas and condensed phases. Restricted to students with permission of the department. Prerequisite: CHEM 6371. Same As: CHEM 3172.

CHEM 6390. Selected Topics in Chemistry. 3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6395. Research. 1-12 Credits.

Limited to master's degree candidates. Survey of a topic approved by departmental staff and resulting in a written report and presentation of a seminar. Open to qualified students with advanced training. May be repeated for credit.

CHEM 6998. Thesis Research. 1-9 Credits.

Limited to students in the master's degree program.

CHEM 6999. Thesis Research. 3 Credits.

Limited to students in the Master's Degree program.

CHEM 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

CHEM 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY/ MASTER OF FORENSIC SCIENCES WITH A CONCENTRATION IN FORENSIC CHEMISTRY

The Department of Chemistry offers a dual bachelor of science with a major in chemistry (p. 174) and master of forensic sciences with a concentration in forensic chemistry (p. 275) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<http://chemistry.columbian.gwu.edu/bs-chemistrymfs-concentration-forensic-chemistry/>) for additional information.

BACHELOR OF ARTS WITH A MAJOR IN CHEMISTRY

REQUIREMENTS

The Department of Chemistry offers the bachelor of arts degree, which is designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical. It should meet the needs of students preparing to enter the fields of medicine, law, dentistry, and business, among others.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77) and the required curriculum, below:

Code	Title	Credits
Prerequisite courses for the bachelor of arts degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	

MATH 1231	Single-Variable Calculus I *
MATH 1232	Single-Variable Calculus II
PHYS 1021 & PHYS 1022	University Physics I and University Physics II
or PHYS 1025	University Physics I with Biological Applications

*Or MATH 1220 (<http://bulletin.gwu.edu/search/?P=MATH%201220>) Calculus with Precalculus I and MATH 1221 (<http://bulletin.gwu.edu/search/?P=MATH%201221>) Calculus with Precalculus II

Code	Title	Credits
Required courses:		
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	
CHEM 3173	Physical Chemistry Laboratory	
CHEM 3165	Biochemistry I	
CHEM 4122	Instrumental Analytical Chemistry	
CHEM 4134	Inorganic Chemistry	

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
MATH 1231*	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151 CHEM 2153	Organic Chemistry I Organic Chemistry Laboratory I
CHEM 2152 CHEM 2154	Organic Chemistry II Organic Chemistry Laboratory II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II

MATH 1232 (if not taken in the first year) Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171	Physical Chemistry I
CHEM 3172	Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165 (if not taken in the junior year)	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4134 (if not taken in the junior year)	Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take CHEM 4195 Undergraduate Research or CHEM 4195W Undergraduate Research for at least 3 credits over two semesters. In addition to the final report for CHEM 4195 or CHEM 4195W, a poster or oral presentation is required.

BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY

OPTION 1

The Department of Chemistry offers four options for bachelor of science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 1 provides considerable concentration in chemistry while permitting a wider selection of electives. It should meet the needs of students preparing to enter the fields of medicine, law, dentistry, and business, among others.

The following requirements must be fulfilled: The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77) and the required curriculum.

Code	Title	Credits
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Prerequisite courses for the bachelor of science degree:

CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231 or MATH 1220 & MATH 1221	Single-Variable Calculus I Calculus with Precalculus I and Calculus with Precalculus II	
MATH 1232	Single-Variable Calculus II	
PHYS 1021 or PHYS 1025	University Physics I University Physics I with Biological Applications	
PHYS 1022 or PHYS 1026	University Physics II University Physics II with Biological Applications	
Two additional semesters of approved coursework in the natural sciences or mathematics, such as one of the following:		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
GEOL 1001 or GEOL 1005	Physical Geology * Environmental Geology	
GEOL 1002	Historical Geology	

*Credit toward the degree cannot be earned for both
GEOL 1001 and GEOL 1005.

Code	Title	Credits
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Required courses:

CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I	
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II	
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II	

CHEM 3173	Physical Chemistry Laboratory
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CHEM 3165	Biochemistry I
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CHEM 4122	Instrumental Analytical Chemistry
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CHEM 4134	Inorganic Chemistry
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Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
MATH 1231*	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171	Physical Chemistry I
CHEM 3172	Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165 (if not taken in the junior year)	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4134 (if not taken in the junior year)	Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I and MATH 1221
Calculus with Precalculus II

OPTION 2

The Department of Chemistry offers four options for bachelor
of science degree, all designed to give students a broad

background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 2 is for students preparing for graduate study in chemistry or those planning to enter the chemical profession and wishing to be certified by the American Chemical Society as having met the minimum requirements for professional training.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77) and the required curriculum.

Code	Title	Credits
Prerequisite courses for the bachelor of science degree:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231	Single-Variable Calculus I	
or MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II	
MATH 1232	Single-Variable Calculus II	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1026	University Physics II with Biological Applications	
Two additional semesters of approved coursework in the natural sciences or mathematics, such as one of the following:		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
GEOL 1001	Physical Geology *	
or GEOL 1005	Environmental Geology	
GEOL 1002	Historical Geology	

*Credit toward the degree cannot be earned for both GEOL 1001 and GEOL 1005.

Code	Title	Credits
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Required courses:

CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II
CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory
CHEM 3165	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134	Inorganic Chemistry
CHEM 4195	Undergraduate Research (Research for credit, either CHEM 4195 or CHEM 4195W, may begin as early as second year)
or CHEM 4195W	Undergraduate Research

A course in a structured computer programming language is recommended

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
MATH 1231 *	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
PHYS 1021 or 1025	University Physics I
PHYS 1022 or 1026	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171	Physical Chemistry I
CHEM 3172	Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134 (if not taken in the junior year)	Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II.

Students are encouraged to consider 6000-level CHEM courses in consultation with their advisor.

OPTION 3

The Department of Chemistry offers four options for bachelor of science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 3 prepares students to meet the needs of federal and state forensic sciences laboratories.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77) and the required curriculum.

Code	Title	Credits
Prerequisite courses		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
CHEM 2122 & CHEM 2123W	Introductory Quantitative Analysis and Introductory Quantitative Analysis Laboratory	
MATH 1231	Single-Variable Calculus I	
or MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II	
MATH 1232	Single-Variable Calculus II	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	

PHYS 1022	University Physics II
or PHYS 1026	University Physics II with Biological Applications

Code	Title	Credits
Required courses		

CHEM 2151 & CHEM 2153 Organic Chemistry I and Organic Chemistry Laboratory I

CHEM 2152 & CHEM 2154 Organic Chemistry II and Organic Chemistry Laboratory II

CHEM 3171 & CHEM 3172 Physical Chemistry I and Physical Chemistry II

CHEM 3173 Physical Chemistry Laboratory

CHEM 3165 Biochemistry I

CHEM 4122 Instrumental Analytical Chemistry

CHEM 4134 Inorganic Chemistry

BISC 1111 Introductory Biology: Cells and Molecules ‡

BISC 1112 Introductory Biology: The Biology of Organisms

Choose any four 6000-level FORS courses in consultation with a Forensic Sciences advisor. Students may begin taking certain FORS courses after completion of CHEM 2152.

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
MATH 1231*	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
BISC 1111 (May be taken in second year instead)	Introductory Biology: Cells and Molecules
BISC 1112 (May be taken in second year instead)	Introductory Biology: The Biology of Organisms

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II

CHEM 2154	Organic Chemistry Laboratory II
PHYS 1021 or 1025 (May be taken in first year instead)	University Physics I
PHYS 1022 or 1026 (May be taken in first year instead)	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123	Introductory Quantitative Analysis Laboratory
CHEM 3171	Physical Chemistry I
CHEM 3172	Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory

Fourth Year

CHEM 3165	Biochemistry I
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory

CHEM 4134 (if not taken in the junior year) Inorganic Chemistry

* Or MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II

OPTION 4

The Department of Chemistry offers four options for bachelor of science degree, all designed to give students a broad background in the basic divisions of chemistry: analytical, biochemistry, inorganic, organic, and physical.

Option 4 includes additional courses in biochemistry and fulfills the American Chemical Society requirement for a certified degree program in chemistry with a biochemistry option.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77) and the required curriculum.

Code	Title	Credits
Prerequisite courses for the bachelor of science degree:		
BISC 1111	Introductory Biology: Cells and Molecules ‡	
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1111	General Chemistry I	

CHEM 1112	General Chemistry II
CHEM 2122	Introductory Quantitative Analysis
CHEM 2123W	Introductory Quantitative Analysis Laboratory

MATH 1231	Single-Variable Calculus I
or MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II

MATH 1232	Single-Variable Calculus II
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PHYS 1021	University Physics I
or PHYS 1025	University Physics I with Biological Applications

PHYS 1022	University Physics II
or PHYS 1026	University Physics II with Biological Applications

Code	Title	Credits
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Required courses:

CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I
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CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II
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CHEM 3171 & CHEM 3172	Physical Chemistry I and Physical Chemistry II
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CHEM 3173	Physical Chemistry Laboratory
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CHEM 3165 & CHEM 3166	Biochemistry I and Biochemistry II (BIOC/BISC equivalents may be substituted)
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CHEM 3262	Biochemistry Laboratory (BIOC/BISC equivalent may be substituted)
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CHEM 4122	Instrumental Analytical Chemistry
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CHEM 4123	Instrumental Analytical Chemistry Laboratory
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CHEM 4134	Inorganic Chemistry
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CHEM 4195	Undergraduate Research (Research for credit, either CHEM 4195 or CHEM 4195W, may begin as early as second year)
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or CHEM 4195W Undergraduate Research

The following are recommended:

BISC 2202	Cell Biology
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BISC 2207	Genetics
BISC 2322	Human Physiology

Suggested Program of Study:

Students should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic program.

First Year

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
MATH 1231*	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
BISC 1111 (May be taken in second year instead)	Introductory Biology: Cells and Molecules
BISC 1112 (May be taken in second year instead)	Introductory Biology: The Biology of Organisms

Second Year

CHEM 2122	Introductory Quantitative Analysis
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
PHYS 1021 or 1025 (May be taken in first year instead)	University Physics I
PHYS 1022 or 1026 (May be taken in first year instead)	University Physics II
MATH 1232 (if not taken in the first year)	Single-Variable Calculus II

Third Year

CHEM 2123W	Introductory Quantitative Analysis Laboratory
CHEM 3171	Physical Chemistry I
CHEM 3172	Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory
CHEM 3165	Biochemistry I
CHEM 3166W	Biochemistry II

Fourth Year

CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134 (if not taken in the junior year)	Inorganic Chemistry
CHEM 3262	Biochemistry Laboratory

* Or MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II

Students are encouraged to consider 6000-level CHEM courses in consultation with their advisor.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.

- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement.
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take CHEM 4195 or CHEM 4195W for at least 3 credits over two semesters. In addition to the final report required for CHEM 4195 or CHEM 4195W, a poster or oral presentation is required.

DOCTOR OF PHILOSOPHY IN THE FIELD OF CHEMISTRY

Housed in the Columbian College of Arts and Sciences, GW's chemistry program fosters active learning through a research-based curriculum.

Beginning with advanced coursework and training in the discipline as a whole and one or more selected subdisciplines, our award-winning graduate students engage in cutting-edge research alongside expert faculty. Research areas include proteomics, and bioanalytical methods development, synthetic medicinal chemistry and drug design, combustion, battery chemistry and renewable energy sources, laser and molecular spectroscopies, nano- and biomaterials, modeling, coordination chemistry and novel inorganic framework structures.

The PhD program is designed to develop students who are able to plan and carry out original research in analytical, biochemical, inorganic, materials and organic or physical chemistry. Studies begin with core courses in focus areas, with students quickly moving on to join research groups that match their interests. Opportunities abound for research presentations, publications and award achievement. Collaborations with colleagues in medicine, engineering and nearby federal research laboratories—including the National Institutes of Health, Naval Research Laboratory and the National

Institute of Standards and Technology—provide rich research experiences.

The PhD program is a designated STEM program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

72 credits in a program of study developed in consultation with the doctoral committee.

Students develop their program of studies in consultation with their doctoral committee, subject to the approval of the department's Graduate Affairs Committee. The program of studies must include coursework in a minimum of five graduate-level courses; at least three of the courses must be core courses as defined in the department's Guide for Graduate Students; at least three must be offered by the Chemistry Department. These course requirements cannot be fulfilled by achievement on placement exams. At least two graduate-level courses must be taken outside the student's subdiscipline and in at least two other subdisciplines/disciplines. Equivalent courses offered by another university may be substituted at the discretion of the Graduate Affairs Committee. Students must pass a cumulative examination system and an oral defense of the doctoral research plan.

Research fields

- Analytical chemistry—analytical neuroscience, analytical spectroscopy, biomedical analysis, chemical imaging, chemical instrumentation, chemical separations, electrochemical analysis, electrospray ionization, lab-on-a-chip devices, high-performance liquid chromatography (LC), laser-material interactions, mass spectrometry, nanophotonic structures, nmr spectroscopy, post-translational modifications, proteomics and metabolomics, single cell analysis;
- Biochemistry—biological sensing via nanoparticles, biomaterials, biomolecular analysis, biophysical topics, enzymology, lipids chemistry, proteomics and metabolomics, enzyme expression and inhibition, structural biology;
- Inorganic (materials) chemistry—battery chemistry, coordination chemistry, f-element chemistry, green chemistry, hydrothermal chemistry, mineral surface geochemistry, magnetochemistry, molecular spintronics, nanoscale and nanostructured materials, organometallic chemistry, small-molecule crystallography, solid-state materials;
- Organic chemistry—biomaterials and lipids, catalysis, computational docking and ligand design, green chemistry,

heterocyclic chemistry, molecules of biological interest, synthesis;

- Physical chemistry—CO₂ removal, combustion chemistry, elemental and molecular spectroscopies, fuel cells, laser analytics, renewable energy conversion, solar chemical syntheses, surface chemistry, theoretical chemistry, thermochemical energy cycles.

PhD students in chemistry may substitute up to 12 hours of Dissertation Research in the form of coursework jointly approved by the Chemistry Department and the Forensic Sciences Department, the Environmental Resource Policy Program, or the International Science and Technology Policy program. The 12 hours may be selected from specified courses offered by Forensic Sciences, Information Systems and Technology Management, Political Science, Public Policy and Public Administration, and the Elliott School of International Affairs.

Note: All entering students in graduate chemistry programs are required to take the American Chemical Society Graduate Level Placement Examinations, given by the Department of Chemistry, prior to matriculation. The four placement examinations (in the disciplines of analytical, organic, inorganic, and physical chemistry) are designed to cover the subject matter in the disciplines generally taught in undergraduate programs preparatory for graduate work in chemistry, and the results are used by the department to advise the individual student in planning a program of courses appropriate to the student's background. All graduate students are required to participate in the seminar and colloquium programs. Upon consultation with course instructors, specific course prerequisites may be waived.

With permission, a limited number of upper-level undergraduate courses in the department may be taken for graduate credit; additional coursework is required. See the Undergraduate programs for course listings.

Visit the program website (<https://chemistry.columbian.gwu.edu/phd-chemistry/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN CHEMISTRY AND MASTER OF SCIENCE IN THE FIELD OF ENVIRONMENTAL AND GREEN CHEMISTRY

The Department of Chemistry offers a dual bachelor of science with a major in chemistry (p. 173) and master of science in the field of environmental and green chemistry (p. 182) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the

master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should consult the Department of Chemistry in their sophomore year. Visit the program website (<https://chemistry.columbian.gwu.edu/ms-environmental-and-green-chemistry/>) for additional information.

MASTER OF SCIENCE IN THE FIELD OF CHEMISTRY

GW's graduate chemistry program fosters active learning through a research-based curriculum. Beginning with advanced coursework and training in the discipline as a whole and one or more selected subdisciplines, our award-winning graduate students engage in cutting-edge research alongside expert faculty. Research areas include proteomics, and bioanalytical methods development, synthetic medicinal chemistry and drug design, combustion, battery chemistry and renewable energy sources, laser and molecular spectroscopies, nano- and biomaterials, modeling, coordination chemistry and novel inorganic framework structures.

The MS program offers thesis and non-thesis tracks to prepare individuals for distinctive career or professional paths. All students take core courses and comprehensive examinations in the fields of analytical, inorganic, organic and physical chemistry.

The MS is a STEM designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

Thesis option—30 credits of approved courses are required, including CHEM 6998 Thesis Research—CHEM 6999 Thesis Research, which may be in analytical, inorganic, organic, or physical chemistry.

Nonthesis option—36 credits of approved courses are required, including CHEM 6395 Research. Up to 9 credits in other departments related to the student's area of interest (e.g., Forensic Sciences) may be included in the program, subject to the approval of the Department of Chemistry. Students who are or will be employed in organizations dealing with science and technology policy programs may select from specified courses offered by Information Systems and Technology Management, Political Science, Public Policy and Public Administration, and the Elliott School of International Affairs.

Coursework must include a minimum of five graduate-level courses; at least four of these courses must be core courses as defined in the department's Guide for Graduate Students; at

least three must be offered by the Department of Chemistry. At least two graduate-level courses must be taken outside of the student's subdiscipline and in at least two other subdisciplines/disciplines. Candidates are required to pass a master's comprehensive examination as described in the department's Guide for Graduate Students.

Note: All entering students in graduate chemistry programs are required to take the American Chemical Society graduate level placement examinations, given by the Department of Chemistry, prior to matriculation. The four placement examinations (in the disciplines of analytical, organic, inorganic, and physical chemistry) are designed to cover the subject matter in the disciplines generally taught in undergraduate programs preparatory for graduate work in chemistry, and the results are used by the department to advise the individual student in planning a program of courses appropriate to the student's background. All graduate students are required to participate in the seminar and colloquium programs. Upon consultation with course instructors, specific course prerequisites may be waived.

Visit the program website (<https://chemistry.columbian.gwu.edu/ms-chemistry/>) for additional information.

MASTER OF SCIENCE IN THE FIELD OF ENVIRONMENTAL AND GREEN CHEMISTRY

Growing public awareness about the state of the environment, chemical product safety, and new chemical regulatory policies is driving demand for leaders who are able to understand the science underlying environmental challenges and thus develop innovative solutions. The Master of Science in Environmental and Green Chemistry, offered through GW's Department of Chemistry, develops the experts needed with an interdisciplinary curriculum that fosters proficiency in evaluating the state of the environment and designing greener technologies.

Unlike many existing graduate programs in environmental chemistry, this unique 30-credit hour program places an emphasis on green chemistry—the design of new chemicals and chemical processes with minimal environmental impact. Students pursue five core focus areas: energy, environmental analytical chemistry, air/water chemistry, green chemical processing, and chemical toxicology. For a broader perspective, the curriculum can be tailored to students' interests, and courses in public health, science policy, and business are encouraged. A capstone project enables students to apply the knowledge gained from other coursework and develop the interpersonal and communication skills needed to collaborate with scientists and laypeople alike.

Being in Washington, D.C. allows for unique opportunities, including proximity to a hotspot for green careers, and

potential capstone partners such as the Environmental Protection Agency, Department of Energy, and Food and Drug Administration. Graduates will find employment as well-rounded chemists in government and the private sector, environmental and sustainability consultants, health professionals, new product developers, engineers, or project managers across industries and business sectors.

This is a STEM-designated degree program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

30 credits, including 18 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
CHEM 6280	Energy and the Environment	
CHEM 6281	Environmental Chemistry: Air, Water, and Soil	
CHEM 6282	Green Industrial Chemistry	
CHEM 6283	Chemical Toxicology and Rational Design of Safer Chemicals	
CHEM 6284	Environmental Analytical Chemistry	
CHEM 6298	Capstone Seminar in Environmental and Green Chemistry	
or PPPA 6198	Environmental Resource Policy Capstone	
Electives		
12 credits in elective courses selected from the following*:		
CHEM 6238	Chemistry of Inorganic Materials	
CHEM 6251	Advanced Organic Chemistry I	
CHEM 6257	Physical-Organic Chemistry	
CHEM 6278	Molecular Spectroscopy	
CHEM 6320	Selected Topics in Analytical Chemistry	
CHEM 6350	Selected Topics in Organic Chemistry	
ECON 6237	Economics of the Environment and Natural Resources	

EMSE 6200	Policy Factors in Environmental and Energy Management
ENRP 6101	Environmental Sciences I: Physical Sciences
ENRP 6102	Environmental Sciences II: Life Sciences
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6142	Technology Creation/Diffusion
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy **
PPPA 6066	U.S. Environmental Policy
PUBH 6002	Biostatistical Applications for Public Health
PUBH 6126	Assessment and Control of Environmental Hazards
SMPP 6290	Special Topics **
STAT 6202	Mathematical Statistics II

*Alternate elective courses may be selected subject to the program director's approval.

**Approved topics only. Consult the Schedule of Classes for current semester offerings. Permission of the advisor must be received prior to enrollment.

Visit the program website (<https://chemistry.columbian.gwu.edu/ms-environmental-and-green-chemistry/>) for additional information.

MINOR IN CHEMISTRY REQUIREMENTS

The following requirements must be fulfilled: 22 credits, including 19 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2122	Introductory Quantitative Analysis	

CHEM 2123 Introductory Quantitative Analysis Laboratory

CHEM 2151 Organic Chemistry I

CHEM 2152 Organic Chemistry II

CHEM 2153 Organic Chemistry Laboratory I

CHEM 2154 Organic Chemistry Laboratory II

One of the following:

CHEM 3170 Introduction to Physical Chemistry

CHEM 3171 Physical Chemistry I

CHEM 3165 Biochemistry I

CHEM 4134 Inorganic Chemistry

Visit the program website (<https://chemistry.columbian.gwu.edu/minor-chemistry-13/>) for additional information.

CLASSICAL ACTING

GW's Department of Classical Acting—part of the Columbian College of Arts and Sciences—works in conjunction with the Shakespeare Theatre Company's Academy for Classical Acting (ACA) to offer the master's of fine arts in the field of classical acting degree program. Students in the program are in class full-time, 40 hours or more per week, for approximately 44 weeks. As actors and acting teachers, graduates help transform the way classical theater is performed on Broadway and in regional theaters around the country.

Visit the Shakespeare Theatre Company Academy for Classical Acting website (<http://aca.shakespearetheatre.org/>) for additional information.

GRADUATE

Master's program

- Master of Fine Arts in the field of classical acting (p. 185)

FACULTY

Director L. Jacobson

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACA 5099. Variable Topics. 1-99 Credits.

ACA 6201. Acting I. 3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6202. Acting II. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6203. Acting: Classical Comedy. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6204. Acting: Master Class. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6205. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6206. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6207. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6208. Topics in Classical Drama and Culture. 1 Credit.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6209. Text I. 2 Credits.

Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6210. Text II. 2 Credits.

Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6211. Voice and Speech I. 3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6212. Voice and Speech II. 2,3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6213. Voice and Speech III. 3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6214. Voice and Speech IV. 2 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6215. Movement I. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6216. Movement II. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6217. Movement III. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6218. Movement IV. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6219. Alexander Technique I. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6220. Alexander Technique II. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6221. Alexander Technique III. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6222. Alexander Technique IV. 1,2 Credit.
Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6223. Stage Combat I. 2 Credits.
Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6224. Stage Combat II. 2 Credits.
Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6225. Practicum I. 2 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6226. Practicum II. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6227. Practicum III. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6228. Practicum IV. 1-6 Credits.
This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6229. Audition Techniques. 3 Credits.
A set of workshops to help students develop strong audition skills. Business aspects of acting, such as selection of agents, Equity status, and taxation issues. The workshop concludes with a showcase performance for casting directors, agents, and theatre directors.

ACA 6595. Selected Topics. 1 Credit.

MASTER OF FINE ARTS IN THE FIELD OF CLASSICAL ACTING

The program features an unprecedented collaboration between two leading D.C. institutions. The Shakespeare Theatre Company brings to the partnership world-class artists/teachers, a comprehensive training program and a distinguished reputation as a nationally and internationally recognized leader in classical repertory, under the guidance of Artistic Director Michael Kahn. GW brings to the partnership its resources and reputation as a major research university, with strong links to the Folger Shakespeare Library and the Library of Congress, as well as shared faculty and space resources.

Located in one of the most vibrant cultural centers in the nation today—considered by many to be the second most important theater center after New York—the Academy for Classical Acting (ACA) is the only Masters of Fine Arts program in the United States dedicated solely to classical acting. Students are in class full-time, 40 hours or more a week, for about 44 weeks. Since 2000, the ACA has been graduating between 12 and 18 students each year who are helping transform the way classical theater is performed on Broadway, in regional theaters and on teaching faculties around the country.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

59 credits in required courses.

Code	Title	Credits
Required		
ACA 6201	Acting I	
ACA 6202	Acting II	
ACA 6203	Acting: Classical Comedy	
ACA 6204	Acting: Master Class	
ACA 6205	Topics in Classical Drama and Culture	
ACA 6206	Topics in Classical Drama and Culture	
ACA 6207	Topics in Classical Drama and Culture	

ACA 6209	Text I
ACA 6210	Text II
ACA 6211	Voice and Speech I
ACA 6212	Voice and Speech II
ACA 6213	Voice and Speech III
ACA 6215	Movement I
ACA 6216	Movement II
ACA 6217	Movement III
ACA 6219	Alexander Technique I
ACA 6220	Alexander Technique II
ACA 6221	Alexander Technique III
ACA 6223	Stage Combat I
ACA 6224	Stage Combat II
ACA 6225	Practicum I
ACA 6227	Practicum III
ACA 6228	Practicum IV
ACA 6229	Audition Techniques
ACA 6595	Selected Topics (taken twice)

Visit the program website (<https://corcoran.gwu.edu/mfa-classical-acting/>) for additional information.

CLASSICAL AND NEAR EASTERN LANGUAGES AND CIVILIZATIONS

The Department of Classical and Near Eastern Languages and Civilizations offers undergraduate instruction in Greek, Latin, Hebrew, Arabic, Persian, and Turkish, as well as courses in ancient history and civilizations and the modern Middle East.

The curriculum is designed to strengthen a student's ability to communicate, reason, and understand the social, cultural, and physical environment of the ancient and modern worlds. The department fosters careful and creative thinking in its students, based in the linguistic, cultural, and historical roots of the rich, varied, and strategically important societies of the Mediterranean basin.

Classroom study is supplemented by the diverse resources of Washington, DC, through field trips, foreign films, special lectures, and cultural programs at embassies. Students have opportunities to study abroad, including Greece, Italy, Israel,

and Morocco, and to participate in excavations around the world.

Visit the Department of Classical and Near Eastern Languages and Civilizations website (<https://cnelc.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in Arabic studies (p. 187)
- Bachelor of Arts with a major in classical and ancient Near Eastern studies (p. 188)

Minors

- Minor in Arabic studies (p. 190)
- Minor in Arabic and Hebrew languages and cultures (p. 189)
- Minor in classical and ancient Near Eastern studies (p. 190)
- Minor in Hebrew (p. 191)

FACULTY

Professors E.H. Cline, M. Essees

Associate Professors A. Bonnah (*Teaching*), D. Cline, E.A. Friedland, C. Rollston (*Chair*), A.M. Smith II

Assistant Professors C. Jorgensen, F. Sinatora, J. Tobkin (*Teaching*), O. Zakai

Teaching Instructors D. El-Hefnawy, E. Oraby, N. Taher,

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Arabic (ARAB) (p. 1418)
- Classical Studies (CLAS) (p. 1461)
- Greek (GREK) (p. 1615)
- Hebrew (HEBR) (p. 1628)
- Latin (LATN) (p. 1674)
- Persian (PERS) (p. 1717)

- Turkish (TURK) (p. 1854)
- Yiddish (YDSH) (p. 1864)

BACHELOR OF ARTS WITH A MAJOR IN ARABIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

In addition to course requirements, students must complete 10 credits (one semester) of study abroad in an Arabic-speaking country, including 6 credits in modern standard Arabic and 4 credits in a spoken Arabic dialect. Students must attain proficiency in speaking, reading, listening, and writing at the advanced level on the ACTFL scale as measured by exit examinations administered by the department.

Code	Title	Credits
Required		
26 credits from the following:		
ARAB 3001	Advanced Arabic	
ARAB 3301	Modern Arabic Literature	
ARAB 3302	Media Arabic	
ARAB 3311	Business Arabic	
ARAB 3501	Arabic and Arab Identity	
ARAB 3502	Arab Film and Culture in English	
ARAB 3503	Fundamentals of Arabic Linguistics	
ARAB 4001	Genres in Modern Arabic Literature	
ARAB 4002	Arabic Narratives Through the Ages	
ARAB 4501	Arabic-English Translation	
ARAB 4502	Arabic-English Advanced Translation and Editing	

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication

competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained a 3.7 grade-point average in the major and at least a 3.25 average overall by the end of the junior year. No later than the beginning of the senior year, students must consult a departmental faculty member about a research project to be prepared under the supervision of that faculty member through CLAS 3901 Directed Project-CLAS 4901 Directed Project. Only if a committee of two faculty members approves the completed project, which must be graded A or A–, will Special Honors be recommended.

BACHELOR OF ARTS WITH A MAJOR IN CLASSICAL AND ANCIENT NEAR EASTERN STUDIES

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeeregulationtext>).

Code	Title	Credits
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Ancient language proficiency

In addition to course requirements, students must complete the language proficiency requirement, which includes Greek (GREK) or Latin (LATN) language study through the 2002 level, or one classical language through the 1002 level and the other through the 2001 level. Students who have scored a 4 or 5 on the AP Latin examination are encouraged to contact the program coordinator.

Core course requirements

Two of the following courses (6 credits): ¹

CLAS 2112	History of Ancient Greece
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or HIST 2112	History of Ancient Greece
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CLAS 2113	The Roman World to 337 A.D.
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or HIST 2113	The Roman World to 337 A.D.
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CLAS 2803	The Ancient Near East and Egypt to 322 B.C.
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or HIST 2803	The Ancient Near East and Egypt to 322 B.C.
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One of the following courses (3 credits):

AH 3101	Ancient Art of the Bronze Age and Greece
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AH 3102	Ancient Art of the Roman Empire
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AH 3103	Art and Archaeology of Egypt and the Near East
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Capstone (3 credits)

CLAS 4111	Capstone Study
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Additional course requirements

21 credits (7 courses) in electives taken as follows: ²

12 credits (four courses) selected from Group A, including at least two courses at the 3000 level or above. ¹

9 credits (three courses) selected from Groups A and/or B. All 9 credits may be taken from Group B, but no more than 9 credits in this group can be counted toward degree requirements.

Group A: CLAS, GREK, and LATN

CLAS 2104	Ancient Medicine and Modern Medical Terms
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CLAS 2105	Special Topics
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CLAS 2105W	Special Topics
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CLAS 2106	Mythology of the Classical World
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or CLAS 2106W	Mythology of the Classical World
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CLAS 2107	Greek and Roman Drama
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CLAS 2112	History of Ancient Greece
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or HIST 2112	History of Ancient Greece
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CLAS 2113	The Roman World to 337 A.D.
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or HIST 2113	The Roman World to 337 A.D.
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CLAS 2802	Gods and Goddesses of the Ancient Near East
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CLAS 2803	The Ancient Near East and Egypt to 322 B.C.
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or HIST 2803	The Ancient Near East and Egypt to 322 B.C.
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CLAS 2804	History of Ancient Israel ³
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or HIST 2804	History of Ancient Israel
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CLAS 3104	Dead Sea Scrolls
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CLAS 3105	Topics in Classical Studies
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CLAS 3107	Law and Diplomacy in the Ancient Near East and Mediterranean
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CLAS 3111	Topics in Ancient History
or HIST 3111	Topics in Ancient History
CLAS 3112	Art and Archaeology of Pompeii
CLAS 3113	Greece and Rome in the Art and Architecture of Washington D.C.
CLAS 3114	Topics in Ancient Literatures and Cultures
CLAS 3115	Topics in Ancient Art and Archaeology
CLAS 3116	Identity in the Greco-Roman World
or HIST 3116	Identity in the Greco-Roman World
CLAS 3117	Alexander The Great
or HIST 3117	Alexander The Great
CLAS 3119	The Ancient Economy
or HIST 3119	The Ancient Economy
CLAS 3901	Directed Project
or CLAS 3901W	Directed Project
CLAS 4901	Directed Project
GREK 3001	Major Greek Authors I
or GREK 3001W	Major Greek Authors II
GREK 3002	Major Greek Authors II
or GREK 3002W	Major Greek Authors II
LATN 3001	Major Latin Authors I
or LATN 3001W	Major Latin Authors I
LATN 3002	Major Latin Authors II
or LATN 3002W	Major Latin Authors II
Group B: Up to 9 credits (see note, above).	
AH 3101	Ancient Art of the Bronze Age and Greece
AH 3102	Ancient Art of the Roman Empire
AH 3103	Art and Archaeology of Egypt and the Near East
AH 3104	Art and Archaeology of the Aegean Bronze Age ³
or ANTH 3806	Art and Archaeology of the Aegean Bronze Age

AH 3106	Art and Archaeology of Israel and Neighboring Lands
or ANTH 3805	Archaeology of Israel and Neighboring Lands
AH 3111	
ANTH 3834	Field Research: Old World
PHIL 2111	History of Ancient Philosophy
or PHIL 2111W	History of Ancient Philosophy
PSC 2105	Major Issues of Western Political Thought I
REL 1009	The Hebrew Scriptures
REL 1010	The New Testament
REL 3341	Christianity in the Ancient World

¹A course taken as part of the core requirement may not also count as a Group A course selection.

²Students may also earn credit from directed study or coursework abroad if approved by appropriate faculty in Classical Studies.

³Only one course from the following can be counted toward major requirements: AH 3106, ANTH 3805, CLAS 2804, or HIST 2804.

MINOR IN ARABIC AND HEBREW LANGUAGES AND CULTURES

REQUIREMENTS

The following requirements must be fulfilled: A minimum of 18 credits, including 9 to 10 credits in one focus area and 9 credits in elective courses. Students must have completed two years of the primary language or equivalent and one year of the secondary language or equivalent before beginning the minor program.

Code	Title	Credits
Required		
All courses in one following focus areas (9 to 10 credits):		
Arabic		
ARAB 3001	Advanced Arabic	
ARAB 3301	Modern Arabic Literature	
ARAB 3302	Media Arabic	
Hebrew		

HEBR 3001	Hebrew Conversation and Writing
HEBR 3301	Modern Hebrew Fiction
or HEBR 3301W	Modern Hebrew Fiction
HEBR 3302	The Israeli Media
or HEBR 3302W	The Israeli Media

Electives

9 credits (three courses) from the following. At least one course must be in the student's focus area.

HEBR 3101	Modern Hebrew Literary Classics in Translation
HEBR 3102	Israeli Society and Culture: Literary Perspectives
HEBR 3103	Israeli Cinema (in English)
HEBR 3104W	Gender and Sexuality in Israel
ARAB 3501	Arabic and Arab Identity
ARAB 3502	Arab Film and Culture in English

MINOR IN ARABIC STUDIES REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 15 credits in required courses and 6 credits in elective courses. In addition, the student must meet the language prerequisite of ARAB 1001 Beginning Arabic I and ARAB 1002 Beginning Arabic II or their equivalent.

Code	Title	Credits
Required		
ARAB 2001	Intermediate Arabic I	
ARAB 2002	Intermediate Arabic II	
ARAB 3001	Advanced Arabic	
ARAB 3302	Media Arabic	
Electives		
One specialized language course from the following:		
ARAB 3301	Modern Arabic Literature	
ARAB 3311	Business Arabic	
One culture or linguistics course from the following:		
ARAB 3501	Arabic and Arab Identity	

ARAB 3502	Arab Film and Culture in English
ARAB 3503	Fundamentals of Arabic Linguistics

MINOR IN CLASSICAL AND ANCIENT NEAR EASTERN STUDIES

The following requirements must be fulfilled: 18 credits.

Code	Title	Credits
Required language proficiency		
Students must demonstrate proficiency in one of the ancient languages by successfully completing one course (3 credits) in Latin or in ancient Greek numbered 1002 or above. The same course may not be used to satisfy the language proficiency requirement and also count toward the elective course requirement.		
Electives		
Five courses (15 credits) from the following:		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
AH 3106	Art and Archaeology of Israel and Neighboring Lands	
or ANTH 3805	Archaeology of Israel and Neighboring Lands	
AH 3104	Art and Archaeology of the Aegean Bronze Age	
or ANTH 3806	Art and Archaeology of the Aegean Bronze Age	
ANTH 3834	Field Research: Old World	
CLAS 2104	Ancient Medicine and Modern Medical Terms	
CLAS 2105	Special Topics	
CLAS 2105W	Special Topics	
CLAS 2106	Mythology of the Classical World	
CLAS 2106W	Mythology of the Classical World	
CLAS 2107	Greek and Roman Drama	
CLAS 2112	History of Ancient Greece	
or HIST 2112	History of Ancient Greece	
CLAS 2113	The Roman World to 337 A.D.	

or HIST 2113	The Roman World to 337 A.D.
CLAS 2802	Gods and Goddesses of the Ancient Near East
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.
or HIST 2803	The Ancient Near East and Egypt to 322 B.C.
CLAS 2804	History of Ancient Israel
or HIST 2804	History of Ancient Israel
CLAS 3107	Law and Diplomacy in the Ancient Near East and Mediterranean
CLAS 3111	Topics in Ancient History
or HIST 3111	Topics in Ancient History
CLAS 3112	Art and Archaeology of Pompeii
CLAS 3113	Greece and Rome in the Art and Architecture of Washington D.C.
CLAS 3114	Topics in Ancient Literatures and Cultures
CLAS 3115	Topics in Ancient Art and Archaeology
CLAS 3116	Identity in the Greco-Roman World
or HIST 3116	Identity in the Greco-Roman World
CLAS 3117	Alexander The Great
or HIST 3117	Alexander The Great
CLAS 3119	The Ancient Economy
or HIST 3119	The Ancient Economy
CLAS 3901	Directed Project
CLAS 3901W	Directed Project
CLAS 4901	Directed Project
GREK 2001	Intermediate Classical Greek I
GREK 2002	Intermediate Classical Greek II
GREK 3001	Major Greek Authors I
GREK 3002	Major Greek Authors II
LATN 2001	Intermediate Latin
LATN 2002	Poetry of Empire
or LATN 2002W	Poetry of Empire

LATN 3001 Major Latin Authors I

or LATN 3001W Major Latin Authors I

LATN 3002 Major Latin Authors II

or LATN 3002W Major Latin Authors II

MINOR IN HEBREW

The following requirements must be fulfilled: 20 credits, including 14 credits in required courses and 6 credits in elective courses. In addition, students must complete HEBR 1001 and HEBR 1002, or their equivalent, before beginning the minor program.

Code	Title	Credits
Prerequisites *		
HEBR 1001	Beginning Hebrew I	
HEBR 1002	Beginning Hebrew II	
Required		
HEBR 2001	Intermediate Hebrew I	
HEBR 2002	Intermediate Hebrew II	
HEBR 3001	Hebrew Conversation and Writing	
HEBR 3301	Modern Hebrew Fiction **	
or HEBR 3301W	Modern Hebrew Fiction	
or HEBR 3302	The Israeli Media	
or HEBR 3302W	The Israeli Media	
Electives		
Two elective courses from the following:		
HEBR 3101	Modern Hebrew Literary Classics in Translation	
HEBR 3102	Israeli Society and Culture: Literary Perspectives	
HEBR 3103	Israeli Cinema (in English)	
HEBR 3104W	Gender and Sexuality in Israel	
HEBR 3105	Special Topics	
HEBR 3301	Modern Hebrew Fiction **	
or HEBR 3301W	Modern Hebrew Fiction	
or HEBR 3302	The Israeli Media	

or HEBR 3302W	The Israeli Media
HEBR 4001	Advanced Hebrew Literature I
HEBR 4002	Advanced Hebrew Literature II
HIST 2812	History of Zionism
or JSTD 2812	History of Zionism
REL 1009	The Hebrew Scriptures

* HEBR 1001 and HEBR 1002 or equivalent must be completed prior to beginning the minor program.

**HEBR 3301 or HEBR 3301W or HEBR 3302 or HEBR 3302W may be taken as an elective only if not taken as a required course.

CORCORAN SCHOOL OF THE ARTS AND DESIGN

Interim Director Kym Rice

Assistant Director for Academic Affairs Susan Sterner

The Corcoran School of the Arts and Design bridges the University's academically robust programs in the arts with Corcoran's creative and inspired scholarship. Part of the Columbian College of Arts and Sciences, the School functions as an incubator for artists and practitioners in arts-related fields, and serves to enrich students who are taking classes in other areas of the University. As such, it provides a platform for engagement that bridges creative expression and practical application with the breadth and depth of the larger liberal arts education.

Program heads

Catherine Anderson—Design, including undergraduate graphic design and interaction design and graduate exhibition design and interaction design

Robert Baker—Dance, music, and theatre (including classical acting)

Barbara von Barghahn—Art history

Dean Kessmann—Studio arts, including fine art, new media photojournalism, photojournalism, and social practice

Stephanie Travis—Interior architecture

Laura Schiavo—Museum studies and decorative arts and design history

Faculty advisors

Catherine Anderson—Interior Architecture (graduate)

Susan Anderson—Museum studies*

Mary Coughlin—Museum studies online certificate program in collections care

Andrea Hunter Dietz—Exhibition design

Zan Dumbadze—Art history (undergraduate)

Matt Eich—Photojournalism and photography (undergraduate)

Leslie Jacobson—Classical acting

Sara Jamshidi—Graphic design

Erin Kuykendall—Decorative arts and design history

Michele Carlson—Fine art, dual BA in fine art and art history (all undergraduate)

Maria del Carmen Montoya—Fine art and social practice (graduate)

Eugene Montague—Music

Kevin Patton—Interaction design (undergraduate and graduate)

Lilien Robinson—Art history (graduate)

Laura Schiavo—Museum studies*

Susan Sterner—New media photojournalism (graduate)

Max van Balgooy—Museum studies*

Nadia Volchansky—Interior architecture (undergraduate)

Matt Wilson—Theatre (undergraduate) and classical acting (graduate)

Maida Withers—Dance

*Co-advisors in museum studies.

Visit the Corcoran School of the Arts and Design website (<https://corcoran.gwu.edu/>) for additional information

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in art history (p. 263)
- Bachelor of Arts with a dual major in art history and in fine art (p. 259)
- Bachelor of Arts with major in dance (p. 499)
- Bachelor of Arts with major in fine arts (p. 266)
- Bachelor of Arts with major in music (p. 355)
- Bachelor of Arts with major in theatre (p. 501)
- Bachelor of Fine Arts with a major in fine art (p. 193)
- Bachelor of Fine Arts with a major in graphic design (p. 195)
- Bachelor of Fine Arts with a major in interaction design (p. 196)
- Bachelor of Fine Arts with a major in interior architecture (p. 318)
- Bachelor of Fine Arts with a major in photojournalism (p. 198)

Combined Program

- Dual Bachelor of Arts with a major in art history and Master of Arts in the field of art history (p. 200)

Minors

- Minor in art history (p. 270)
- Dual minor in art history and fine arts (p. 268)
- Minor in dance (p. 503)
- Minor in fine arts (p. 270)
- Minor in graphic design (p. 200)
- Minor in music (p. 356)

- Minor in photography (p. 200)
- Minor in theatre (p. 504)

GRADUATE

Master's programs

- Master of Arts in the field of art history (p. 268)
- Master of Arts in the field of decorative arts and design history (p. 200)
- Master of Arts in the field of exhibition design (p. 201)
- Master of Arts in the field of interaction design (p. 202)
- Master of Arts in the field of interior architecture (<http://bulletin.gwu.edu/arts-sciences/corcoran/ma-interior-architecture/>)
- Master of Arts in the field of museum studies (p. 351)
- Master of Arts in the field of new media photojournalism (p. 203)
- Master of Fine Arts in the field of classical acting (p. 185)
- Master of Fine Arts in the field of fine arts (p. 269)
- Master of Fine Arts in the field of interior architecture (p. 319)
- Master of Fine Arts in the field of social practice (p. 204)

Combined program

- Dual Master of Arts in the field of museum studies and Graduate Certificate in Jewish cultural arts (p. 204)

CERTIFICATES

Certificate programs

- Graduate certificate in museum studies (<https://current.bulletin.gwu.edu/arts-sciences/museum-studies/certificate/>)
- Graduate certificate in museum collections management and care (<https://current.bulletin.gwu.edu/arts-sciences/museum-studies/museum-collections-management-care-certificate/>)

FACULTY

Visit the Corcoran School of the Arts and Design website (<https://corcoran.gwu.edu/faculty/>) for a list of current faculty.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Some of the courses listed below may not correspond with a degree program. For example, ceramics is not a degree program, ceramics courses are part of the fine arts program. See the faculty advisor for guidance regarding courses.

- Art History (AH) (p. 1419)
- Corcoran Art History (CAH) (p. 1483)
- Corcoran Continuing Education (CCE) (p. 1491)
- Corcoran Decorative Arts and Design History (CDAD) (p. 1491)
- Corcoran Exhibition Design (CEX) (p. 1492)
- Corcoran First-Year Foundation (CFN) (p. 1493)
- Corcoran Graphic Design (CGD) (p. 1494)
- Corcoran Interior Architecture (IA) (p. 1658)
- Corcoran Interior Architecture (CIAR) (p. 1498)
- Corcoran Interaction Design (CIXD) (p. 1496)
- Corcoran Museum Studies (CMST) (p. 1500)
- Corcoran Music (MUS) (p. 1502)
- Corcoran Photojournalism (CPJ) (p. 1506)
- Corcoran Studio Arts (CSA) (p. 1509)
- Corcoran Theatre and Dance (TRDA) (p. 1517)

BACHELOR OF FINE ARTS WITH A MAJOR IN FINE ART

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

78 credits in program-specific courses.

Recommended Program of Study

Code	Title	Credits
Required		
12 credits in foundational courses		
CFN 1090	First-Year Studio 1: Drawing and Surface	
CFN 1091	First-Year Studio 2: Form and Materials	
CFN 1092	First Year Studio 3: Time and Light	
CFN 1093	First-Year Studio 4: Interaction	
12 credits in fine art studio courses		
CSA 1090	Fine Art Fundamentals I	

CSA 1091	Fine Art Fundamentals II
CSA 2092	Fine Art Studio Experimental Materiality
CSA 3092	Fine Art Studio Critical Practices in Making
9 credits in introductory studio electives, selected from the following:	
CSA 1101	Introduction to Handbuilt Ceramics
CSA 1102	Introduction to Wheelthrown Ceramics
CSA 1501	Black and White Photography Fundamentals
CSA 1502	Introduction to Digital Color Photography
CSA 1502	Introduction to Digital Color Photography
CSA 1701	Printmaking Medium and Materials Workshop
9 credits in studio electives taken from at the 1000 level or above, selected from studio areas CDE, CGD, CIAR, CIXD, CPJ, and CSA.	
9 credits in studio arts electives taken at the 2000 to 4000 levels, selected from studio areas CPJ or CSA.	
3 credits in cross-disciplinary studio electives, selected from the following:	
CSA 3901	Special Topics: Cross-Disciplinary Studio Arts
CSA 3911	Collaborative Practices: Social Practices of Art
CSA 3912	The Cinematic in Contemporary Art
CSA 3913	Painting Off the Wall
CSA 3914	Art Outside the Gallery
CSA 3915	Public Spectacle in Socially Engaged Art
CSA 3951	Creative Photovoltaics
3 credits in professional practices, selected from the following:	
CSA 4070	Professional Practices for Lens-Based Media
CSA 4170	Professional Practices for Artists
6 credits in thesis coursework. Students participate in a thesis exhibition as part of their thesis.	

CSA 4092	Fine Art Thesis I
CSA 4093	Fine Art Thesis II
6 credits in introductory art history courses	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
CAH 1091	Art History II: Historical Perspectives in the Visual Arts
3 credits in an art history elective, selected from any AH or CAH course (Writing in the Discipline courses are recommended).	
6 credits in seminars, selected from the following:	
CSA 3020W	Topics in Photography and Photojournalism
CSA 3021W	Topics in Fine Art Seminar
CSA 4020W	Photography and Photojournalism Studio Seminar
CSA 4021	Fine Art Studio Seminar

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.

- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

BACHELOR OF FINE ARTS WITH A MAJOR IN GRAPHIC DESIGN REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

78 credits in program-specific courses, including 54 credits in required courses and 24 credits in elective courses. Students should contact their advisor for a sample program of study.

Code	Title	Credits
Required		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	

CAH 1091	Art History II: Historical Perspectives in the Visual Arts
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CFN 1090	First-Year Studio 1: Drawing and Surface
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CFN 1091	First-Year Studio 2: Form and Materials
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CFN 1092	First Year Studio 3: Time and Light
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CFN 1093	First-Year Studio 4: Interaction
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CGD 1090	Design Fundamentals I
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CGD 1091	Design Fundamentals II
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CGD 2050	Typography I
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CGD 2060	Typography II
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CGD 2090	Design Studio I
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CGD 2091	Design Studio II
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CGD 3090	Graphic Design Studio III
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CGD 3091	Graphic Design Studio IV
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CGD 4090	Graphic Design Thesis I
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CGD 4091	Graphic Design Thesis II
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CGD 4170	Professional Practices for Designers
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6 credits of courses in art and design history

Required

CAH 3150	Theories and History of Graphic Design
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One of the following:

CAH 3060	History of Design
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CAH 3065	Digital Media Culture
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CAH 4179	Topics in Design History and Theory
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Electives

12 credits in advanced CGD elective courses at the 3000 or 4000 level.

9 credits in elective courses from any art or design studio area (CGD, CIXD, CPJ, and CSA).

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement,

G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW

courses that have been approved by the University and the College.

BACHELOR OF FINE ARTS WITH A MAJOR IN INTERACTION DESIGN

Interaction Design is an interdisciplinary field that uses human-centered processes to create meaningful, usable, and desirable design solutions for sites of interaction. Interaction designers shape the everyday behaviors of digital and physical environments, services, products and systems.

REQUIREMENTS

Track 1:

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

78-credits in studio and art/design history coursework:

Code	Title	Credits
Required		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CDE 1090	Design Fundamentals I	
CDE 1091	Design Fundamentals II	
CFN 1090	First-Year Studio 1: Drawing and Surface	
CFN 1091	First-Year Studio 2: Form and Materials	
CFN 1092	First Year Studio 3: Time and Light	
CFN 1093	First-Year Studio 4: Interaction	
CIXD 2090	Narrative Media for Interaction	
CIXD 2091	Systems Thinking for Interaction Design	
CIXD 2111	Creative Code	
CIXD 3090	Human Centered Design for Social Engagement	
CIXD 3091	Prototyping and Fabrication for Interaction	
CIXD 3820	Engagement Lab (taken twice for a total of 6 credits)	

CIXD 3910	Collaborative Design Project
CIXD 4090	Interaction Design Thesis I
CIXD 4091	Interaction Design Thesis II
CIXD 4193	Topics in Design Leadership
9 credits of time-based media or computational media electives in CIXD, CDM, or from the following:	
CGD 4120	Environmental Design
CSA 2601	
CSA 3202	Sculpture Digital Forms
6 credits of studio electives in any art or design area	
3 credits in design history course at the 3000-4000 level from the following:	
CAH 3060	History of Design
CAH 3065	Digital Media Culture
CAH 4179	Topics in Design History and Theory
CAH 4410	
A 3-credit design research seminar at the 3000-4000 level from the following:	
CAH 4179	Topics in Design History and Theory
CIXD 4020	Topics in Design Research

Track 2:

For program Option 2, the following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeeregulationtext>).

87 credits in program-specific coursework. This includes completion of a minor program with at least 18 credits.

Code	Title	Credits
Required		
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	
CAH 1091	Art History II: Historical Perspectives in the Visual Arts	
CDE 1090	Design Fundamentals I	
CDE 1091	Design Fundamentals II	

CFN 1090	First-Year Studio 1: Drawing and Surface
CFN 1091	First-Year Studio 2: Form and Materials
CFN 1092	First Year Studio 3: Time and Light
CFN 1093	First-Year Studio 4: Interaction
CIXD 2090	Narrative Media for Interaction
CIXD 2091	Systems Thinking for Interaction Design
CIXD 2111	Creative Code
CIXD 3090	Human Centered Design for Social Engagement
CIXD 3091	Prototyping and Fabrication for Interaction
CIXD 3820	Engagement Lab (taken for 3 credits)
CIXD 3910	Collaborative Design Project
CIXD 4090	Interaction Design Thesis I
CIXD 4091	Interaction Design Thesis II
CIXD 4193	Topics in Design Leadership

Electives

6 credits in time-based media or computational media courses selected from any CDM or CIXD course and/or CFA 2611, CFA 3202, and CGD 4120.

One 3-credit studio course in any art or design area.

One 3-credit design history course selected from the following:

CAH 3060	History of Design
CAH 3065	Digital Media Culture
CAH 4179	Topics in Design History and Theory
CAH 4410	
One 3-credit design research seminar selected from the following:	
CAH 4179	Topics in Design History and Theory
CIXD 4020	Topics in Design Research

Required minor program

All students pursuing this option must successfully complete a minor program in a related field. Students should consult with the advisor concerning this requirement.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

BACHELOR OF FINE ARTS WITH A MAJOR IN PHOTOJOURNALISM REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

78 credits in program-specific courses, including 54 credits in required courses and 24 credits in elective courses. Students should contact their advisor for a sample program of study.

Recommended Program of Study

Code	Title	Credits
G-PAC requirement		
In addition to the major requirements listed below, students must take the following course in fulfillment of the G-PAC requirement in social science:		
SMPA 2101	Journalism: Theory & Practice	
Major requirements		
Foundation courses (12 credits)		
CFN 1090	First-Year Studio 1: Drawing and Surface	
CFN 1091	First-Year Studio 2: Form and Materials	
CFN 1092	First Year Studio 3: Time and Light	
CFN 1093	First-Year Studio 4: Interaction	
Photo/photojournalism studios (21 credits)		
CSA 1501	Black and White Photography Fundamentals	
CSA 1502	Introduction to Digital Color Photography	
CPJ 2091	Photojournalism Studio Sequencing and Narrative Strategies	
CSA 2502	Time-based Media Lab	

CPJ 3090	Photojournalism Studio Visual Reportage
CPJ 3091	Photojournalism Studio Multimedia Storytelling
CPJ 4340	Project-Driven Website Design
Studio electives	
9 credits in CGD, CIAR, CIXD, CPJ, or CSA courses taken at any level.	
Upper-level studio electives	
12 credits from any CPJ course at the 2000 to 4000 level; and/or any CSA courses with 5 as the second digit of the course number; and/or any time-based electives selected from the following:	
CSA 2611	Video Art
CSA 3601	Special Topics: Time-Based and Electronic Media
CSA 3606	Performative Media
CSA 3612	Video: Remixing the Archive
CSA 3613	Site and Sound
CSA 3912	The Cinematic in Contemporary Art
CSA 3915	Public Spectacle in Socially Engaged Art
Professional practices (6 credits)	
CSA 4070	Professional Practices for Lens-Based Media
or CSA 4170	Professional Practices for Artists
SMPA 2173	Media Law
Thesis (6 credits)	
CPJ 4090	Photojournalism Thesis I
CPJ 4091	Photojournalism Thesis II
Note that students participate in a thesis exhibition as part of their thesis coursework.	
Art history and lens-based seminars (18 credits)	
18 credits in art history and lens-based seminars, with 12 credits in art history and 6 credits in lens-based.	
Art history seminars (12 credits)	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts

CAH 1091	Art History II: Historical Perspectives in the Visual Arts
or CAH 1031	Survey of Art and Architecture I
CAH 2162W	History of Photography
SMPA 2110W	Introduction to News Writing and Reporting
Lens-based seminars (6 credits)	
CSA 3020W	Topics in Photography and Photojournalism
or CSA 3021W	Topics in Fine Art Seminar
CSA 4020W	Photography and Photojournalism Studio Seminar
or CSA 4021	Fine Art Studio Seminar

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or

interpretation of artistic traditions or knowledge of art in a contemporary context.

- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

DUAL BACHELOR OF ARTS WITH A MAJOR IN ART HISTORY AND MASTER OF ARTS IN THE FIELD OF ART HISTORY

The Corcoran School of the Arts and Design offers a dual bachelor of arts with a major in art history (<https://current.bulletin.gwu.edu/arts-sciences/fine-arts-art-history/ba-art-history/>) and master of arts in the field of art history (<https://current.bulletin.gwu.edu/arts-sciences/fine-arts-art-history/ma-art-history/>) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the program website (<https://corcoran.gwu.edu/art-history-undergraduate/>) for additional information.

MINOR IN GRAPHIC DESIGN REQUIREMENTS

The following requirements must be met: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
CGD 1090	Design Fundamentals I	
CGD 1091	Design Fundamentals II	
CGD 2050	Typography I	
CGD 2060	Typography II	
Electives		
6 credits (two courses) from the CGD or CIXD subject areas at the 2000 level or above.		

MINOR IN PHOTOGRAPHY

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
AH 2162	History of Photography	
One course from the following:		
CSA 1501	Black and White Photography Fundamentals	
CSA 1502	Introduction to Digital Color Photography	
Electives		
3 credits in any photography, photojournalism, or other studio course taken at any level in the CPJ or CSA subject areas.		
9 credits in photography or photojournalism in any CPJ courses taken at the 2000 to 4000 level and/or any CSA courses numbered with 5 as the second digit.		

MASTER OF ARTS IN THE FIELD OF DECORATIVE ARTS AND DESIGN HISTORY

The master of arts in the field of decorative arts and design history degree program is offered through a partnership between the Corcoran School of the Arts and Design and the Smithsonian Associates. This unique graduate program covers a range of historical, cultural, and material topics. Through object-based study, students develop expertise in the history of cultural and stylistic influences, techniques and technology, and makers and materials.

Courses are taught at the Smithsonian Institution by curators, scholars, and leading museum professionals in Washington, DC. In addition to classes, students also participate in internships with arts institutions, organizations, and museum professionals. The internship experience complements the formal curriculum, enabling students to hone their research and writing skills in both professional and academic settings.

For some students, the MA in decorative arts and design history is a terminal degree leading to professional careers as curators and scholars in galleries and museums. For others, the degree is completed in preparation for doctoral study.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs.

42 credits, as follows: Thesis option—21 credits in required courses, a 3-credit internship, 6 credits in thesis research, and 12 credits in elective courses; non-thesis option—21 credits in required courses, a 3-credit internship, 18 credits in elective courses, and successful completion of a comprehensive oral and written examination. All students must demonstrate competency in a language other than English, to be assessed by examination. Students must maintain a 3.0 GPA in order to graduate from the program.

Code	Title	Credits
Required		
Foundation courses		
CDAD 6570	Proseminar in Decorative Arts and Design	
CDAD 6571	Survey of Decorative Arts and Design I	
CDAD 6572	Survey of Decorative Arts and Design II	
Core courses		
CDAD 6573	Material Culture Theory	
CDAD 6574	Topics in Medium-Based Decorative Arts and Design	
CDAD 6575	Non-Western Influences in Decorative Arts and Design	
CDAD 6902	Internship	
CMST 6201	Introduction to Museum Collections	
or CMST 6301	Museum Exhibition Curatorial Research and Planning	
or CMST 6304	Exhibition Development and Scriptwriting	

or CMST 6305 Visitor Perspectives: Museum Evaluation

Thesis

Students pursuing the thesis option take the following:

CDAD 6998 Thesis Research

CDAD 6999 Thesis Research

Electives

Thesis option: Students who choose the thesis option take 4 elective courses (12 credits).

Non-thesis option: Students who choose to take the master's comprehensive exam instead of writing a thesis take 6 elective courses (18 credits).

MASTER OF ARTS IN THE FIELD OF EXHIBITION DESIGN

The Master of Arts in Exhibition Design (MA-EX) program explores the intersection of design and public communications, in the nation's capital, at a critical moment in the history of cultural discourse and spatial practice.

Exhibition design, in the MA-EX program at GW's Corcoran School, is more than the design of spaces that convey information, share stories, or promote products. It does more than relate artworks, objects, and audiences in experiential compositions. It has the potential to tell us about how we are living and how we could be living.

MA-EX students take up the charge to rethink connections in the world. They find shapes for ideas and identities and orient them for diverse publics. They choreograph forms, facts, and fictions that put people in touch with each other and with the (built) environment. They design exhibitions as sites of material expression and activism.

The interdisciplinarity of the MA-EX program prepares students to innovate through exhibitions. Students work with curators, artists, and institutions. You will design in dialogue—drawing on multiple art, design, and social practices. And, you will develop dexterity, through training in analog craft and digital fabrication, studies in history and theory and exercises in real-world application.

The MA-EX program coordinates with Washington, DC's extensive network of national museums. It also engages the city at-large, identifying opportunities for exhibition in its places of memory and monument, performance and protest, and commerce and leisure.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

48 credits, including 36 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
CAH 6400	History of Exhibitions	
CEX 6010	Exhibition Design Studio 1	
CEX 6011	Spatial Representation and Making I	
CEX 6012	Spatial Representation and Making II	
CEX 6014	Materials, Detailing, and Fabrication/Installation	
CEX 6020	Exhibition Design Studio 2	
CEX 6030	Exhibition Design Studio 3	
CEX 6040	Exhibition Design Studio 4	
CEX 6100	Lighting, Acoustics, and Design for the Senses	
CEX 6210	Special Topics in Exhibition Design	
CEX 6220	Exhibition Design Research	
CEX 6230	Art and Design Writing	
Electives		
One 3-credit studio practice elective course.		
One 3-credit curatorial or exhibition elective course.		
One 3-credit design skills elective course.		
One 3-credit arts/design business or management elective course.		

MASTER OF ARTS IN THE FIELD OF INTERACTION DESIGN

Interaction design seeks solutions to complex human and environmental challenges—from designing smart devices to reimagining educational environments. A unique and growing field, it explores the ways people engage with technology and their environments in their daily lives.

The Master of Arts in Interaction Design, offered by the Corcoran School of the Arts and Design, trains leaders who can analyze and create meaningful digital and physical design solutions. Students have the opportunity to develop their design practice in a real-world context by working with

community organizations through the program's innovative Engagement Lab. This curricular component enables students to embrace a human-centered collaborative approach to design that is mindful of social and environmental impact.

With the program's focus on human services and the role of interaction design in public policy, graduates are equipped to make a difference across the non-profit, government and business sectors.

REQUIREMENTS

The Corcoran master of arts in interaction design at the concentrates on preparing students to enter fields connected to the design of interactive services with a social or civic imperative. The course of study consists of four primary components: studio based skill-building; academic study connecting theoretical, historical, and practice in human-centered design; collaborative project-based work with partners in the Washington, DC, region; and strategic design thinking.

Code	Title	Credits
Required		
CIXD 6010	Interaction Design for Service	3
CIXD 6011	Narrative Media Design for Interaction	3
CIXD 6012	Prototyping Interaction	3
CIXD 6020	Topics in Human Centered Design	3
CIXD 6021	Topics in Design Leadership	3
CIXD 6080	Engagement Lab (Taken four times for a total of 12 credits)	3-6
Thesis		
Completion of a written thesis.		
CIXD 6998	Interaction Design Thesis I	3
CIXD 6999	Interaction Design Thesis II	3
Completion of a creative thesis project and exhibition.		
Electives		
9 credits in elective courses.		
Total Credits		24-27

MASTER OF ARTS IN THE FIELD OF NEW MEDIA PHOTOJOURNALISM

The New Media Photojournalism program is a high-energy, immersive experience grounded in the fundamentals of photojournalism and documentary photography. Emphasizing strong storytelling skills and fluency in multimedia platforms, the Master of Arts in New Media Photojournalism program incorporates writing, photography, audio, video, and web design to prepare students to work as freelancers, visual reporters, editors, and producers.

The program emphasizes the individual as a visual reporter and encourages experimentation with new ways of storytelling, documentation, and editing. The program also encourages its students to explore the latest digital practices taught in conjunction with the enduring fundamentals of visual reporting, editing, and ethics. Through intensive faculty mentoring along with a broad and flexible program of study and internship opportunities, students choose and develop their professional paths.

In addition to the Washington Post, National Public Radio, National Geographic, and Discovery Communications, countless newspapers, magazines, trade journals and major media outlets are located within a five-mile radius of the Corcoran's downtown campus. Graduates of the program are prepared to excel in careers in a wide range of visual media—including photography, picture and video editing, documentary production and multimedia management—and go on to lead a new generation of photojournalists as the field evolves in tandem with technology.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Code	Title	Credits
Required		
CPJ 6010	New Media Photojournalism Image and Impact	
CPJ 6020	Topics in Photo Editing Studio Seminar	
or CPJ 6225	Making Meaning Through the Photography Book	
CPJ 6050	Advanced Multimedia Lab I	
CPJ 6060	Advanced Multimedia Lab II: Editing and Production	

CPJ 6100	Research, Reporting, and Writing: Contemporary Journalism Practice
CPJ 6110	Story and Narrative in Photojournalism
CPJ 6500	New Media Photojournalism Capstone Production Workshop
CPJ 6501	New Media Photojournalism Capstone Post-Production Workshop
CPJ 6550	New Media Photojournalism Capstone Research and Reporting

Electives

15 credits in any graduate-level Corcoran School studio, seminar, art history, internship, and directed study courses, or other graduate-level courses offered in Columbian College. Only 3 credits in internships may be applied toward the degree.

Recommended program of study

Code	Title	Credits
First semester		
CPJ 6010	New Media Photojournalism Image and Impact	
CPJ 6110	Story and Narrative in Photojournalism	
CPJ 6100	Research, Reporting, and Writing: Contemporary Journalism Practice	
CPJ 6050	Advanced Multimedia Lab I	
Second semester		
CPJ 6020	Topics in Photo Editing Studio Seminar	
CPJ 6060	Advanced Multimedia Lab II: Editing and Production	
Third semester		
CPJ 6500	New Media Photojournalism Capstone Production Workshop	
CPJ 7010		
Fourth semester		
CPJ 7900		

Visit the program website (<https://corcoran.gwu.edu/ma-new-media-photojournalism/>) for additional information.

MASTER OF FINE ARTS IN THE FIELD OF SOCIAL PRACTICE

The Master of Fine Arts in Social Practice with a focus in public policy is a unique program that connects art, policy and collective action. The program is designed for emerging artists and creative thinkers looking to develop skills in both the arts and public policy sectors during an intensive, two-year, 60-credit degree. The program brings together artists, designers, organizers, researchers and policymakers to initiate learning opportunities and projects that address the critical questions of our time.

It combines study in experimental, relational and performative creative practices with academic research, collaborative work and field-based experiential learning in Washington, D.C. - a global hub for policy makers, tech leaders, NGO's and cultural institutions. To support their creative work, students in the program take academic coursework across the university, including the departments of the Columbian College of Arts and Sciences and the Trachtenberg School of Public Policy and Administration.

Students who are especially interested in working with diverse populations and who wish to create a hybrid studio practice focused on issues of social justice, collaborative methodology and ethical innovation are candidates for this MFA in Social Practice. We particularly seek applicants whose statement and/or portfolio demonstrates a broad-based creative practice, which may include professional work outside the arts; an understanding of the challenges and opportunities of working with diverse communities in an art context; and familiarity with more than one language. **Note: This program will begin accepting applications for the Fall 2020 term.**

REQUIREMENTS

The following requirements must be fulfilled: 60 credits, including 45 credits in required courses (including thesis) and 15 credits in elective courses.

Code	Title	Credits
Required		
CSA 6010	Social Practice Workshop (taken four times, once per semester, for a total of 16 credits)	
CSA 6015	History and Theory of Art in the Public Realm	
CSA 6016	Field and Research Methodologies for Artists	
CSA 6080	Social Practice Field Studio (taken twice for a total of 6 credits)	

CSA 6097	Topics in Public Strategies (taken four times, once per semester, for a total of 8 credits)
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PPPA 6006	Policy Analysis
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Thesis

CSA 6999	Thesis Research (taken twice for a total of 6 credits)
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A thesis exhibition consisting of the execution of creative work along with a critical statement about this work must be completed under the supervision of a committee consisting of at least two full-time faculty members in the department.

Electives

3 credits in studio electives in any art or design area.

12 credits of supporting academic or studio coursework, in any area of the University, selected in consultation with the Director of Graduate Studies.

DUAL MA IN MUSEUM STUDIES AND GC IN JEWISH CULTURAL ARTS

The Museum Studies Program offer a dual master of arts in the field of museum studies (p. 351) and graduate certificate in Jewish cultural arts (p. 322) program. 9 credits may be shared between programs, thereby decreasing the total number of credits normally required. All requirements for both programs must be fulfilled.

Visit the Museum Studies program website (<https://corcoran.gwu.edu/graduate-museum-studies/>) for additional information.

DATA SCIENCE

Developed through a collaborative effort between the Statistics (<http://statistics.columbian.gwu.edu/>), Mathematics (<http://math.columbian.gwu.edu/>), Physics (<http://physics.columbian.gwu.edu/>), Economics (<http://economics.columbian.gwu.edu/>), Geography (<http://geography.columbian.gwu.edu/>), and Political Science (<http://politicalscience.columbian.gwu.edu/>) Departments, the Data Science program offers the master of science in data science and graduate certificate in data science. The program teaches students to understand data and contribute important insights with the goal of changing the way in which people live, work, and communicate. Through a structured curriculum that provides foundational knowledge as well as application skills, students learn how to confront the most complex problems facing government and private industry

Visit the Department of Data Science website (<https://datasci.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in data science (p. 207)

Minor

- Minor in data science (p. 209)

GRADUATE

Master's program

- Master of Science in the field of data science (p. 210)

Combined programs

- Dual Bachelor of Science in an approved Columbian College program and Master of Science in the field of data science (p. 210)
- Dual Master of Science in the field of data science and certificate in geographic information systems (p. 210)

CERTIFICATES

Graduate certificate

- Graduate certificate in data science (p. 211)

FACULTY

Associate Professors R. Engstrom (*Program Director*), E. Lawrence

Assistant Professors Y. Huang, N. Zahadat

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DATS 1001. Data Science for All. 3 Credits.

Cross-disciplinary perspective on topics ranging from an introduction and overview of standard data science tools through to frontier research topics in real-world systems. R is introduced.

DATS 2101. Ethical Life in a Digital World. 3 Credits.

Introduction to ethical perspectives and policies in an increasingly digital world. Topics include generation, recording, curation, processing, sharing, and use of data; algorithms; programming; hacking; and professional codes.

DATS 2102. Data Visualization for Data Science. 3 Credits.

Working with data and code to engage data science questions. Students develop coding, data visualization, and data presentation skills. Prerequisites: DATS 1001; and STAT 1051 or STAT 1053 or STAT 1111 or STAT 1127.

DATS 2103. Data Mining for Data Science. 3 Credits.

Basic concepts, principles, methods, implementation techniques, and applications of data mining, with a focus on Python and data mining algorithms. Overview of data mining techniques and skills to explore and analyze data. Prerequisites: CSCI 1012, DATS 1001, MATH 1232, and STAT 1053.

DATS 2104. Data Warehousing for Data Science. 3 Credits.

Fundamental concepts of databases and data warehousing. Database management; extract, transform, load (ETL) processes; and SQL. Ethical considerations, including privacy, data stewardship, and database security. Prerequisites: CSCI 1012 and DATS 1001.

DATS 4001. Data Science Capstone. 3 Credits.

Capstone experience for data science majors. Application of theoretical knowledge and practical skills gained in major courses to a real-world problem. Review of ethical issues and current topics in data science. Restricted to data science majors. Prerequisites: DATS 1001, DATS 2101W, DATS 2102, DATS 2103, and DATS 2104.

DATS 6001. Algorithm Design for Data Science. 3 Credits.

Theory and implementation of the most important problems in algorithm design. Tailored to the needs of non-computer science students.

DATS 6101. Introduction to Data Science. 3 Credits.

Basic techniques of data science. Algorithms for data mining, basics of statistical modeling, and concepts, abstractions, and practical techniques.

DATS 6102. Data Warehousing. 3 Credits.

Fundamentals and practical applications of data warehousing, including planning requirements, infrastructure, design, and maintenance. Prerequisites: STAT 2118 or permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics.

DATS 6103. Introduction to Data Mining. 3 Credits.

Concepts, principles, and techniques related to data mining; strengths and limitations of various data mining techniques, including classification, association analysis, and cluster analysis.

DATS 6201. Numerical Linear Algebra and Optimization. 3 Credits.

Linear and quadratic programming, nonlinear equations, global and unconstrained optimization, and general linearly and nonlinearly constrained optimization as used in data science. Restricted to students in the MS in data science program or with the permission of the instructor. Prerequisites: MATH 2184 or MATH 2185. Recommended background: An undergraduate degree with a strong foundation in science, mathematics, or statistics.

DATS 6202. Machine Learning I: Algorithm Analysis. 3 Credits.

Practical approach to fundamentals of algorithm design associated with machine learning; techniques of statistical and probability theory, combinatorial optimization, and factor graph and graph ensemble as used in machine learning. Prerequisites: DATS 6101 and DATS 6103. Credit cannot be earned for this course and PHYS 6620.

DATS 6203. Machine Learning II: Data Analysis. 3 Credits.

This course is a practical approach to fundamentals of machine learning with an emphasis on data analysis; i.e., how to extract useful information from different datasets. Topics include linear models, error and noise, training and testing methods, and generalization as used in machine learning. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Prerequisite: DATS 6101. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. Credit cannot be earned for this course and PHYS 6720.

DATS 6311. Bayesian Methods in Data Science. 3 Credits.

Introduction to Bayesian data analysis. Parameter estimation (using formal analysis, grid approximation, and Markov chain Monte Carlo), hierarchical models, generalized linear models, JAGS, and Stan. Prerequisites: DATS 6101 and DATS 6103.

DATS 6312. Natural Language Processing for Data Science. 3 Credits.

Introduction to natural language processing and its basic techniques and methods. Natural language processing techniques used to explore, analyze, and leverage natural language data stored in text, covering commonly used text analysis techniques and tools. Prerequisite: DATS 6202.

DATS 6401. Visualization of Complex Data. 3 Credits.

This course is a practical approach to fundamentals of data visualization specifically for data science professional. It covers all significant topics, including graphics, discrete and continuous variables, clustering and classification. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101, DATS 6102, and DATS 6103.

DATS 6402. High Performance Computing and Parallel Computing. 3 Credits.

Practical approach to high performance computing specifically for the data science professional. Topics such as parallel architectures and software systems, and parallel programming. Restricted to students in the MS or graduate certificate in data science programs or with permission of the instructor. Prerequisites: DATS 6101, DATS 6102 and DATS 6103.

DATS 6450. Topics in Data Science. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Restricted to students in the master's and graduate certificate in data science programs. Restricted to students in the master's and graduate certificate programs in data science. Prerequisites: DATS 6101 or permission of the instructor.

DATS 6499. Data Science Applied Research. 3 Credits.

Students conduct research projects under the supervision of the instructor. Project topics build on the knowledge and skills acquired during the data science program. Permission of the instructor required prior to enrollment.

DATS 6501. Data Science Capstone. 3 Credits.

Practical application of the knowledge and skills acquired during the master's program. Capstone team projects are chosen in consultation with the instructor. In addition to the specific prerequisite courses, completion of five pre-approved data science courses is required prior to enrollment. Restricted to students in their final semester of the MS in data science program. Prerequisites: DATS 6101, DATS 6102 and DATS 6103.

DATS 6810. Hot Topics in Big Data Analytics. 3 Credits.

This course will enhance students' big-data analysis and statistical skills, and is aimed at upper-level undergraduate and graduate students from the physical, biological and social sciences. In addition to over-viewing standard tools using R, it will expose students to current thinking about real data, analysis and modeling in our 'non-normal' world where distributions are fat-tailed rather than approximately normal, and where processes are bursty rather than approximately Poisson. Its cross-disciplinary approach will also help address the likely challenge facing next-generation researchers and employees, to 'understand' real-world data not only through statistical tests, but also by building generative simulations (e.g. in C) that reproduce the statistical stylized facts of real-world data sets. Other topics to be discussed include networks, machine-learning, as well as web-scraping of data – e.g. from social media sources. Restricted to Graduate and advance undergraduate students with permission of the instructor. Prerequisite: MATH 2184. Recommended background: Competency in single-variable calculus; MATH 2233 would be beneficial but is not strictly necessary. (Same as PHYS 6810).

BACHELOR OF SCIENCE WITH A MAJOR IN DATA SCIENCE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses (15 credits)		
CSCI 1012	Introduction to Programming with Python	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2184	Linear Algebra I	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
or STAT 1127	Statistics for the Biological Sciences	
Core courses (18 credits)		
DATS 1001	Data Science for All	
DATS 2101	Ethical Life in a Digital World	
DATS 2102	Data Visualization for Data Science	
DATS 2103	Data Mining for Data Science	
DATS 2104	Data Warehousing for Data Science	
DATS 4001	Data Science Capstone	
Domain concentration (9 credits)		
Students must complete a 9-credit domain concentration. Domain options are astronomy and astrophysics; biology-biodiversity and global change; biology-biotechnology; data journalism; geospatial data science; mathematical modeling; physics; and science, technology, and society.		
Students may petition to substitute a second major or a minor in another discipline for the domain.		
Astronomy and astrophysics domain		
Prerequisites		

PHYS 1011 & PHYS 1021	General Physics I and University Physics I
PHYS 1012 & PHYS 1022	General Physics II and University Physics II
Required	
ASTR 2121	Introduction to Modern Astrophysics
One course from the following:	
ASTR 2131	Astrophysics Seminar
ASTR 3141	Data Analysis in Astrophysics
ASTR 3161	Space Astrophysics
Biology-biodiversity and global change domain	
Prerequisites	
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
Required	
BISC 2450	Organic Evolution
Two courses from the following:	
BISC 2010	Global Change Biology
BISC 2332	Comparative Vertebrate Anatomy
BISC 2333	Evolution and Extinction of Dinosaurs
BISC 2454	General Ecology
BISC 3454	Marine Ecology
BISC 3458	Plant Comparative Structure and Function
BISC 3460	Conservation Biology
Biology-biotechnology domain	
Prerequisites	
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
BISC 2202	Cell Biology
BISC 2337	Introductory Microbiology Laboratory

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
BISC 3209	Molecular Biology
BISC 3209	Molecular Biology
Required	
BISC 2207	Genetics
Two courses from the following:	
BISC 2202	Cell Biology
BISC 2213	Biology of Cancer
BISC 2337	Introductory Microbiology Laboratory
BISC 3209	Molecular Biology
PUBH 3201	Introduction to Bioinformatics
Data journalism domain	
Prerequisite	
SMPA 2110W	Introduction to News Writing and Reporting
Required	
SMPA 2111W	Advanced News Reporting
SMPA 3230	Reporting in the Digital Age
One course from the following:	
SMPA 3233	Photojournalism
SMPA 3234	Editing and Design for Print and Web
SMPA 3235W	Broadcast News Writing
SMPA 3240W	Washington Reporting
SMPA 3241W	Campaign Reporting
SMPA 3242	Investigative Reporting
SMPA 3246	Specialized Reporting
Geospatial data science domain	
Required	
GEOG 2104	Introduction to Cartography and GIS
GEOG 3105	Techniques of Spatial Analysis
One course from the following:	

GEOG 3106	Intermediate Geographic Information Systems
GEOG 3107	Introduction to Remote Sensing
GEOG 3196	Special Topics in Techniques (Mathematical modeling domain)
Mathematics domain	
Prerequisite	
MATH 2233	Multivariable Calculus
Required	
Three courses from the following:	
MATH 3553	Introduction to Numerical Analysis
MATH 3359	Introduction to Mathematical Modeling
MATH 4981	Seminar: Topics in Mathematics (Complex Networks)
MATH 4981	Seminar: Topics in Mathematics (Bioinformatics Algorithms)
MATH 4981	Seminar: Topics in Mathematics (Wavelets and Fourier Analysis)
STAT 4197	Fundamentals of SAS Programming for Data Management
Physics domain	
Prerequisites	
MATH 2233	Multivariable Calculus
MATH 3342	Ordinary Differential Equations
PHYS 1021 & PHYS 1025	University Physics I and University Physics I with Biological Applications
PHYS 1022 & PHYS 1026	University Physics II and University Physics II with Biological Applications
Required:	
PHYS 2023	Modern Physics
PHYS 3161	Mechanics
PHYS 3181	Computational Physics
Science, technology, and society domain	
Three courses from the following:	

AMST 2610	Science, Technology, and Politics in Modern America
or HIST 2610	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2680W	Hashtag America
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3691	Special Topics in Linguistic Anthropology
SMPA 3476	Media, Technology, and Culture
SMPA 3477	Information Technology and Politics

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

MINOR IN DATA SCIENCE

The following requirements must be fulfilled: 21 credits including 9 credits in prerequisite courses and 12 credits in required courses.

Code	Title	Credits
Prerequisite courses for the minor (9 credits)		
CSCI 1012	Introduction to Programming with Python	
MATH 1231	Single-Variable Calculus I ¹	
STAT 1051	Introduction to Business and Economic Statistics ²	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
or STAT 1127	Statistics for the Biological Sciences	
Required courses for the minor (12 credits)		
DATS 1001	Data Science for All	

DATS 2101	Ethical Life in a Digital World
DATS 2102	Data Visualization for Data Science
One of the following:	
DATS 2103	Data Mining for Data Science
DATS 2104	Data Warehousing for Data Science

DUAL BS IN AN APPROVED COLUMBIAN COLLEGE PROGRAM AND MS IN THE FIELD OF DATA SCIENCE

The Columbian College of Arts and Sciences and the Department of Data Science work in coordination to offer a dual bachelor of science in an approved Columbian College program and master of science in the field of data science (p. 210) degree program. This dual program allows students the opportunity to study fundamental ideas that underlie the process of using data and problem solving and to apply the knowledge they gain to real-world scenarios. This is accomplished through elective coursework and partnerships with organizations in a variety of market areas, including health sciences, geography, cybersecurity, and public policy, to name a few. The program allows students to take up to 7.5 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://datasci.columbian.gwu.edu/ms-degree/>) for additional information.

DUAL MASTER OF SCIENCE IN THE FIELD OF DATA SCIENCE AND CERTIFICATE IN GEOGRAPHIC INFORMATION SYSTEMS

The Data Science Program and the Department of Geography (<https://geography.columbian.gwu.edu/>) work in conjunction to offer a dual Master of Science in Data Science and Graduate Certificate in Geographical Information Systems (GIS).

The graduate certificate program helps students acquire the knowledge and skills to move directly from the classroom into the workplace as environmental scientists, civil engineers and public health officials in the public and private sectors.

The curriculum guides students through all aspects of GIS theory and practice, from the science of cartography to database design and geospatial modeling.

Visit the Department of Data Science (<https://datasci.columbian.gwu.edu/ms-degree/>) website for additional information.

MASTER OF SCIENCE IN THE FIELD OF DATA SCIENCE

The explosion of data in today's world is rapidly shaping the landscape of our lives. This has led to an urgent need to process massive amount of information and obtain meaningful insights. Data scientists are trained to meet such challenges. Through a structured curriculum that provides foundational knowledge as well as application skills, students in the Data Science program learn how to confront the most complex problems across both government and private industry using data-driven decisions.

Data Science is an emerging field that aims to draw actionable conclusions from data. It uses techniques and theories from the broader areas of statistics, computer science, and mathematics. Its applications are in many fields including business, engineering, natural sciences, social sciences, humanities, and health care.

The STEM-designated Master of Science degree in Data Science provides a deep foundation in statistical analysis and programming. It also offers knowledge of the application domain, in addition to project management skills. Graduates of the MS in Data Science apply data science techniques to the solution of real world problems, communicate findings, and effectively present results using data visualization tools.

Developed through a collaborative effort between the Departments of Statistics, Mathematics, Physics, Economics, Geography and Political Science, the Data Science Program gives students cutting-edge tools for analyzing "Big Data" and teaches them how to extract the insights that are changing the way we live, work, and communicate.

Visit the program website (<https://datasci.columbian.gwu.edu/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits, including 18 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
DATS 6101	Introduction to Data Science	
DATS 6102	Data Warehousing	
DATS 6103	Introduction to Data Mining	
DATS 6501	Data Science Capstone	
DATS 6202	Machine Learning I: Algorithm Analysis	
DATS 6401	Visualization of Complex Data	
Electives		

12 credits in elective courses in DATS numbered 6000 or above.

GRADUATE CERTIFICATE IN DATA SCIENCE

The explosion of data in today's world is rapidly shaping the landscape of our lives. This has led to an urgent need to process massive amount of information and obtain meaningful insights. Data scientists are trained to meet such challenges. Through a structured curriculum that provides foundational knowledge as well as application skills, students in the Data Science program learn how to confront the most complex problems across both government and private industry using data-driven decisions.

Data Science is an emerging field that aims to draw actionable conclusions from data. It uses techniques and theories from the broader areas of statistics, computer science, and mathematics. Its applications are in many fields including business, engineering, natural sciences, social sciences, humanities, and health care.

Data Science, and the associated areas referred to as big data and data analytics, is a rapidly emerging technology field fueled by the dramatic growth in the amount of data involved in most areas of society. The 12-credit graduate certificate in data science program allows students to study fundamental ideas that underlie large data systems and document a knowledge base for work in data intensive jobs. Credit earned in the certificate program may be applied to the master of science in the field of data science degree program.

Visit the program website (<https://datasci.columbian.gwu.edu>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
Two courses from the following:		
DATS 6101	Introduction to Data Science	
DATS 6102	Data Warehousing	
DATS 6103	Introduction to Data Mining	
Electives		

Two additional DATS courses numbered 6000 or above.

EAST ASIAN LANGUAGES AND LITERATURES

OVERVIEW

The Department of East Asian Languages and Literatures offers instruction in the languages and cultures of China, Japan, and Korea. Courses in the fields of language, literature, and cultural studies introduce students to the long and unique civilizations of the East Asian peoples. The curriculum prepares students for careers in academia, business, diplomacy, government, medicine, and law, among other fields where knowledge of East Asia is critically important.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in Chinese language and literature (p. 212)
- Bachelor of Arts with a major in Japanese language and literature (p. 214)
- Bachelor of Arts with a major in Korean language and literature (p. 215)

Minors

- Minor in Chinese language and literature (p. 218)
- Minor in Japanese language and literature (p. 219)
- Minor in Korean language and literature (p. 219)

GRADUATE

Master's program

- Master of Arts in the field of Chinese language and culture (p. 217)

FACULTY

Professors J. Chaves, S. Hamano (*Chair, fall 2020*)

Associate Professors H. Dong, I. Kim (*Chair, spring 2021*), T. Tsujioka (*Teaching*), H. Zhang, P. N. Zhang

Assistant Professors B. Morley, L. Chen, I. Ko (*Teaching*), B. Morley, M.D. Pak, M. Wei (*Teaching*)

Professorial Lecturers Y. Kang, C. Yang

Lecturers W.K. Cavanaugh, M.Coss, M. Ichikawa, Q. Zhou

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Chinese (CHIN) (p. 1450)
- East Asian Languages and Literature (EALL) (p. 1537)
- Japanese (JAPN) (p. 1671)
- Korean (KOR) (p. 1673)
- Vietnamese (VIET) (p. 1856)

BACHELOR OF ARTS WITH A MAJOR IN CHINESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

39 credits in required courses.

Code	Title	Credits
Prerequisite courses		
CHIN 1001	Beginning Chinese I	
CHIN 1002	Beginning Chinese II	
CHIN 2003	Intermediate Chinese I	
CHIN 2004	Intermediate Chinese II	
Required for the major		
CHIN 3105	Intermediate Chinese III	
CHIN 3106	Intermediate Chinese IV	

CHIN 3109	Introduction to Classical Chinese I
CHIN 3110	Introduction to Classical Chinese II
CHIN 3111	Chinese Literature in Translation I
CHIN 3112	Chinese Literature in Translation II
CHIN 4107	Readings in Modern Chinese I
or CHIN 4108	Readings in Modern Chinese II
CHIN 4121W	Advanced Conversation and Composition I
or CHIN 4122W	Advanced Conversation and Composition II
or CHIN 4119W	Business Chinese
Three additional upper-level courses (9 credits) in Chinese language and culture, selected from the following list:	
CHIN 3116	Language Policy of China
CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3136W	Chinese Women in Myth, Literature, and Film
or WGSS 3136	Chinese Women in Myth, Literature, and Film
or WGSS 3136W	Chinese Women in Myth, Literature, and Film
CHIN 3163	Taiwanese Literature and Film
CHIN 3171	Poetry of the Tang and Song Periods I
CHIN 3172	Poetry of the Tang and Song Periods II
CHIN 3173	Chinese Drama and Theatre
CHIN 4108	Readings in Modern Chinese II
CHIN 4119W	Business Chinese
CHIN 4122W	Advanced Conversation and Composition II
CHIN 4179	Twentieth-Century Chinese Literature I
CHIN 4180W	Twentieth-Century Chinese Literature II
CHIN 4185	Directed Reading I
CHIN 4186W	Directed Reading II
CHIN 4198	Proseminar: Readings for the Major in Chinese Language and Literature
CHIN 4199	Proseminar: Readings for the Major in Chinese Language and Literature

Two additional courses related to China (6 credits), selected from the following:

AH 2190	East Asian Art
ANTH 3705	Anthropology of East Asia
EALL 3811	Confucian Literature in East Asia
or REL 2811	Confucian Literature in East Asia
EALL 3814	Religion and Philosophy in East Asia
or EALL 3814W	Religion and Philosophy in East Asia
or REL 2814	Religion and Philosophy in East Asia
ECON 2169	Introduction to the Economy of China
HIST 3610	China to 1800
HIST 3611	History of Modern China
HIST 3614	Writing Modern Chinese History
or HIST 3614W	Writing Modern Chinese History
HIST 3615	History of Chinese Communism
IAFF 2091	East Asia-Past and Present
JAPN 3111	Japanese Literature in Translation I
JAPN 3112	Japanese Literature in Translation II
JAPN 3162	Japanese Culture Through Film
or ANTH 3709	Japanese Culture Through Film
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2475	International Relations of East Asia
REL 2601	Buddhism
REL 2831	Introduction to Daoism
or EALL 3831	Introduction to Daoism
or EALL 3831W	Introduction to Daoism

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education

curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may

count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

East Asian Languages and Literatures faculty recommend students for ALL departmental special honors based on the following criteria:

In addition to the general requirements stated under University Regulations, candidates for special honors must have attained by the end of the fall semester of the senior year:

- A minimum 3.7 grade-point average in courses in the major.
- A minimum 3.4 overall grade-point average.
- A minimum grade of C- in all courses taken at GW.
- Qualified students may be invited, by the beginning of the fall semester of the senior year, to write an honors thesis, under the supervision of a faculty member, through CHIN 4199 Proseminar. Only if a committee of three faculty members approves the completed project are special honors recommended; the research project must be graded A or A-.

BACHELOR OF ARTS WITH A MAJOR IN JAPANESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
JAPN 1001	Beginning Japanese I	
JAPN 1002	Beginning Japanese II	
JAPN 2003	Intermediate Japanese I	
JAPN 2004	Intermediate Japanese II	
Required for the major		
JAPN 3105	Intermediate Japanese III	
JAPN 3106	Intermediate Japanese IV	
JAPN 3111	Japanese Literature in Translation I	

JAPN 3112	Japanese Literature in Translation II
JAPN 4109	Introduction to Bungo, Literary Japanese
Six additional JAPN courses (18 credits) numbered 3000 or above.	
Two additional courses (6 credits) selected from the following:	
AH 2190	East Asian Art
ANTH 3705	Anthropology of East Asia
CHIN 3111	Chinese Literature in Translation I
CHIN 3112	Chinese Literature in Translation II
CHIN 3136W	Chinese Women in Myth, Literature, and Film
or WGSS 3136	Chinese Women in Myth, Literature, and Film
or WGSS 3136W	Chinese Women in Myth, Literature, and Film
EALL 3811	Confucian Literature in East Asia
or REL 2811	Confucian Literature in East Asia
EALL 3814	Religion and Philosophy in East Asia
or REL 2814	Religion and Philosophy in East Asia
EALL 3831	Introduction to Daoism
or REL 2831	Introduction to Daoism
ECON 2170	Introduction to the Economy of Japan
HIST 3610	China to 1800
HIST 3611	History of Modern China
HIST 3621	History of Modern Japan
IAFF 2091	East Asia-Past and Present
KOR 3111	Korean Literature in Translation
KOR 3112	Korean Literature in Translation
PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2475	International Relations of East Asia
REL 2601	Buddhism

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

EALL faculty will recommend students for EALL departmental special honors based on the following criteria:

In addition to the general requirements stated under University Regulations, candidates for special honors must have attained by the end of the fall semester of the senior year:

- a 3.7 grade-point average in the Japanese major
- at least a 3.4 average overall
- a minimum of C- in every course that they have taken at GW

The Japanese program selects two students at the most based on the students' overall performance in the program.

BACHELOR OF ARTS WITH A MAJOR IN KOREAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

39 credits in required courses.

Code	Title	Credits
Prerequisite courses		
KOR 1001	Beginning Korean I	
KOR 1002	Beginning Korean II	
KOR 2003	Intermediate Korean I	
KOR 2004	Intermediate Korean II	
Required for the major		
KOR 3105	Intermediate Korean III	
KOR 3106	Intermediate Korean IV	
KOR 3111	Korean Literature in Translation	

KOR 3112	Korean Literature in Translation
KOR 4107	Readings in Modern Korean I
KOR 4108	Readings in Modern Korean II
KOR 4121W	Advanced Korean Conversation and Composition I
or KOR 4122W	Advanced Korean Conversation and Composition II
Four additional upper-level courses (12 credits) selected from the following:	
KOR 3123	Introduction to Korean Linguistics
KOR 3124	Introduction to Korean Linguistics
KOR 3162	Korean Culture through Film
KOR 4109	Introduction to the History of the Korean Language
KOR 4190	North Korean Society and Culture
Two courses (6 credits) related to Korea selected from the following:	
AH 2190	East Asian Art
ANTH 3705	Anthropology of East Asia
CHIN 3111	Chinese Literature in Translation I
CHIN 3112	Chinese Literature in Translation II
EALL 3811	Confucian Literature in East Asia
EALL 3814	Religion and Philosophy in East Asia
ECON 2169	Introduction to the Economy of China
HIST 2630	History of Korea
HIST 3610	China to 1800
HIST 3611	History of Modern China
HIST 3614	Writing Modern Chinese History
HIST 3615	History of Chinese Communism
HIST 3621	History of Modern Japan
IAFF 2091	East Asia-Past and Present
JAPN 3111	Japanese Literature in Translation I
JAPN 3112	Japanese Literature in Translation II
JAPN 3162	Japanese Culture Through Film

PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2368	Politics in the Two Koreas
PSC 2475	International Relations of East Asia
REL 2601	Buddhism
REL 2811	Confucian Literature in East Asia
REL 2814	Religion and Philosophy in East Asia
REL 2831	Introduction to Daoism
WGSS 3136W	Chinese Women in Myth, Literature, and Film

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or

interpretation of artistic traditions or knowledge of art in a contemporary context.

- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

The East Asian Languages and Literatures faculty recommends students for all departmental special honors based on the following criteria:

In addition to the general requirements stated under University Regulations, candidates for special honors must have attained by the end of the fall semester of the senior year:

- A 3.7 grade-point average in courses in the major.
- At least a 3.4 overall grade-point average.
- A minimum grade of C- in all courses taken at GW.

The Korean program selects at most two students for special honors based on the students' overall performance in the program.

MASTER OF ARTS IN THE FIELD OF CHINESE LANGUAGE AND CULTURE

The Master of Arts degree in Chinese Language and Culture (CLC) offers students the opportunity to deepen intellectual and cultural understanding of China as well as to learn the Chinese language. It prepares students for careers in various fields such as academia, consulting, government, business, non-profit, or education. Being in the heart of the nation's

capital, our program allows students the opportunity to interact with many leading organizations, business headquarters, consulting firms, and government and media agencies based in D.C. Students can enrich their learning experiences with additional activities.

Here are the program highlights:

- The only MA program of its kind in the greater D.C. region
- Customized curriculum to suit personal interests and career goals
- Close mentorship from well-established scholars and award-winning teachers in the department
- Competitive teaching assistant or internship positions
- Numerous China-related events and lectures on and off campus
- Preparation for the pursuit of either a professional career or doctoral studies
- Access to the many resources of downtown Washington, D.C.
- Building a professional network to support career opportunities

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs.

30 credits for the thesis option, 33 credits for the non-thesis option.

Program Requirements

Course List	Code	Title	Credits
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Required

Language Proficiency

Students whose Chinese language skills are determined by examination to be below the advanced level must take CHIN 4108: Readings in Modern Chinese. Students whose skills are determined to be at the required level take an alternative 3-credit course, which must be pre-approved.

Major Field Courses

A minimum of 18 credits from the following:

CHIN 6109	Introduction to Classical Chinese
CHIN 6110	Introduction to Classical Chinese 2
CHIN 6111	Chinese Literature in Translation
CHIN 6112	Chinese Literature in Translation II

CHIN 6123	Structure of Chinese
CHIN 6125	History of the Chinese Language
CHIN 6126	Chinese Phonology
CHIN 6128	Chinese Semantics
CHIN 6163	Taiwanese Literature and Film
CHIN 6171	Poetry of the Tang and Song Periods I
CHIN 6172	Poetry of the Tang and Song Periods II
CHIN 6173	Traditional Chinese Theatre and Drama
CHIN 6179	Twentieth-Century Chinese Literature I
CHIN 6180	Twentieth-Century Chinese Literature II
CHIN 6199	Graduate Seminar
CHIN 6201	Second Language Acquisition of Mandarin Chinese
CHIN 6210	Introduction to Teaching Chinese as a Foreign Language
CHIN 6310	Practicum in Chinese Language Instruction

Electives

A minimum of 6 credits from the following:

CHIN 6550	Independent Study for Chinese Language and Culture (Thesis Option) *
CHIN 6841	Religion and Politics in China
CPED 6557	Second Language Acquisition
CPED 6627	Teaching Second Language Reading and Writing
EALL 6811	Confucian Literature in East Asia
EALL 6831	Introduction to Daoism
EALL 6832	Myth, Ritual, and Popular Religion in China
EALL 6881	Women, Gender, and Religion in China

HIST 6610 Readings Seminar: Late Imperial China (Thesis Option (3 credits)) *

Thesis option

For students pursuing the thesis option a total of 3 credits from the following:

CHIN 6999	Thesis Research
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*Or an alternative pre-approved course.

**Students must submit a research proposal before enrolling in CHIN 6550.

Visit the program website for additional information.

MINOR IN CHINESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

18 credits in required courses.

Code	Title	Credits
Prerequisite courses		

CHIN 1001	Beginning Chinese I
CHIN 1002	Beginning Chinese II
CHIN 2003	Intermediate Chinese I
CHIN 2004	Intermediate Chinese II

Code	Title	Credits
Required for the minor		

CHIN 3105	Intermediate Chinese III
CHIN 3106	Intermediate Chinese IV

One upper-level language course (3 credits) selected from the following:

CHIN 4107	Readings in Modern Chinese I
CHIN 4108	Readings in Modern Chinese II
CHIN 4119W	Business Chinese
CHIN 4121W	Advanced Conversation and Composition I

CHIN 4122W	Advanced Conversation and Composition II
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Three additional courses (9 credits) in Chinese language and literature selected from the following:

CHIN 3109	Introduction to Classical Chinese I
CHIN 3110	Introduction to Classical Chinese II
CHIN 3111	Chinese Literature in Translation I
CHIN 3112	Chinese Literature in Translation II
CHIN 3116	Language Policy of China

CHIN 3123	Introduction to Chinese Linguistics
CHIN 3124	Introduction to Chinese Linguistics
CHIN 3136W	Chinese Women in Myth, Literature, and Film
or WGSS 3136W	Chinese Women in Myth, Literature, and Film
CHIN 3163	Taiwanese Literature and Film
CHIN 3171	Poetry of the Tang and Song Periods I
CHIN 3172	Poetry of the Tang and Song Periods II
CHIN 3173	Chinese Drama and Theatre
CHIN 4179	Twentieth-Century Chinese Literature I
CHIN 4180W	Twentieth-Century Chinese Literature II

Visit the program website (<https://eall.columbian.gwu.edu/major-and-minor-chinese/>) for additional information.

MINOR IN JAPANESE LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Prerequisite courses		
JAPN 1001	Beginning Japanese I	
JAPN 1002	Beginning Japanese II	
JAPN 2003	Intermediate Japanese I	
JAPN 2004	Intermediate Japanese II	
Required for the minor		
Six JAPN courses (18 credits) numbered 3000 or above, at least one of these must be selected from the following:		
JAPN 4107	Readings in Modern Japanese I	
JAPN 4108	Readings in Modern Japanese II	
JAPN 4109	Introduction to Bungo, Literary Japanese	
JAPN 4110	Readings in Classical Japanese	
JAPN 4121W	Advanced Conversation and Composition I	

JAPN 4122W	Advanced Conversation and Composition II
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MINOR IN KOREAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

18 credits in required courses.

Code	Title	Credits
Prerequisite courses		
KOR 1001	Beginning Korean I	
KOR 1002	Beginning Korean II	
KOR 2003	Intermediate Korean I	
KOR 2004	Intermediate Korean II	
Required for the minor		
KOR 3105	Intermediate Korean III	
KOR 3106	Intermediate Korean IV	
One course (3 credits) selected from the following:		
KOR 4107	Readings in Modern Korean I	
KOR 4108	Readings in Modern Korean II	
KOR 4121W	Advanced Korean Conversation and Composition I	
KOR 4122W	Advanced Korean Conversation and Composition II	
Three courses (9 credits) in Korean language and literature selected from the following. At least one course must be in Korean literature.		
KOR 3111	Korean Literature in Translation	
KOR 3112	Korean Literature in Translation	
KOR 3123	Introduction to Korean Linguistics	
KOR 3124	Introduction to Korean Linguistics	
KOR 3162	Korean Culture through Film	

ECONOMICS

The study of economics investigates the consequences of scarcity, which forces people, organizations, and governments to choose among competing objectives. Economics looks at these choices and how they affect the production of goods and services, market prices, national output, unemployment, inflation, economic growth, and the use and distribution of resources within and across nations. Part of the social and behavioral sciences in the Columbian College of Arts and Sciences, the economics program exposes students to macroeconomics, microeconomics, labor economics, the economics of industry, international finance, international trade and development, money and banking, the economics of government and public policy, and econometrics.

Visit the Department of Economics website (<https://economics.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in economics (p. 227)
- Bachelor of Science with a major in economics (p. 229)

Combined programs (<http://bulletin.gwu.edu/arts-sciences/economics/combined-bs-ma/>)

- Dual Bachelor of Arts or Bachelor of Science with a major in economics and Master of Public Policy (p. 231)

Minor

- Minor in economics (p. 231)

GRADUATE

Master's programs

- Master of Arts in the field of applied economics (p. 231)

Doctoral program

- Doctor of Philosophy in the field of economics (p. 232)

Combined programs

- Dual Master of Arts in the field of applied economics and graduate certificate in accountancy (p. 233)
- Dual Master of Arts in the field of applied economics and graduate certificate in budget and public finance (p. 233)
- Dual Master of Arts in the field of applied economics and graduate certificate in business analytics (p. 234)

- Dual Master of Arts in the field of applied economics and graduate certificate in data science (p. 234)
- Dual Master of Arts in the field of applied economics and graduate certificate in digital marketing and communications (p. 234)
- Dual Master of Arts in the field of applied economics and graduate certificate in environmental resource policy (p. 234)
- Dual Master of Arts in the field of applied economics and graduate certificate in financial management (p. 234)
- Dual Master of Arts in the field of applied economics and graduate certificate in geographic information systems (p. 234)
- Dual Master of Arts in the field of applied economics and graduate certificate in sports management (p. 235)
- Dual Master of Arts in the field of applied economics and graduate certificate in walkable urban real estate development (p. 235)

FACULTY

Professors M.D. Bradley, M.X. Chen, B.R. Chiswick, J.J. Cordes, V. Fon, J.E. Foster, S. Joshi (*Chair*), F.L. Joutz, G.L. Kaminsky, P. Labadie, A.S. Malik, M.O. Moore, D.O. Parsons, J. Pelzman, R.F. Phillips, R.M. Samaniego, J.C. Shambaugh, S.C. Smith, N. Vonortas, A.M. Yezer

Associate Professors P. E. Carrillo, I.R. Foster, R.C. Jedwab, W.P. Mullin, T. Sinclair, S.M. Suranovic, C. Wei, J. Weiner

Assistant Professors S. Hamilton, E.W.K. Hovander, D. Mackay, B.A. Stuart, P. Tien, O. Timoshenko, B.D. Williams, T. Williams

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental Prerequisite: ECON 1011 Principles of Economics I-ECON 1012 Principles of Economics II is prerequisite to all other undergraduate courses offered by the Department of Economics.

Courses at the 8000 level are specifically designed for economics graduate students and typically require knowledge of calculus and one or more of the core theory and econometrics courses. Less-well-prepared graduate students in other disciplines may register for 6000-level courses

after having completed ECON 6217 Survey of Economics I-ECON 6218 Survey of Economics II, or ECON 6218 Survey of Economics II and ECON 6219 Managerial Economics, or ECON 2101 Intermediate Microeconomic Theory and ECON 2102 Intermediate Macroeconomic Theory, or ECON 2103 Intermediate Microeconomic Theory: A Mathematical Approach and ECON 2104 Intermediate Macroeconomic Theory: A Mathematical Approach, unless the course description indicates that these prerequisites have been waived. Intermediate-level micro and macro courses taken elsewhere usually satisfy this requirement, but introductory or first-year courses do not. Graduate students in economics can take 6000-level courses only with permission of their advisor.

ECON 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

ECON 1001. Principles of Mathematics for Economics. 3 Credits.

Prepares students for college instruction in principles of microeconomic and macroeconomic theory, as well as instruction in business, social science, and basic science courses that do not require knowledge of calculus. Restricted to students who have successfully completed high school algebra I and basic geometry prior to matriculation and who have taken the Assessment and Learning in Knowledge Spaces (ALEKS) placement examination at GW; No minimum ALEKS score is required for this course.

ECON 1011. Principles of Economics I. 3 Credits.

Major economic principles, institutions, and problems in contemporary life. Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets. Credit cannot be earned for this course and HONR 2043.

ECON 1012. Principles of Economics II. 3 Credits.

Continuation of ECON 1011. Major economic principles, institutions, and problems in contemporary life. Topics in macroeconomics, including national income concepts, unemployment and inflation, institutions of monetary control. Prerequisite: ECON 1011 OR HONR 2043. Credit cannot be earned for this course and HONR 2044.

ECON 1099. Variable Topics. 1-36 Credits.

ECON 2101. Intermediate Microeconomic Theory. 3 Credits.

Analysis of household economic behavior, including derivation of demand functions. Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2103.

ECON 2102. Intermediate Macroeconomic Theory. 3 Credits.

Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2104.

ECON 2103. Intermediate Microeconomic Theory: A Mathematical Approach. 3 Credits.

Analysis of household economic behavior, including derivation of demand functions, and of firm behavior, including derivation of supply frameworks; demand and supply interaction under various market structures and in factor markets; reliance on constrained and unconstrained optimization techniques when analyzing household and firm behavior. Corequisite: MATH 1232. Recommended for students pursuing the BS degree in economics. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044; MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2101.

ECON 2104. Intermediate Macroeconomic Theory: A Mathematical Approach. 3 Credits.

Development and application of mathematical models of aggregate economic behavior with a focus on the intertemporal choices made by households, firms, and governments. Corequisite: MATH 1232. Recommended for students pursuing the BS degree in economics. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2102.

ECON 2121. Financial Economics. 3 Credits.

Economic analysis of key financial institutions, markets, and variables. Investigation of the performance of asset markets and the roles of money, credit, interest rates, and exchange rates. Examination of private sector institutions like equity markets and the banking system and the roles of regulators like the Federal Reserve. Credit cannot be earned for both ECON 2121 and ECON/FINA 3301. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044. Credit cannot be earned for this course and FINA 3301.

ECON 2122. Monetary Theory and Policy. 3 Credits.

Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. Prerequisites: ECON 1011 and ECON 1012.

ECON 2123. Introduction to Econometrics. 3 Credits.

Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231; and STAT 1051 or STAT 1053 or STAT 1111. Same As: STAT 2123.

ECON 2136. Environmental and Natural Resource Economics. 3 Credits.

Analysis of a variety of environmental and natural resource problems. The economic causes of these problems, their consequences, and the relative merits of alternative policies for dealing with them. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044.

ECON 2148. Survey of Health Economics. 3 Credits.

Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. Credit cannot be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 1011 and ECON 1012. Credit cannot be earned for this course and ECON 3148.

ECON 2151. Economic Development. 3 Credits.

Theories and empirical studies of the economic problems of developing countries. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044. Credit cannot be earned for this course and ECON 6250.

ECON 2151W. Economic Development. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ECON 1011 and ECON 1012.

ECON 2157. Urban and Regional Economics. 3 Credits.

Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets. Prerequisites: ECON 1011 and ECON 1012.

ECON 2158. Industrial Organization. 3 Credits.

Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. Prerequisite: ECON 1011- ECON 1012.

ECON 2159. Government Regulation of the Economy. 3 Credits.

Economic analysis of antitrust and regulation in the American economy. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103 or ECON 2158.

ECON 2160. Surv:Finance&Engineering Econ. 3 Credits.

ECON 2167. Economics of Crime. 3 Credits.

Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044.

ECON 2169. Introduction to the Economy of China. 3 Credits.

Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

ECON 2170. Introduction to the Economy of Japan. 3 Credits.

Analysis of the structure and growth of the Japanese economy. Prerequisites: ECON 1011 and ECON 1012.

ECON 2180. Survey of International Economics. 3 Credits.

Basic concepts of international trade and international finance, with emphasis on policy issues. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Credit cannot be earned for this course and ECON 6280.

ECON 2181. International Trade Theory and Policy. 3 Credits.

The basis for international trade and the effect of trade on consumers, producers, and workers; causes and effects of the international movement of factors including foreign direct investment, outsourcing, and migration; and the impacts of trade policies and trade agreements. Credit may not be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Credit cannot be earned for this course and ECON 3181, ECON 6283.

ECON 2182. International Macroeconomic Theory and Policy. 3 Credits.

Topics include the balance of payments, the determination of exchange rates and prices in open economies, the interaction of the exchange rate and domestic economic activity, international financial markets, and exchange rate and financial crises. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044. Credit cannot be earned for this course and ECON 6284.

ECON 2185. Economic History and Problems of Latin America. 3 Credits.

Analysis of present structures and problems of Latin American economies. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044.

ECON 2195W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ECON 2198. Special Topics in Economics - Regional. 3 Credits.

Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011 and ECON 1012.

ECON 2199. Special Topics in Economics. 3 Credits.

Topics vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044.

ECON 3098. Variable Topics - Regional Economics. 1-9 Credits.

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ECON 3099. Variable Topics. 1-12 Credits.**ECON 3105. Economic Forecasting. 3 Credits.**

Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. Prerequisites: ECON 1011 and ECON 1012; and ECON 2102 or ECON 2104; and ECON 2123.

ECON 3142. Labor Economics. 3 Credits.

Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044; and ECON 2101 or ECON 2103.

ECON 3148. Health Economics. 3 Credits.

Analysis of economic theories and applications to the demand for and supply of health care. Examination of the role of government in health care, public health, and unhealthy behavior (e.g., smoking). Credit cannot be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 2101 or ECON 2103. Credit cannot be earned for this course and ECON 2148.

ECON 3161. Public Finance: Expenditure Programs. 3 Credits.

Economic analysis of government spending and social regulation program; public goods, externalities, income transfer and social insurance programs, and benefit-cost analysis of government programs. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103.

ECON 3162. Public Finance: Taxation. 3 Credits.

Economic analysis of taxes. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth taxes, design of tax systems, and effects of taxation on labor and capital markets. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044; and ECON 2101 or ECON 2103.

ECON 3165. Economics of Human Resources. 3 Credits.

Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. Prerequisites: ECON 1011 and ECON 1012; and ECON 2101 or ECON 2103.

ECON 3181. International Trade Theory. 3 Credits.

Rigorous examination of theories of international trade that explain why countries trade and their gains from trade. Theories include comparative advantage, the factor-proportions theory of trade, and recent theoretical developments. The course also deals with the theory of trade policies, such as tariffs and quotas. Credit cannot be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103; and MATH 1221, MATH 1231, or MATH 1252. Credit cannot be earned for this course and ECON 2181.

ECON 3190. Law and Economics. 3 Credits.

An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103.

ECON 3191. Game Theory. 3 Credits.

Introduction to game theory, covering concepts such as Nash equilibrium, evolutionary games, backward induction and subgame perfection, Bayesian-Nash games of imperfect information, adverse selection, and moral hazard. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103.

ECON 3198. Advanced Topics in Economics - Regional. 3 Credits.

Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON 2104) or ECON 2123.

ECON 3199. Advanced Topics in Economics. 3 Credits.

Topics vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON 2104) or ECON 2123.

ECON 4198W. Proseminar in Economics. 3 Credits.

Preparation and presentation of a research paper in any field of economics agreed upon by the student and instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to seniors in the economics program. Prerequisites: ECON 2101 or ECON 2103; and ECON 2102 or ECON 2104. Recommended background: Prior or concurrent enrollment in ECON 2123 or STAT 2112 or STAT 2118.

ECON 4199. Independent Research - Economics. 3 Credits.

Independent research. Prerequisites: ECON 1011 and ECON 1012; and completion of 12 credits of upper-division economics courses, including ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the economics department.

ECON 5099. Variable Topics. 1-99 Credits.**ECON 6217. Survey of Economics I. 3 Credits.**

Intermediate-level microeconomic theory for graduate students in fields other than economics.

ECON 6218. Survey of Economics II. 3 Credits.

Continuation of ECON 6217. Intermediate-level macroeconomic theory for graduate students in fields other than economics. (ECON 6217 and ECON 6218--).

ECON 6219. Managerial Economics. 3 Credits.

Intermediate microeconomic theory, with emphasis on production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Credit can be earned for only one of ECON 6217 or ECON 6219.

ECON 6237. Economics of the Environment and Natural Resources. 3 Credits.

Analysis of public policy problems relating to the environment and natural resources development and management.

Prerequisite: ECON 6217.

ECON 6239. Economics of Defense. 3 Credits.

Economic analysis applied to national security planning and objectives. Analysis of defense establishment problems, including manpower, the defense industry base, procurement policy.

ECON 6248. Health Economics. 3 Credits.

Demand for medical care; organization of the health care delivery industry; policy issues on regulation, efficiency, and allocation of health care services.

ECON 6249. Industrial Org-TComm Industry. 3 Credits.**ECON 6250. Survey of Economic Development. 3 Credits.**

An introduction to economic problems faced by less developed countries. Emphasis on applications to policymaking and evaluation. Prerequisite: ECON 6217 or ECON 6280 or equivalent. Credit cannot be earned for this course and ECON 2151.

ECON 6255. Economics of Technological Change. 3 Credits.

Economics of research and development; innovation and growth; the role of government in the development and use of new technology.

ECON 6269. Economy of China I. 3 Credits.

Analysis of organization, operation, policies, and problems. Development of the economy since 1949.

ECON 6270. Economy of China II. 3 Credits.

Continuation of ECON 6269. Examination of critical problems of development. Prerequisites: ECON 6269 or permission of the instructor.

ECON 6271. Economy of Japan. 3 Credits.

Analysis of Japanese economic institutions and their contribution to Japan's development.

ECON 6280. Survey of International Economics. 3 Credits.

Introductory international trade and finance, primarily for students in the Elliott School. Topics include the economic effects of trade liberalization and protection, exchange rate determination, and macroeconomic policies in an open economy. Recommended background: introductory microeconomics and macroeconomics. Credit cannot be earned for this course and ECON 2180.

ECON 6283. Survey of International Trade Theory and Policy. 3 Credits.

For graduate students in fields other than economics. Survey of international economics and policy; application of comparative advantage and other arguments for trade; impact of trade on a domestic economy; new arguments for protectionism; and regional trading blocs. Credit cannot be earned for this course and ECON 2181.

ECON 6284. Survey of International Macroeconomics and Finance Theory and Policy. 3 Credits.

For graduate students in fields other than economics. Open economy macroeconomics; international finance; balance of payments accounting; exchange markets; alternative models of balance of payments determination and adjustment; behavior of flexible exchange rate systems. Credit cannot be earned for this course and ECON 2182.

ECON 6285. Economic Development of Latin America. 3 Credits.

Diversity of structures of Latin American economies; import substituting industrialization; inflation; problems of underemployment and income distribution.

ECON 6286. Economic Development of Latin America. 3 Credits.

Continuation of ECON 6285. Structure of trade; protection, exports, and economic development; regional and global economic integration; foreign investment, multinational enterprise, and technology transfer.

ECON 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as GEOG 6290/ SOC 6290/ STAT 6290.

ECON 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as GEOG 6291/ SOC 6291/ STAT 6291.

ECON 6292. Topics in International Trade. 3 Credits.

Topics on international trade issues and policy. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6293. Topics in International Finance. 3 Credits.

Topics on macroeconomic issues and policies in open economies, including exchange rate regimes, determinants of international capital flows, currency crises, financial contagion, current account sustainability and sovereign crises, fiscal problems, and macro-policies in emerging markets and mature economies.

ECON 6294. Topics in Economic Development. 3 Credits.

Topics on economic development issues and policy vary depending on faculty availability and interest. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6295. Special Topics. 3 Credits.

Topics vary, depending on current issues of interest and faculty availability.

ECON 6298. Reading and Research. 3 Credits.

Independent research. Restricted to master's candidates.

ECON 6300. Mathematical Methods for Economics. 3 Credits.

Instruction in the mathematical background required to appreciate and understand the use of mathematics in economic analysis, including multivariable calculus, integral calculus, and linear algebra. Emphasis on techniques for solving systems of equations, unconstrained and constrained optimization, comparative static analysis, difference equations, and analysis of dynamic models and their application to a range of economic problems. Restricted to students in the MA in applied economics program.

ECON 6301. Applied Microeconomic Theory. 3 Credits.

The principal areas of microeconomic theory: consumer demand, decision making under uncertainty, production and costs, game theory, and product markets; both competitive and imperfectly competitive, factor markets, and market failures. Emphasis on the application of theory to microeconomic issues of interest to the private and public sectors, such as product pricing, market entry and deterrence, competition policy, tax policy, and environmental regulation. ECON 6301 may be taken as a corequisite. Restricted to students in the MA in applied economics program. Prerequisite: ECON 6300.

ECON 6305. Applied Macroeconomic Theory. 3 Credits.

Development of an integrated framework for analyzing the determination of macroeconomic variables such as total production, unemployment, interest rates and inflation; interpreting macroeconomic data and macroeconomic policy; linking economic theory and current economic policy. The level of mathematical rigor is above that in a typical intermediate undergraduate macroeconomics course, but below that in a first-year PhD course. ECON 6300 may be taken as a corequisite. Restricted to students in the MA in applied economics program. Prerequisite: ECON 6300.

ECON 6321. Applied Managerial Economics. 3 Credits.

The application of economic principles and methodologies to key management decisions within organizations. Recommended background: Prior completion of a course in intermediate microeconomics.

ECON 6323. Applied Behavioral Economics. 3 Credits.

The application of economic principles and methodologies to key management decisions within organizations. Recommended background: Prior completion of a course in intermediate microeconomics.

ECON 6325. Applied Game Theory. 3 Credits.

Equilibrium concepts based on the Nash Equilibrium; application of these concepts to oligopolistic markets, long-term relationships in repeated games, auctions, reputation formation, and others. Recommended background: Prior completion of a course in intermediate microeconomics and one semester of undergraduate calculus.

ECON 6330. Applied Macroeconomics and Money. 3 Credits.

Motivations for employing the modern, expanded tools of a central bank; historical and present limitations. Recommended background: Prior completion of a course in intermediate macroeconomics.

ECON 6335. Applied Financial Derivatives. 3 Credits.

Introduction to the theoretical and practical aspects of financial and derivative markets; application of quantitative and statistical approaches to a variety of problems. Recommended background: Prior completion of a course in intermediate microeconomics.

ECON 6340. Applied Labor Economics and Public Policy. 3 Credits.

Topics in labor economics, including unemployment, unions, immigration, the minimum wage, pensions, worker mobility, and inequality. ECON 6300 may be taken as a corequisite. Prerequisite: ECON 6300.

ECON 6344. Applied Industrial Organization. 3 Credits.

The behavior of firms and implications of market structure and resource allocation; market participants, the role of transaction costs, product differentiation, imperfect knowledge, and market contestability. Public policy related to monopoly regulation and antitrust law. Use of standard microeconomic empirical and theoretical tools, including an introduction to game theory. Recommended background: Prior completion of a course in intermediate microeconomics and one semester of undergraduate calculus.

ECON 6350. Applied Development Economics. 3 Credits.

The complex causes of underdevelopment and contemporary ideas about how to make development succeed; theory underlying development economics, as well as the analytical tools used in development research. Students are expected to have a working understanding of the concepts of calculus. Recommended background: Prior completion of a course in intermediate microeconomics or intermediate macroeconomics.

ECON 6374. Probability and Statistics for Economics. 3 Credits.

Basics of research design, probability theory, mathematical expectations, univariate and bivariate statistical comparison tools, and a brief introduction to regression analysis. Restricted to students in the MA in applied economics program or with the permission of the instructor.

ECON 6375. Applied Econometrics. 3 Credits.

Introduction to the skills needed to critically evaluate and conduct econometric analysis. Multiple regression analysis; theoretical underpinnings of the ordinary least squares estimator; interpreting regression results and how to address common issues that arise in regression analysis; econometric methods to estimate and test economic models and to address causal questions using observational data. Restricted to students in the MA in applied economics program. Prerequisite: ECON 6374.

ECON 6376. Time Series Analysis. 3 Credits.

The tools required to understand, implement, and interpret common models used in time series econometrics. Emphasis on intuition and application. Students become proficient with performing basic time series analysis and forecasting using time series statistical software. Restricted to students in the MA in applied economics program. Prerequisites: ECON 6305 and ECON 6374.

ECON 6997. Independent Research. 1-3 Credits.

This course is limited to master's degree candidates in Economics. Before permission is granted to register for ECON 6997, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. The written plan must also be approved by the program director. This course may be repeated once for credit but to no more than a total of 6 credits.

ECON 6998. Thesis Research. 3 Credits.**ECON 6999. Thesis Research. 3 Credits.****ECON 8301. Microeconomic Theory I. 3 Credits.**

Theory of unconstrained optimization; optimization subject to equality and inequality constraints, along with applications. Profit maximization, utility maximization and cost minimization, concave and quasi-concave functions, monotone comparative statics, duality theory, the envelope theorem and Le Chatelier principle, and the Kuhn-Tucker conditions.

ECON 8302. Microeconomic Theory II. 3 Credits.

Expected utility theory, general equilibrium in a pure exchange economy and economy with production, welfare theorems and the core theory of the competitive firm in the short run and long run, monopoly and price discrimination, models of oligopoly. Prerequisite: ECON 8301.

ECON 8303. Microeconomic Theory III. 3 Credits.

Theory of games, including Nash equilibrium and its refinements and comparative statics, evolutionary game theory, multistage games and subgame perfection, repeated games and oligopolistic supergames, static and dynamic Bayesian games, auction theory, and bargaining theory. Prerequisite: ECON 8301 and ECON 8302.

ECON 8305. Macroeconomic Theory I. 3 Credits.

Alternative theories of income, employment, and the price level; impact of monetary and fiscal policy; role of expectations in the economy; and microfoundations of macroeconomic models and dynamic analysis.

ECON 8306. Macroeconomic Theory II. 3 Credits.

Extensions of alternative models of income determination, economic growth, and the application of analytical frameworks to the U.S. and international economies. Prerequisite: ECON 8305.

ECON 8307. Macroeconomic Theory III. 3 Credits.

Extensions to stochastic and dynamic general equilibrium frameworks, with emphasis on economic policy. Prerequisite: ECON 8306.

ECON 8323. Monetary Theory and Policy I. 3 Credits.

Theory of monetary policy within the framework of contemporary American central banking.

ECON 8324. Monetary Theory and Policy II. 3 Credits.

Continuation of ECON 8323. Theory of monetary policy within the framework of contemporary American central banking.

ECON 8337. Environmental Economics. 3 Credits.**ECON 8341. Labor Economics I. 3 Credits.**

Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8342. Labor Economics II. 3 Credits.

Continuation of ECON 8341. Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8345. Industrial Organization I. 3 Credits.

Economic theory and evidence regarding industrial market structure, conduct, and economic performance.

ECON 8346. Industrial Organization II. 3 Credits.

Continuation of ECON 8345. Economic issues in antitrust and government regulation of the U.S. economy.

ECON 8351. Development Economics I. 3 Credits.

Major analytic concepts, measures, theoretical models, and empirical methods of development economics.

ECON 8352. Development Economics II. 3 Credits.

Continuation of ECON 8351. In-depth examination of special research topics with emphasis on methods in applied microeconomics.

ECON 8357. Regional Economics. 3 Credits.

Study of regional planning and growth models, including input-output, programming, and econometric models used by planning agencies; analysis of interregional production, trade, migration, firm location, and pricing models.

ECON 8358. Urban Economics. 3 Credits.

Analysis of spatial relationships among economic activities within an urban area including the urban land, labor, and housing markets; urban transportation models; fiscal relationships among jurisdictions.

ECON 8363. Public Finance I. 3 Credits.

Theoretical and empirical analysis of the economic role of the public sector and the effects of public expenditures on resource allocation and income distribution. Topics include public goods, externalities, social insurance, and benefit-cost analysis.

ECON 8364. Public Finance II. 3 Credits.

Theoretical and empirical analysis of the effects of taxes and transfers on the allocation of resources and income distribution. Topics include partial and general equilibrium models of tax incidence, effects of taxes on labor supply, saving, and portfolio choices of households and on investment and financing decisions of firms.

ECON 8375. Econometrics I. 3 Credits.

Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as STAT 8375.

ECON 8376. Econometrics II. 3 Credits.

Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as STAT 8376. Prerequisite: ECON 8375.

ECON 8377. Econometrics III. 3 Credits.

Econometric methods for systems of equations and panel data, with additional topics that may vary from year to year. Prerequisite: ECON 8376.

ECON 8378. Economic Forecasting. 3 Credits.

Introduction to the theoretical and applied aspects of economic forecasting. Topics include the role of forecasting, univariate time-series analysis, single equation models, multiple series models, and evaluation of forecasts. Prerequisites: ECON 8375 or permission of the instructor.

ECON 8379. Laboratory in Applied Econometrics. 3 Credits.

Application of econometric theory and the use of econometric software; students are required to write an empirical research paper. The course usually deals exclusively with either micro or macroeconomic issues. May be repeated for credit provided the topic differs.

ECON 8381. International Trade Theory. 3 Credits.

International trade theory, including alternative models of the gains from trade and evaluations of the new justifications for protectionism, and analysis of commercial policy, factor flows, and trade and investment with multinational corporations. Prerequisites: Most sections require calculus or permission of the instructor.

ECON 8382. International Finance and Open-Economy Macroeconomics. 3 Credits.

International finance, including alternative models of balance of payments behavior and adjustment, payments accounting, exchange markets, and alternative exchange-rate regimes.

ECON 8383. International Financial Markets. 3 Credits.

Financial economics and international financial markets. Topics include standard asset pricing theory, uncertainty in open economy macroeconomics models, financial market micro-structure, and incomplete markets.

ECON 8395. Advanced Special Topics. 3 Credits.

Topics vary depending upon current interests and faculty availability. Open to graduate students in economics. May be repeated for credit.

ECON 8397. Dissertation Proposal Seminar. 3 Credits.

Limited to Doctor of Philosophy candidates in Unit II. Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies.

ECON 8997. Independent Research. 3 Credits.

Prior to enrollment, a written plan of study must be submitted for approval of both the faculty member directing the research and the director of graduate studies for the PhD program or the department chair. May be repeated for a total of 6 credits. Restricted to doctoral degree candidates in economics. Prerequisites: departmental approval.

ECON 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ECON 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN ECONOMICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
ECON 1011	Principles of Economics I ¹	
ECON 1012	Principles of Economics II ¹	
ECON 2101 or ECON 2103	Intermediate Microeconomic Theory Intermediate Microeconomic Theory: A Mathematical Approach	
ECON 2102 or ECON 2104	Intermediate Macroeconomic Theory Intermediate Macroeconomic Theory: A Mathematical Approach	
ECON 4198W	Proseminar in Economics	
MATH 1221 or MATH 1231 or MATH 1252	Calculus with Precalculus II ² Single-Variable Calculus I Calculus for the Social and Management Sciences	
STAT 1111	Business and Economic Statistics I (or equivalent) ²	

or STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
STAT 2112	Business and Economic Statistics II ²
or STAT 2118	Regression Analysis
or ECON 2123	Introduction to Econometrics

Electives

Six additional Economics (ECON) courses numbered between 2000 and 4999; a maximum of three of these courses can be regional and two international. Students may substitute up to two of the six ECON elective courses with FINA 3101 and FINA 3301. However, FINA 3301 and ECON 2121 cannot both be taken for credit. If ECON 2123 was taken instead of STAT 2112 as a required course, only five additional ECON courses are required.

Regional courses

ECON 2169	Introduction to the Economy of China
ECON 2170	Introduction to the Economy of Japan
ECON 2185	Economic History and Problems of Latin America
ECON 2198	Special Topics in Economics - Regional
ECON 3098	Variable Topics - Regional Economics
ECON 3198	Advanced Topics in Economics - Regional

International courses

ECON 2180	Survey of International Economics
ECON 2181	International Trade Theory and Policy
or ECON 3181	International Trade Theory
ECON 2182	International Macroeconomic Theory and Policy

¹ Post-matriculation residency requirement: For ECON 1011 and ECON 1012 to count toward the major, the course must be completed at GW with a minimum grade of C-. Students who matriculate with AP or transfer credit for one or both courses are exempt from this residency requirement for the relevant course(s).

² The selected MATH option, MATH 1221, MATH 1231, or MATH 1252, must be completed with a minimum grade of C-. STAT 1111, or STAT 1051, or STAT 1053 must be completed with a minimum grade of C-.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a grade-point average of at least 3.5 in economics courses taken at George Washington University. Upon review of the student’s ECON 4198W paper, the student may be recommended for graduation with Special Honors.

BACHELOR OF SCIENCE WITH A MAJOR IN ECONOMICS REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77) and the following curricular requirements.

Program-specific curriculum:

Code	Title	Credits
Required		
ECON 1011	Principles of Economics I ¹	
ECON 1012	Principles of Economics II ¹	
ECON 2103	Intermediate Microeconomic Theory: A Mathematical Approach	
or ECON 2101	Intermediate Microeconomic Theory	
ECON 2104	Intermediate Macroeconomic Theory: A Mathematical Approach	
or ECON 2102	Intermediate Macroeconomic Theory	
ECON 2123	Introduction to Econometrics	
ECON 4198W	Proseminar in Economics	
MATH 1221	Calculus with Precalculus II ²	
or MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II ²	

STAT 1111	Business and Economic Statistics I (or equivalent) ²
or STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science

Electives

Two courses (6 credits), completed with a minimum grade of C-, from the following:

CSCI 1011	Introduction to Programming with Java
CSCI 1012	Introduction to Programming with Python
CSCI 1111	Introduction to Software Development
CSCI 1112	Algorithms and Data Structures
CSCI 1311	Discrete Structures I
EMSE 2705	Mathematics of Operations Research
EMSE 3850	Quantitative Models in Systems Engineering
EMSE 4701	Optimization in Operations Research
EMSE 4710	Applied Optimization Modeling
MATH 2184	Linear Algebra I
MATH 2233	Multivariable Calculus ³
MATH 2971	Introduction to Mathematical Reasoning ³
MATH 3342	Ordinary Differential Equations ³
MATH 3410	Mathematics of Finance ³
MATH 4239	Real Analysis I ³
STAT 1129	Introduction to Computing
STAT 2183	Intermediate Statistics Lab/Packages
STAT 3119	Analysis of Variance
STAT 3187	Introduction to Sampling
STAT 4157	Introduction to Mathematical Statistics I
STAT 4158	Introduction to Mathematical Statistics II
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Statistics Inference

STAT 4189	Mathematical Probability and Applications I
STAT 4190	Mathematical Probability and Applications II
STAT 4197	Fundamentals of SAS Programming for Data Management

Additional requirements

Five additional Economics (ECON) courses (15 credits) numbered between 2000 and 4999. The following guidelines and restrictions apply:

FINA 3101 and/or FINA 3301 may be used as substitutes for up to two ECON courses; however, credit may not be earned for both FINA 3301 and ECON 2121.

At least one of the five courses must be taken at the 3000 level. ECON 3098, ECON 3099, FINA 3101, and FINA 3301 may be counted toward the 15 credits of ECON electives, but do not count toward the required minimum of 3 credits of 3000-level courses.

No more than three courses may be selected from ECON 2169, ECON 2170, ECON 2185, ECON 2198, ECON 3098, and ECON 3198.

No more than two courses may be selected from ECON 2180; ECON 2181 or ECON 3181; and ECON 2182.

¹ Post-matriculation residency requirement: In order for ECON 1011 to count towards the major it must be completed at George Washington University with a minimum grade of C-. Students who matriculate with AP or transfer credit for ECON 1011 are exempt from this residency requirement. In order for ECON 1012 to count towards the major it must be completed at George Washington University with a minimum grade of C-. Students who matriculate with AP or transfer credit for ECON 1012 are exempt from this residency requirement.

² The MATH course selected from between MATH 1221 or MATH 1231 as well as MATH 1232, must be completed with a minimum grade of C-. Moreover, STAT 1111, or STAT 1051, or STAT 1053 must be completed with a minimum grade of C-.

³ MATH 2233, MATH 2971, MATH 3342, MATH 3410, and MATH 4239 are strongly recommended for those planning to pursue graduate study in economics.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that

enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a grade-point average of at least 3.5 in economics courses taken at George Washington University. Upon review of the student’s ECON 4198W paper, the student may be recommended for graduation with Special Honors.

DUAL BA OR BS WITH A MAJOR IN ECONOMICS AND MASTER OF PUBLIC POLICY

The Department of Economics and the Trachtenberg School of Public Policy and Public Administration in Columbian College offer dual bachelor of arts with a major in (p. 227)economics or bachelor of science with a major in (p. 229)economics and master of public policy (p. 448) degree programs. The programs allow students to take 12 graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's. All requirements for both degrees must be fulfilled. Students interested in the dual degree program should consult with their advisor.

Visit the program website (<https://economics.columbian.gwu.edu/ba-or-bs-economicsmpp/>) for additional information.

MINOR IN ECONOMICS REQUIREMENTS

The following requirements must be fulfilled: 24 credits

Code	Title	Credits
Required		
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
ECON 2101	Intermediate Microeconomic Theory *	
or ECON 2103	Intermediate Microeconomic Theory: A Mathematical Approach	
ECON 2102	Intermediate Macroeconomic Theory *	
or ECON 2104	Intermediate Macroeconomic Theory: A Mathematical Approach	
Two additional upper-division Economics (ECON) courses numbered between 2000 and 4999		
One of the following mathematics courses:		

MATH 1221	Calculus with Precalculus II *
MATH 1231	Single-Variable Calculus I *
MATH 1252	Calculus for the Social and Management Sciences *
And one of the following options	
Option A: One of the following statistics courses:	
STAT 1111	Business and Economic Statistics I
STAT 1051	Introduction to Business and Economic Statistics
STAT 1053	Introduction to Statistics in Social Science *
Option B:	
MATH 1232	Single-Variable Calculus II
Option C:	
One additional upper-division Economics (ECON) course numbered between 2000 and 4999, other than excluded courses.**	

*Must be completed with a minimum grade of C-.

** The following may not be used for Option C: ECON 2169 Introduction to the Economy of China, ECON 2170 Introduction to the Economy of Japan, ECON 2185 Economic History and Problems of Latin America, ECON 2198 Special Topics in Economics - Regional, and ECON 3098 Variable Topics - Regional Economics.

MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS

The master of arts (MA) in applied economics provides students with the tools needed to succeed as economists in today's data-driven world. The program teaches students how to draw meaningful implications from economic data, to apply economic theory and quantitative methods to answer real-world policy questions, and to integrate economic analysis into their professional lives.

The program helps students develop the ability to communicate ideas through coursework, workshops, and intensive data and economic analysis. The program is offered both full- and part time to accommodate students’ work schedules. Graduate certificate programs in areas such as data science, budget and public finance, accountancy, financial management, and digital marketing may be pursued simultaneously.

Graduates of the applied economics program are prepared for positions as economic analysts in government, private

consulting firms, financial institutions, international organizations, and applied policy research institutions. Coursework integrating academic scholarship with hands-on research and data projects prepares graduates to enter the job market with proven skills to succeed as economists in today's data-driven world.

Program students come from the United States and around the world and are a mix of recent graduates and students with years of work experience.

The MA in applied economics is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The following curriculum requirements must be fulfilled: 30 credits, including 18 credits in core courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ECON 6300	Mathematical Methods for Economics	
ECON 6301	Applied Microeconomic Theory	
ECON 6305	Applied Macroeconomic Theory	
ECON 6374	Probability and Statistics for Economics	
ECON 6375	Applied Econometrics	
ECON 6376	Time Series Analysis	
Electives		

Twelve credits in elective economics (ECON) courses at the 6000 level or above selected in consultation with the program director.

Note: ECON 6217, ECON 6218, and ECON 6219 may not be used to fulfill the elective requirement. With program approval, students may select up to two graduate-level courses offered by the Trachtenberg School of Public Policy and Public Administration, School of Business, Milken Institute School of Public Health, and/or School of Engineering and Applied Science to fulfill the elective requirement. Courses in other graduate programs may meet this requirement subject to approval by the Program Director.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ECONOMICS

Economics looks at choices under scarcity and how these choices affect production, market prices, national output, unemployment, inflation, economic growth and the use and distribution of resources within and across nations. GW's graduate economics program involves topics ranging from microeconomics, macroeconomics and econometrics to subject areas chosen from labor economics, international economics, and the economics of industry. It is part of the social and behavioral sciences program in the Columbian College of Arts and Sciences.

The PhD program is divided into two units. The first unit includes completing examinations in microeconomic and macroeconomic theory and two field examinations selected by the student and approved by the doctoral program committee. The second unit includes participation in a dissertation seminar, completion of the written dissertation, and an oral defense. The program is offered primarily on a full-time basis and students are expected to complete their degrees in five to six years. Occasionally, the program admits highly qualified part-time students.

This is a STEM-designated degree program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Pre-candidacy requirements

Pre-candidacy requirements include satisfactory completion of 48 credits, including 18 credits in required courses and 30 credits in elective courses, and achievement of a passing grade in the general examination.

Code	Title	Credits
Required		
Core theory and econometrics		
ECON 8301	Microeconomic Theory I	
ECON 8302	Microeconomic Theory II	
ECON 8305	Macroeconomic Theory I	
ECON 8306	Macroeconomic Theory II	
ECON 8375	Econometrics I	

ECON 8376 Econometrics II

Research Development Course

ECON 8397 Paper Proposal Seminar

Electives

30 credits in 8000-level (or approved 6000-level) courses.

Additional requirements

Students must achieve a passing grade in the general examination and on the research paper proposal.

General examination

The General Examination consists of two preliminary examinations, one in microeconomic theory and one in macroeconomic theory, and a research paper proposal. To pass the general examination, students must earn a grade of "pass" or "pass with distinction" in the preliminary examinations in microeconomic and macroeconomic theory and earn a grade of "pass" or "pass with distinction" on the research paper proposal.

Students are required to take the microeconomic and macroeconomic preliminary examinations in May of their first year in the PhD program. The exams may be retaken at the start of the following semester, with departmental approval. Both exams must be passed by the second attempt.

Electives

Students must complete 30 credits in 8000-level or approved 6000-level courses. Research credits such as those taken in ECON 8998 or ECON 8999 do not count as elective credits in pre-candidacy, nor does ECON 8397.

In cases where knowledge outside the discipline of economics or outside Department of Economics course offerings is critical to the student's research field, students may take up to 6 credits in pre-candidacy coursework outside the department, with departmental approval. In exceptional circumstances, a student may take 9 such credits, with departmental approval.

Research paper proposal

Students must submit the research paper proposal by the end of their third year in the program. Part-time students may submit the research paper proposal in the fourth or fifth year of the program, subject to departmental approval.

Post-candidacy requirements

Post-candidacy requirements include successful completion of 24 credits at the 8000 level, the formulation of a dissertation proposal, a formal presentation of the proposal by the student to a potential dissertation committee for approval, and completion of a dissertation that demonstrates the candidate's ability to do original research as determined by the dissertation committee.

The 24 credits must include a minimum of 6 credits in ECON 8999.

Once a student successfully completes 24 credits, they must register for 1 credit in CCAS 0940 each subsequent fall and spring semester until they have successfully defended their dissertation to the dissertation oral examination committee, thereby completing the degree program.

Students may apply for the master of philosophy (MPhil) degree after successfully defending a dissertation proposal.

Time limits

The pre-candidacy stage must be concluded within three years of matriculation in the program; part-time students may conclude the pre-candidacy stage within five years of matriculation, subject to departmental approval. Upon successful completion of pre-candidacy, students are considered for admission to candidacy, i.e., the dissertation stage. The dissertation stage must be completed within five years of entry into candidacy, or within eight years of matriculation in the program, whichever is sooner*.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN ACCOUNTANCY

The Department of Economics works in conjunction with the School of Business to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in accountancy (p. 588). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN BUDGET AND PUBLIC FINANCE

The Department of Economics works in conjunction with the Trachtenberg School of Public Policy and Public Administration to offer a dual master of arts in the field of applied economics (<http://bulletin.gwu.edu/arts-sciences/economics/ma-applied-economics/>) and g (<http://bulletin.gwu.edu/engineering-applied-science/computer-science/ms/>) graduate certificate in budget and public finance (<http://bulletin.gwu.edu/arts-sciences/public-policy-administration/certificate-budget-public-finance/>) program. Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/>) and Trachtenberg

School of Public Policy and Public Administration (<https://tspppa.gwu.edu/>) websites for more information.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN BUSINESS ANALYTICS

The Department of Economics works in conjunction with the School of Business to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in business analytics (p. 590). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN DATA SCIENCE

The Department of Economics works in conjunction with the Department of Data Science to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in data science (p. 211). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN DIGITAL MARKETING AND COMMUNICATIONS

The Department of Economics works in conjunction with the School of Business to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in digital marketing and analytics (p. 592). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN ENVIRONMENTAL RESOURCE POLICY

The Department of Economics works in conjunction with the Trachtenberg School of Public Policy and Public Administration to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in environmental resource policy (p. 445). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN FINANCIAL MANAGEMENT

The Department of Economics works in conjunction with the School of Business to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in financial management (p. 593). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MASTER OF ARTS IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN GEOGRAPHIC INFORMATION SYSTEMS

The Department of Economics works in conjunction with the Department of Geography to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in geographical information systems (<http://bulletin.gwu.edu/arts-sciences/geography/certificate-geographical-information-systems/>). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MA IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN SPORTS MANAGEMENT

The Department of Economics works in conjunction with the School of Business to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in sports management (p. 597). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

DUAL MA IN THE FIELD OF APPLIED ECONOMICS AND GRADUATE CERTIFICATE IN WALKABLE URBAN REAL ESTATE DEVELOPMENT

The Department of Economics works in conjunction with the School of Business to offer a dual master of arts in the field of applied economics (p. 231) and graduate certificate in walkable urban real estate development (p. 599). Up to 6 credits may be shared between programs. All requirements for both programs must be fulfilled.

Visit the Department of Economics (<https://economics.columbian.gwu.edu/graduate-certificates-and-applied-economics-ma/>) website for additional information.

ENGLISH

Part of the Columbian College of Arts and Sciences' arts and humanities program, the Department of English fosters critical reflection on literature and culture, connecting reading practices with lucid writing and persuasive argumentation. Using a broad range of texts, students explore community, creativity, cultural conflict, history, and other relevant issues.

Visit the Department of English website (<https://english.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in creative writing and English (p. 246)
- Bachelor of Arts with a major in English (p. 248)

Combined program

- Dual Bachelor of Arts with a major in English and Master of Arts in the field of English (p. 251)
- Dual Bachelor of Arts with a major in English and Master of Education in the field of secondary education with a concentration in English (p. 656)

Minors

- Minor in creative writing (p. 252)
- Minor in English (p. 252)
- Minor in English for business students (p. 253)
- Minor in linguistics (p. 68) (interdisciplinary)

GRADUATE

Master's program

- Master of Arts in the field of English with optional concentrations in English or American literature (p. 251)

Doctoral program

- Doctor of Philosophy in the field of English with optional concentrations in English or American literature (p. 251)

FACULTY

Professors M. Alcorn (*Chair*), J.J. Cohen, R.L. Combs, P. Cook, M. Frawley, A. Huang, E.P. Jones, S. Knapp, T.V. Mallon, D. McAleavey, R. McRuer, D. Mitchell, K. Moreland, E. Schreiber, O.A. Seavey, J. Shore, C.W. Sten, A. Thompson, G. Wald, T.G. Wallace

Associate Professors G. Carter, P. Chu, K. Daiya, H. Dugan, J.M. Green-Lewis, P. Griffith, J. Hsy, J.C. James, A. López, D. Moshenberg, M.S. Soltan

Assistant Professors J. Chang, D. DeWispelare, J. Yun

Visiting Assistant Professors L. Page

Adjunct Professors A.C. Stokes

Jenny McKean Moore Writer in Washington M. Moustakis

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: The department strongly recommends a literature course, such as ENGL 1315 Literature and the Financial Imagination through ENGL 1711 or ENGL 1830 or ENGL 1840, as a prerequisite to upper-division English courses. All creative writing courses are limited to 15 students. Two creative writing courses in the same genre may not be taken during the same semester.

All graduate English courses, except ENGL 6100 Introduction to Literary Theory, may be repeated for credit with permission of the director of graduate studies.

ENGL 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ENGL 1050. Introduction to Literary Studies. 3 Credits.

How to read and interpret literature at the college level and beyond. Close readings of poetry, fiction, and drama, emphasizing genre and form.

ENGL 1099. Variable Topics. 1-36 Credits.

ENGL 111W. Preparation-Peer Tutors-Writing. 3 Credits.

ENGL 1210. Introduction to Creative Writing. 3 Credits.

An exploration of genres of creative writing (fiction, poetry, and/or playwriting). Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing.

ENGL 1300. The Bible as Literature. 3 Credits.

The Bible in translation as a literary object; the historical context in which its many parts were composed and its literary themes, styles, and structures.

ENGL 1305. Colonial/Post-Colonial British Literature. 3 Credits.

ENGL 1315. Literature and the Financial Imagination. 3 Credits.

Literary studies focused broadly on representations of business, finance, or commerce; the economics of literary production; and/or theories of economic class as they pertain to literary works. Topic, genre, and time period vary by instructor.

ENGL 1320. Literature of the Americas. 3 Credits.

American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe. Same As: ENGL 1320W.

ENGL 1320W. Literature of the Americas. 3 Credits.

American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1320.

ENGL 1330. Myths of Britain. 3 Credits.

Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor. Same As: ENGL 1330W.

ENGL 1330W. Myths of Britain. 3 Credits.

Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1330.

ENGL 1340. Essential Shakespeare. 3 Credits.

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world? Same As: ENGL 1340W.

ENGL 1340W. Essential Shakespeare. 3 Credits.

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world? Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1340.

ENGL 1351. Shakespeare Seminar. 3 Credits.

Seminar course for first-year students in the Dean's Scholars in Shakespeare Program. Literary study of Shakespeare's poems and plays along with those of his contemporaries. Topic, genre, and time period vary by instructor.

ENGL 1360. Fantasy and Speculative Fiction. 3 Credits.

General overview of fantasy and speculative fiction. Topics may vary.

ENGL 1365. Literature and the Environment. 3 Credits.

The depiction of the nonhuman world in literature and film; how natural and built environments are translated into narrative; the relationship between literary production and environmental action.

ENGL 1370. Topics in Global Cinema. 3 Credits.

Topics vary by semester. Consult the Schedule of Classes for more details.

ENGL 1500. American Political Fictions. 3 Credits.

Examination of writing about U.S. politics and political figures through intensively subjective first-person points of view. Writers as influential diagnosticians of governance practices.

ENGL 1712W. Bollywood Cinema. 3 Credits.**ENGL 1830W. Tragedy. 3 Credits.**

Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1840W. Comedy. 3 Credits.

Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the schedule of classes for more details. Instructor's permission is required.

ENGL 2100. Introduction to Asian American Studies through Literature. 3 Credits.

Major topics in Asian American culture and history, including identity, crosscultural and gender norms, racial formation, and exclusion. Writing and film about Asian Americans of East Asian, Southeast Asian, South Asian, Filipino, and mixed ancestry. Recommended background: Prior completion of UW 1020 or equivalent is suggested but not required.

ENGL 2210. Techniques in Creative Writing. 3 Credits.

The craft and technique of creative writing and/or theories of creative writing. Topics vary by semester. Consult the Schedule of Classes for more information.

ENGL 2240. Play Analysis. 3 Credits.

Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature. Literary and theatrical techniques used by playwrights. Same As: CTAD 2240. Credit cannot be earned for this course and TRDA 2240.

ENGL 2250. Dramatic Writing. 3 Credits.

Workshop in playwriting and screenwriting, with emphasis on dramatic structure. (Same as TRDA 2250).

ENGL 2410. Introduction to English Literature I. 3 Credits.

Study of British authors from the Middle Ages to the French Revolution. These may include Chaucer, Shakespeare, Donne, Milton, Swift, Gay, Johnson, and Gray.

ENGL 2410W. Introduction to English Literature I. 3 Credits.

Study of British authors from the Middle Ages to the French Revolution. These may include Chaucer, Shakespeare, Donne, Milton, Swift, Gay, Johnson, and Gray. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2411. Introduction to English Literature II. 3 Credits.

Surveys literature from two of the traditional period units in British Literature, the Romantic Period (roughly 1785 to 1832), and the Victorian Period (roughly 1832 to 1901), with some additional twentieth century texts.

ENGL 2411W. Introduction to English Literature II. 3 Credits.

Surveys literature from two of the traditional period units in British Literature, the Romantic Period (roughly 1785 to 1832), and the Victorian Period (roughly 1832 to 1901), with some additional twentieth century texts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2460. Fiction Writing. 3,4 Credits.

The writing of fiction. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2470. Poetry Writing. 3 Credits.

The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2510. Introduction to American Literature I. 3 Credits.

Historical survey of early American writing through Melville, Whitman, and Dickinson.

ENGL 2510W. Introduction to American Literature I. 3 Credits.

Historical survey of early American writing through Melville, Whitman, and Dickinson. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2511. Introduction to American Literature II. 3 Credits.

Reading of significant works by modern American authors such as Wharton, Chopin, Crane, London, Frost, Morrison. Hughes, and Faulkner.

ENGL 2511W. Introduction to American Literature II. 3 Credits.

Reading of significant works by modern American authors such as Wharton, Chopin, Crane, London, Frost, Morrison. Hughes, and Faulkner. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2560. Intermediate Fiction Writing. 3 Credits.

The writing of fiction. Prerequisite: ENGL 2460 .

ENGL 2570. Intermediate Poetry Writing. 3 Credits.

The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2610. Introduction to Black Literature of America I. 3 Credits.

Survey of significant works of black American literature from the late eighteenth century to the turn of the twentieth century, with a particular emphasis on the slave narrative.

ENGL 2610W. Introduction to Black Literature of America I. 3 Credits.

Survey of significant works of black American literature from the late eighteenth century to the turn of the twentieth century, with a particular emphasis on the slave narrative. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2611. Introduction to Black Literature of America II. 3 Credits.

Influential black writers and literary trends of the twentieth century. How the Great Migration altered black American life and how black literature registered the concerns of the Civil Rights, Black Power, feminist, and anti-war movements.

ENGL 2611W. Introduction to Black Literature of America II. 3 Credits.

Influential black writers and literary trends of the twentieth century. How the Great Migration altered black American life and how black literature registered the concerns of the Civil Rights, Black Power, feminist, and anti-war movements. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2710. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Same As: WGSS 2710.

ENGL 2710W. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2711. Postcolonialism and Migration in Global Anglophone Literature and Film. 3 Credits.

Migration and politics as represented in world Anglophone literature and film; theories and histories of migration, feminist theory, and ethnic studies engaged in conversation with cultural texts.

ENGL 2711W. Postcolonialism and Migration in Global Anglophone Literature and Film. 3 Credits.

Migration and politics as represented in world Anglophone literature and film; theories and histories of migration, feminist theory, and ethnic studies engaged in conversation with cultural texts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2712. Bollywood Cinema. 3 Credits.

Introduction to the history and aesthetics of popular Hindi film known as Bollywood from the 1950s through the present; gender identities, melodrama, nationalism, modernity, religion, family, sexuality, globalization, and diaspora. Same As: ENGL 1712W.

ENGL 2712W. Bollywood Cinema. 3 Credits.

Introduction to the history and aesthetics of popular Hindi film known as Bollywood from the 1950s through the present; gender identities, melodrama, nationalism, modernity, religion, family, sexuality, globalization, and diaspora. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1712W.

ENGL 2800. Introduction to Critical Theory. 3 Credits.

Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies. Same As: ENGL 2800W.

ENGL 2800W. Introduction to Critical Theory. 3 Credits.

Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 2800.

ENGL 2830. Introduction to Tragedy. 3 Credits.

Tragic works of literature from the Greeks to Beckett.

ENGL 2840. Introduction to Comedy. 3 Credits.

Introduction to comic masterpieces from Chaucer to Tom Stoppard.

ENGL 3099. Variable Topics. 1-12 Credits.

ENGL 3210. Readings in Creative Writing. 3 Credits.

Intensive reading of one to three texts selected by the instructor with the goal of learning to read as a writer and developing close reading skills. Authors and texts vary. May be repeated for credit provided course coverage differs.

ENGL 3240. Introduction to Dramaturgy. 3 Credits.

Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as TRDA 3240.

ENGL 3250. Intermediate Dramatic Writing. 3 Credits.

A workshop developing scripts for both theatre and film. Same as TRDA 3250. Prerequisite: ENGL 2250 . May be repeated for credit with departmental approval.

ENGL 3360. Advanced Fiction Writing. 3 Credits.

Further workshop study of the writing of fiction. Prerequisite: ENGL 2560 . May be repeated for credit with departmental approval.

ENGL 3370. Advanced Poetry Writing. 3 Credits.

Further workshop study of the writing of poetry. May be repeated for credit with permission of the department. Prerequisite: ENGL 2570.

ENGL 3380. Creative Writing Workshop. 3 Credits.

Taught by the Jenny McKean Moore Writer in Washington; for undergraduates and graduate students. May be repeated for credit if taught by a different instructor. Prerequisites: One of the following upper-level creative writing courses: ENGL 2210, ENGL 2240, ENGL 2250, ENGL 2460, ENGL 2470, ENGL 2560, ENGL 2570, ENGL 3210, ENGL 3240, ENGL 3250, ENGL 3360, ENGL 3370, or ENGL 3390.

ENGL 3385. American Memoir. 3 Credits.

Contemporary American memoir as a literary construct; the history of the genre, its relationship to other literary models, and recent developments. Prerequisite: None.

ENGL 3390. Topics in Creative Writing. 3 Credits.

Topics announced prior to the registration period; may be repeated for credit provided the topic differs. Topics may include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; "Literature, Live"; avant-garde and experimental writing.

ENGL 3400. Topics in Literature and Finance. 3 Credits.

Capstone course for English minors in the School of Business. Analysis of economic theories as they pertain to literary works. Topics may vary. Recommended background: Prior completion of English 1315.

ENGL 3410. Chaucer. 3 Credits.

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late fourteenth century. Focus on *The Canterbury Tales*, read in the original Middle English.

ENGL 3410W. Chaucer. 3 Credits.

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late fourteenth century. Focus on *The Canterbury Tales*, read in the original Middle English. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3410.

ENGL 3420. Medieval Literature. 3 Credits.

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3420W. Medieval Literature. 3 Credits.

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3420.

ENGL 3430. The English Renaissance. 3 Credits.

Verse and prose written in the period 1515 to 1625, examined in relation to cultural practices and social institutions that shaped English life. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert, many others.

ENGL 3440. Shakespeare I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3440W. Shakespeare I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3441. Shakespeare II. 3 Credits.

Continuation of ENGL 3440. Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441W. Shakespeare II. 3 Credits.

Continuation of ENGL 3440. Close study of six or seven plays, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3445. Shakespeare on Film. 3 Credits.

Students learn in detail the history of a small but significant subset of American and European film production: adaptations of Shakespeare's plays using the original language.

ENGL 3446. Shakespearean London. 3 Credits.

Early modern London's emergence as a global capital and its influence on Shakespeare's plays. Instructor permission required.

ENGL 3450. Topics in Shakespeare Studies. 3 Credits.

Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, eighteenth-century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

ENGL 3460. Milton. 3 Credits.

Study of the major works in verse and prose, following the course of Milton's career.

ENGL 3470. English Drama I. 3 Credits.

Shakespeare's contemporaries.

ENGL 3471. English Drama II. 3 Credits.

Continuation of ENGL 3470. Historical survey, 1660 to present.

ENGL 3480. Eighteenth-Century British Literature. 3 Credits.

Eighteenth-century British literature, including literature that reflects some of the upheavals of a period that produced the Enlightenment, the French Revolution, the United States of America, and the two-party system.

ENGL 3480W. The Eighteenth Century I. 3 Credits.

Readings in significant eighteenth-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3481. The Eighteenth Century II. 3 Credits.

Continuation of ENGL 3480. Readings in significant eighteenth-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies. Same As: ENGL 3481W.

ENGL 3481W. The Eighteenth Century II. 3 Credits.

Continuation of ENGL 3480. Readings in significant eighteenth-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3481.

ENGL 3490. Early American Literature and Culture. 3 Credits.

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others.

ENGL 3490W. Early American Literature and Culture. 3 Credits.

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3510. Children's Literature. 3 Credits.

Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

ENGL 3520. American Romanticism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3520W. American Romanticism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3530. The British Romantic Period. 3 Credits.

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others. Same As: ENGL 3530W.

ENGL 3530W. The British Romantic Period. 3 Credits.

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3530.

ENGL 3540. Victorian Literature I. 3 Credits.

Major writers between 1830 and 1865: E. Brontë, Dickens; Tennyson, Browning, Arnold; Darwin, Carlyle, Ruskin. Same As: ENGL 3540W.

ENGL 3540W. Victorian Literature I. 3 Credits.

Major writers between 1830 and 1865: E. Brontë, Dickens, Tennyson, Browning, Arnold, Darwin, Carlyle, Ruskin. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3540.

ENGL 3541. Victorian Literature II. 3 Credits.

Major writers between 1865 and 1900: Eliot, Hardy, Conrad, Swinburne, the Rossetts, Morris, Pater, and Wilde.

ENGL 3550. The English Novel I. 3 Credits.

The eighteenth century—Defoe, Richardson, Fielding, Sterne, and others.

ENGL 3551. The English Novel II. 3 Credits.

Continuation of ENGL 3550. The nineteenth century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3551W. The English Novel II. 3 Credits.

Continuation of ENGL 3550. The nineteenth century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3551.

ENGL 3560. American Realism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3560W. American Realism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3570. Nineteenth-Century Black Literature. 3 Credits.

Studies in nineteenth-century black literature of the Americas and the transatlantic. Writing from the United States, Latin America, the Caribbean, Britain, and Africa may be included. Topics and emphasis may vary.

ENGL 3610. Modernism. 3 Credits.

The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

ENGL 3620. American Poetry I. 3 Credits.

Close examination of major American poems from the beginnings to the early twentieth century: Poe, Emerson, Whitman, Dickinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3620W.

ENGL 3620W. American Poetry I. 3 Credits.

Close examination of major American poems from the beginnings to the early twentieth century: Poe, Emerson, Whitman, Dickinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3620.

ENGL 3621. American Poetry II. 3 Credits.

This course examines important books by twelve American poets from throughout the twentieth century who collectively disrupt the continuity and traditions of English-language poetry, starting with the Georgian, even Horatian lyrics of Robert Frost (just before WW I), through the Modernist constructions of Gertrude Stein, T.S. Eliot, William Carlos Williams, Wallace Stevens, and Langston Hughes, and on through the post-WW II socially-conscious, Confessionalist, and Postmodern poetries of Brooks, Ginsberg, Plath, Bishop, Ammons, and Ashbery. Same As: ENGL 3621W.

ENGL 3621W. American Poetry II. 3 Credits.

This course examines important books by twelve American poets from throughout the twentieth century who collectively disrupt the continuity and traditions of English-language poetry, starting with the Georgian, even Horatian lyrics of Robert Frost (just before WW I), through the Modernist constructions of Gertrude Stein, T.S. Eliot, William Carlos Williams, Wallace Stevens, and Langston Hughes, and on through the post-WW II socially-conscious, Confessionalist, and Postmodern poetries of Brooks, Ginsberg, Plath, Bishop, Ammons, and Ashbery. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3621.

ENGL 3630. American Drama I. 3 Credits.

Nineteenth-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early twentieth century.

ENGL 3631. American Drama II. 3 Credits.

Continuation of ENGL 3630. Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

ENGL 3640. The American Novel I. 3-4 Credits.

Historical and critical study of major works in the American novelistic tradition. From the beginnings through the nineteenth century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3640W. The American Novel I. 4 Credits.

Historical and critical study of major works in the American novelistic tradition. From the beginnings through the nineteenth century: Hawthorne, Melville, James, Twain, Dreiser, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3641. The American Novel II. 3 Credits.

Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The twentieth century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3641W. The American Novel II. 3 Credits.

Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The twentieth century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3650. The Short Story. 3 Credits.

An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

ENGL 3660. Twentieth-Century Irish Literature I. 3 Credits.

Irish writers from the time of the literary revival in the late nineteenth century to the present. Yeats and other Irish poets and playwrights of his time and after—Synge, O’Casey, Kavanagh, Heaney, and others.

ENGL 3661. Twentieth-Century Irish Literature II. 3 Credits.

Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late nineteenth century to the present. Joyce through Ulysses and other fiction writers of later generations—O’Brien, Beckett, and others.

ENGL 3661W. Twentieth-Century Irish Literature I. 3 Credits.

Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late nineteenth century to the present. Joyce through Ulysses and other fiction writers of later generations—O’Brien, Beckett, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3710. Contemporary Drama. 3 Credits.

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today’s audience.

ENGL 3710W. Contemporary Drama. 3 Credits.

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today’s audience. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3710.

ENGL 3720. Contemporary American Literature. 3 Credits.

Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3720W. Contemporary American Literature. 3 Credits.

Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3720.

ENGL 3730. Topics in Global Postcolonial Literature and Film. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: WGSS 3730.

ENGL 3730W. Topics in Global Postcolonial Literature and Film. 3 Credits.

Representations of empire and culture in modern Anglophone literature and cinema from around the world; cross-cultural encounter, migration, identity, orientalism, gender, environment, conflict, and globalization. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. May be repeated for credit provided the topic differs. See department for more details.

ENGL 3800. The Literature of Hawaii. 3 Credits.

The history, culture, and politics of the settlement of the Hawaiian Islands through depictions in literature, poetry, film, journalism, archeological excavation reports, and diaries; the diversity of inhabitants on the islands and hybrid communicative forms they have developed.

ENGL 3810. Selected Topics in Literature. 3-4 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Same As: ENGL 3810W.

ENGL 3810W. Selected Topics in Literature. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3810.

ENGL 3820. Major Authors. 3 Credits.

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3820W. Major Authors. 3 Credits.

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3820.

ENGL 3826. Toni Morrison and William Faulkner. 3 Credits.

Commonalities between the fictional and discursive practices of Toni Morrison and William Faulkner; specifically, how their texts reenact and resist racism and patriarchal structures, explore the ways in which memory and the past construct identity, experiment with style.

ENGL 3830. Topics in Literary Theory and Cultural Studies. 3 Credits.

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs. Same As: ENGL 3830W.

ENGL 3830W. Topics in Literary Theory and Cultural Studies. 3 Credits.

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3830.

ENGL 3840. Gender and Literature. 3 Credits.

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3840W. Gender and Literature. 3 Credits.

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3850. Ethnicity and Place in American Literature. 3 Credits.

The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally diverse American populations, and how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary by instructor.

ENGL 3860. Topics in the History of the English Language. 3 Credits.

The cultural and literary functions of English across time and space. Scope and methodology vary by instructor. Topics may include language and identity, theoretical and linguistic approaches to language, multilingualism, diasporic writing, or history and periodization.

ENGL 3910. Disability Studies. 3 Credits.

Consideration of cultural texts that illustrate or illuminate issues of ability and disability—terms that extend the prism through which human experience may be understood.

ENGL 3912. Disability and the Holocaust. 3 Credits.

Investigating the question of direct links between the medical mass murder of disabled people in German psychiatric institutions to the Holocaust during World War II; studies of contemporary memorialization practices are examined.

ENGL 3915. Literature and Madness. 3 Credits.

A literary history of mental unrest; madness as a condition of culture, as an adaptive cognitive style, and as a cognitive challenge; descriptive, medical, historical, and socio-critical perspectives.

ENGL 3918. Literature and Medicine. 3 Credits.

The experience of illness as determined by historical, social, and psychological contexts; narrative as a mode of both understanding and managing illness, pain, loss, and the injustice of suffering.

ENGL 3920. U.S. Latina/o Literature and Culture. 3 Credits.

Introduction to the basic texts in the Chicana/o, Cuban-American, Dominican-American, and Puerto Rican literary and cultural traditions. Works by U.S. writers of Central American origin are discussed as well.

ENGL 3930. Topics in U.S. Latina/o Literature and Culture. 3 Credits.

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness, and latinidad.

ENGL 3930W. Topics in U.S. Latina/o Literature and Culture. 3 Credits.

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and latinidad. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3940. Topics in African American Literary Studies. 3 Credits.

Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

ENGL 3945. African American Poetry. 3 Credits.

African American poetry from the Black Atlantic through contemporary spoken word and web-based experiments in hypertext composition. Topics vary and may include Langston Hughes, Gwendolyn Brooks, poetry manifestoes, poetry and social justice, or eco-poetics of the black experience.

ENGL 3950. Cultural Theory and Black Studies. 3 Credits.

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers. Same As: ENGL 3950W.

ENGL 3950W. Cultural Theory and Black Studies. 3 Credits.

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3950.

ENGL 3960. Asian American Literature. 3 Credits.

How Asian American writers construct their identities in dialogue with shifting ideas of "America." Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3960W. Asian American Literature. 3 Credits.

How Asian American writers construct their identities in dialogue with shifting ideas of "America." Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3960.

ENGL 3965. Topics in Asian American Cultural Studies. 3 Credits.

Literary and cinematic texts of Asian diasporic writers, with a focus on Asian American authors, history, and culture; the globalization of Asian American literature.

ENGL 3970. Jewish American Literature. 3 Credits.

One hundred years of Jewish American writing including fiction, nonfiction, autobiography, poetry, and drama. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition. Same As: ENGL 3970W.

ENGL 3970W. Jewish American Literature. 3 Credits.

One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3970.

ENGL 3980. Queer Studies. 3 Credits.

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs. Same As: ENGL 3980W.

ENGL 3980W. Queer Studies. 3 Credits.

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3980.

ENGL 3990. Literary Studies Workshop. 1 Credit.

Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated once for credit provided the topic differs.

ENGL 4020. Studies in Contemporary Literature. 1-3 Credits.

Theme-based studies of specific issues or figures in twenty-first-century literature.

ENGL 4030. Service Learning with the Pen/ Faulkner Foundation. 3 Credits.

The role of literature in public life; how nonprofits bridge literary citizenship and civic engagement. This course is offered in collaboration with the PEN/Faulkner Foundation, a nonprofit organization that promotes literary achievement and excellence through various events programs.

ENGL 4040. Honors Seminar. 3 Credits.

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches –ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English. Same As: ENGL 4040W.

ENGL 4040W. Honors Seminar. 3 Credits.

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches –ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 4040.

ENGL 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as HIST 4135/ FREN 4135.

ENGL 4220. Creative Writing Senior Thesis. 3 Credits.

Under the guidance of an instructor, students compose an original manuscript of poetry or short fiction accompanied by an essay situating their work in the contemporary context. Restricted to seniors in the BA in English and and BA in creative writing and English programs.

ENGL 4220W. Creative Writing Senior Thesis. 3 Credits.

Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 4250. Honors Thesis. 3 Credits.

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4250W. Honors Thesis. 3 Credits.

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 4250.

ENGL 4360. Independent Study. 1-4 Credits.

For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain departmental approval and arrange for supervision by an appropriate member of the faculty.

ENGL 4470. Internship. 1-3 Credits.

Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. Permission of the supervising faculty required prior to enrollment. P/NP grading only. Restricted to juniors and seniors in the English program.

ENGL 5099. Variable Topics. 1-99 Credits.**ENGL 6100. Introduction to Literary Theory. 3 Credits.**

An overview of methodologies for examining texts as linguistic and cultural productions. Methodologies explored may include structuralism, formalism, deconstruction, cultural materialism, postcolonial theory, feminism, gender studies, and queer theory.

ENGL 6120. Advanced Literary Theory. 3 Credits.

The course focuses on a major figure or topic in theory (e.g., Foucault, Lacan, Barthes, Kristeva, Bakhtin, post-Marxist theory, language and power, the canon).

ENGL 6130. Selected Topics in Criticism. 3 Credits.

Topics may include cultural studies, film, gay/lesbian studies, others.

ENGL 6220. Topics in Medieval and Early Modern Studies. 3 Credits.

Topics may include gender and body; postcolonial approaches to the period; surveys of poetry and/or prose with a special thematic coherence.

ENGL 6240. Literature of the British Archipelago. 3 Credits.

The literary and historical texts of early modern and medieval Britain within a pan-insular framework: England in conflict and coexistence with Ireland, Wales, Scotland.

ENGL 6250. Transnational England. 3 Credits.

The early literature of England within a global framework: England, Spain, France, Italy, Turkey, the Levant, the Americas, Africa, India, the Caribbean.

ENGL 6260. Seminar in Medieval and Early Modern Studies. 3 Credits.

Trends and cutting-edge research in medieval and early modern studies.

ENGL 6350. Nineteenth Century I. 3 Credits.

Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6351. Nineteenth Century II. 3 Credits.

Continuation of ENGL 6350. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6352. Nineteenth Century III. 3 Credits.

Continuation of ENGL 6351. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6353. Nineteenth Century IV. 3 Credits.

Continuation of ENGL 6352. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6450. Twentieth Century I. 3 Credits.

Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6451. Twentieth Century II. 3 Credits.

Continuation of ENGL 6450. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6452. Twentieth Century III. 3 Credits.

Continuation of ENGL 6451. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6453. Twentieth Century IV. 3 Credits.

Continuation of ENGL 6452. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6510. Writing, Race, and Nation. 3 Credits.

Literary culture as a basis for exploration of intersections of origins and evolution of racial and ethnic identities and national myths and political objectives.

ENGL 6520. Ethnicity and Identity. 3 Credits.

Literary culture is used to explore how individuals, communities, and societies construct self-awareness and knowledge about others for cultural exchange.

ENGL 6530. Conceptualizing Genders. 3 Credits.

Structures of sex and gender difference considered historically and theoretically, including masculinity/femininity, sexualities, and their textual representations.

ENGL 6540. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as WGSS 6251.

ENGL 6550. Studies in Genre I. 3 Credits.

Questions of genre, considered theoretically and practically. Content varies.

ENGL 6551. Studies in Genre II. 3 Credits.

Continuation of ENGL 6550. Questions of genre, considered theoretically and practically. Content varies.

ENGL 6560. Postcolonialism. 3 Credits.

Exploration of aesthetics and politics through global and postcolonial literature and cinema, primarily from the twentieth and twenty-first centuries. Includes legal, theoretical, literary, and film texts. Restricted to graduate students and junior and senior undergraduate students. Same As: WGSS 6560.

ENGL 6620. Medicine and Society. 3 Credits.

The interaction of medicine and society in ways that touch on philosophy, economics, sociology, and public policy, but that cannot be fully understood in terms of any single perspective. Society's effect on medicine and medicine's effect on society.

ENGL 6630. Literature and Medicine. 3 Credits.

Methods of critical theory applied to issues concerning the practice of medicine. The polar constructs of illness and health, life and death, and life's worth or its waste.

ENGL 6720. Independent Research. 3 Credits.

Written permission of the instructor required prior to enrollment. May be repeated for credit to a maximum of 9 credits.

ENGL 6740. Mastering the Canon. 3 Credits.

Independent reading under a faculty member.

ENGL 6810. Folger Institute Seminars I. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6811. Folger Institute Seminars II. 3 Credits.

Continuation of ENGL 6810. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6998. Thesis Research. 3 Credits.

ENGL 6999. Thesis Research. 3 Credits.

ENGL 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ENGL 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Must be taken as the final 12 credits of the degree. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN CREATIVE WRITING AND ENGLISH

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum (33 credits):

Code	Title	Credits
Required		
One course (3 credits) in literature before the 18th century selected from the following:		
ENGL 3410	Chaucer	
or ENGL 3410W	Chaucer	
ENGL 3420	Medieval Literature	
or ENGL 3420W	Medieval Literature	
ENGL 3430	The English Renaissance	
ENGL 3440	Shakespeare I	
or ENGL 3440W	Shakespeare I	
ENGL 3441	Shakespeare II	
or ENGL 3441W	Shakespeare II	
ENGL 3450	Topics in Shakespeare Studies	
ENGL 3460	Milton	
ENGL 3470	English Drama I	
ENGL 3490	Early American Literature and Culture	
or ENGL 3490W	Early American Literature and Culture	
ENGL 4135	Folger Seminar	
One course (3 credits) in literature during the 18th and 19th century selected from the following:		
ENGL 3510	Children's Literature	
ENGL 3520	American Romanticism	
ENGL 3540	Victorian Literature I	
ENGL 3640	The American Novel I	
ENGL 3820	Major Authors	

One course (3 credits) in literature after the 19th century selected from the following:

ENGL 3510	Children's Literature
ENGL 3610	Modernism
ENGL 3621 or ENGL 3621W	American Poetry II
ENGL 3630	American Drama I
ENGL 3631	American Drama II
ENGL 3641 or ENGL 3641W	The American Novel II
ENGL 3650	The Short Story
ENGL 3660	Twentieth-Century Irish Literature I
ENGL 3661 or ENGL 3661W	Twentieth-Century Irish Literature II
ENGL 3710 or ENGL 3710W	Contemporary Drama
ENGL 3720 or ENGL 3720W	Contemporary American Literature
ENGL 3730 or ENGL 3730W	Topics in Global Postcolonial Literature and Film
ENGL 3850	Ethnicity and Place in American Literature
ENGL 3930 or ENGL 3930W	Topics in U.S. Latina/o Literature and Culture
ENGL 3960 or ENGL 3960W	Asian American Literature
ENGL 3970 or ENGL 3970W	Jewish American Literature
One course (3 credits) in minority/postcolonial literature selected from the following:	
ENGL 3570	Nineteenth-Century Black Literature
ENGL 3660	Twentieth-Century Irish Literature I

ENGL 3661 Twentieth-Century Irish Literature II

or ENGL 3661W Twentieth-Century Irish Literature I

ENGL 3730 Topics in Global Postcolonial Literature and Film

or ENGL 3730W Topics in Global Postcolonial Literature and Film

ENGL 3850 Ethnicity and Place in American Literature

ENGL 3910 Disability Studies

ENGL 3920 U.S. Latina/o Literature and Culture

ENGL 3930 Topics in U.S. Latina/o Literature and Culture

or ENGL 3930W Topics in U.S. Latina/o Literature and Culture

ENGL 3940 Topics in African American Literary Studies

ENGL 3950 Cultural Theory and Black Studies

or ENGL 3950W Cultural Theory and Black Studies

ENGL 3960 Asian American Literature

or ENGL 3960W Asian American Literature

ENGL 3980 Queer Studies

or ENGL 3980W Queer Studies

Five creative writing workshops (15 credits), two of which must be at the 3000 level or above, selected from the following:

ENGL 2250 Dramatic Writing

or TRDA 2250 Dramatic Writing

ENGL 2460 Fiction Writing

ENGL 2470 Poetry Writing

ENGL 2560 Intermediate Fiction Writing

ENGL 2570 Intermediate Poetry Writing

ENGL 3250 Intermediate Dramatic Writing

or TRDA 3250 Intermediate Dramatic Writing

ENGL 3360 Advanced Fiction Writing

ENGL 3370 Advanced Poetry Writing

ENGL 3380 Creative Writing Workshop

ENGL 3390 Topics in Creative Writing

Other required courses (6 credits):

ENGL 2210 Techniques in Creative Writing

ENGL 3210 Readings in Creative Writing

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).

- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

Majors in Creative Writing and English who wish to be considered for Special Honors must apply in writing in the spring semester of the junior year; they must meet the requirements stated under University Regulations and have a GPA of 3.25 in courses in the English Department at the time of applying. Candidates take the Creative Writing Senior Thesis ENGL 4220 (<http://bulletin.gwu.edu/search/?P=ENGL%204250>) in the spring semester. To be eligible for graduation with Special Honors, candidates must earn an A or A– on the Honors Thesis and have achieved a 3.4 grade-point average in courses in the English Department.

BACHELOR OF ARTS WITH A MAJOR IN ENGLISH

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
Any one introductory, non-creative writing course at the 1000 level. Suggested courses include:		
ENGL 1000	Dean's Seminar	
ENGL 1050	Introduction to Literary Studies	
ENGL 1300	The Bible as Literature	

ENGL 1305	Colonial/Post-Colonial British Literature
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas
or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1351	Shakespeare Seminar
ENGL 1360	Fantasy and Speculative Fiction
ENGL 1365	Literature and the Environment
ENGL 1370	Topics in Global Cinema
One course in creative writing at the 1000 or 2000 level. Suggested courses include:	
ENGL 1210	Introduction to Creative Writing
ENGL 2210	Techniques in Creative Writing
ENGL 2240	Play Analysis
ENGL 2460	Fiction Writing
ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 2570	Intermediate Poetry Writing
Two introductory survey courses at the 2000 level. Suggested courses include:	
ENGL 2100	Introduction to Asian American Studies through Literature
ENGL 2410	Introduction to English Literature I
or ENGL 2410	Introduction to English Literature I
ENGL 2411	Introduction to English Literature II
or ENGL 2411W	Introduction to English Literature II
ENGL 2510	Introduction to American Literature I
or ENGL 2510W	Introduction to American Literature I
ENGL 2511	Introduction to American Literature II
or ENGL 2511W	Introduction to American Literature II

ENGL 2610	Introduction to Black Literature of America I
or ENGL 2610W	Introduction to Black Literature of America I
ENGL 2611	Introduction to Black Literature of America II
or ENGL 2611	Introduction to Black Literature of America II
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 2712	Bollywood Cinema
or ENGL 2712W	Bollywood Cinema
ENGL 2830	Introduction to Tragedy
ENGL 2840	Introduction to Comedy
One course in critical theory:	
ENGL 2800	Introduction to Critical Theory
or ENGL 2800W	Introduction to Critical Theory
One minority/diversity course at the 3000 level. Suggested courses include:	
ENGL 3570	Nineteenth-Century Black Literature
ENGL 3660	Twentieth-Century Irish Literature I
ENGL 3661	Twentieth-Century Irish Literature II
or ENGL 3661W	Twentieth-Century Irish Literature I
ENGL 3730	Topics in Global Postcolonial Literature and Film
or ENGL 3730W	Topics in Global Postcolonial Literature and Film
ENGL 3800	The Literature of Hawaii
ENGL 3840	Gender and Literature
or ENGL 3840W	Gender and Literature
ENGL 3850	Ethnicity and Place in American Literature
ENGL 3910	Disability Studies

ENGL 3912	Disability and the Holocaust
ENGL 3920	U.S. Latina/o Literature and Culture
ENGL 3930	Topics in U.S. Latina/o Literature and Culture
or ENGL 3930W	Topics in U.S. Latina/o Literature and Culture
ENGL 3940	Topics in African American Literary Studies
ENGL 3945	African American Poetry
ENGL 3950	Cultural Theory and Black Studies
ENGL 3960	Asian American Literature
or ENGL 3960W	Asian American Literature
ENGL 3965	Topics in Asian American Cultural Studies
ENGL 3970	Jewish American Literature
or ENGL 3970W	Jewish American Literature
ENGL 3980	Queer Studies
or ENGL 3980W	Queer Studies

Electives

Four additional ENGL courses (12 credits) at the 3000 level, excluding creative writing courses. Up to two of these courses may be taken in foreign literature if determined to be equivalent to 3000-level English courses by the English Director of Undergraduate Advising.

With departmental approval, courses with appropriate subject matter may be substituted for those specified above. A single course may fulfill only one requirement.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must apply in writing in the spring semester of the junior year; and they must have a GPA of 3.25 in courses in the English Department at the time of applying. Candidates take ENGL 4040 Honors Seminar in the fall semester of the senior year and ENGL 4250 Honors Thesis

in the spring semester. Candidates must earn an A or A– on the Honors Thesis and have achieved a 3.4 grade-point average in courses in the English Department.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ENGLISH WITH OPTIONAL CONCENTRATIONS IN ENGLISH OR AMERICAN LITERATURE

The PhD in English features areas of strength (<https://english.columbian.gwu.edu/areas-strength/>) in American Literature and Culture, British and Postcolonial Studies, Crip/Queer Studies and Medieval and Early Modern Studies. Within each of these areas, students are invited to construct their own specializations and methodologies, ranging from sociohistorical angles to digital humanities and film studies.

Doctoral-level seminars are small, encouraging discussion and equal participation. Seminar presentations are modeled on conference papers, and many of our students have turned their coursework into conference presentations and articles that are suitable for publication in scholarly journals.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Required:

1. Coursework planned in consultation with the department advisor
2. A comprehension exam in a language approved by the department
3. A qualifying examination passed at the beginning of the student's second year and a field examination passed by the end of the student's coursework, topics and reading lists for which are designed in consultation with two graduate faculty advisors
4. A dissertation proposal after the field exam
5. A dissertation on an approved topic, directed by a member of the department's graduate faculty, and completed by the end of the fifth year of study.

Each student plans a program of studies in consultation with the department advisor and a committee of the graduate faculty. Students must maintain a grade-point average of at least 3.5.

DUAL BACHELOR OF ARTS WITH A MAJOR IN ENGLISH AND MASTER OF ARTS IN THE FIELD OF ENGLISH

The Department of English offers a dual bachelor of arts with a major in English (p. 248) and master of arts in the field of English (p. 251) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://english.columbian.gwu.edu/combined-bama-program/>) for additional information.

MASTER OF ARTS IN THE FIELD OF ENGLISH WITH OPTIONAL CONCENTRATIONS IN ENGLISH OR AMERICAN LITERATURE

The MA program offers comprehensive training in critical theory as well as literary and cultural studies, exposing students to a diversity of texts within a global and transnational context. A large faculty serves a small student body to allow for close interaction and mentoring at every stage of graduate study. Students have access to extraordinary research archives, such as the Folger Shakespeare Library, Library of Congress, National Archives, and libraries connected to the many museums in Washington, DC.

Each semester, the graduate programs in English offer seminars on a variety of subjects and time periods. Special strengths include medieval and early modern studies, nineteenth century studies, and contemporary literatures. Students and faculty work closely together in and outside the classroom, especially through the Medieval and Early Modern Studies Institute, the nineteenth century studies seminar, the Wang Visiting Scholars series, and special events.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Non-thesis option—30 credits; including 30 credits in required courses and a final master's portfolio; thesis option—30 credits, including 24 credits in required courses and 6 credits of thesis.

Code	Title	Credits
Required		
ENGL 6100	Introduction to Literary Theory	
For students pursuing the thesis option only		
ENGL 6998	Thesis Research	
ENGL 6999	Thesis Research	
The remainder of the program is developed in consultation with the departmental advisor.		

Students must maintain a minimum grade-point average of 3.25.

MINOR IN CREATIVE WRITING

The following requirements must be fulfilled: 21 credits selected from the following options:

Code	Title	Credits
One introductory literature course (3 credits) from the following:		
ENGL 1305	Colonial/Post-Colonial British Literature	
ENGL 1315	Literature and the Financial Imagination	
ENGL 1320	Literature of the Americas	
or ENGL 1320W	Literature of the Americas	
ENGL 1330	Myths of Britain	
or ENGL 1330W	Myths of Britain	
ENGL 1340	Essential Shakespeare	
or ENGL 1340W	Essential Shakespeare	
ENGL 2410	Introduction to English Literature I	
or ENGL 2410W	Introduction to English Literature I	
ENGL 2411	Introduction to English Literature II	
or ENGL 2411W	Introduction to English Literature II	
ENGL 2510	Introduction to American Literature I	
or ENGL 2510W	Introduction to American Literature I	
ENGL 2511	Introduction to American Literature II	
or ENGL 2511W	Introduction to American Literature II	
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film	

or ENGL 2710W Postcolonialism, Race, and Gender in Global Anglophone Literature and Film

ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 2830	Introduction to Tragedy
ENGL 2840	Introduction to Comedy

Code	Title	Credits
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Six additional English (ENGL) courses (18 credits), of which five must be in creative writing:

At least three in poetry:

ENGL 2470	Poetry Writing
ENGL 2570	Intermediate Poetry Writing
ENGL 3370	Advanced Poetry Writing
ENGL 3380	Creative Writing Workshop

Or three in fiction:

ENGL 2460	Fiction Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3360	Advanced Fiction Writing
ENGL 3380	Creative Writing Workshop

Or two in dramatic writing:

ENGL 2250	Dramatic Writing
or TRDA 2250	Dramatic Writing
ENGL 3250	Intermediate Dramatic Writing
or TRDA 3250	Intermediate Dramatic Writing

ENGL 3390 Topics in Creative Writing

MINOR IN ENGLISH REQUIREMENTS

The following requirements must be fulfilled: 18 credits in selected courses.

Code	Title	Credits
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One introductory courses (3 credits) from the following:

ENGL 1305	Colonial/Post-Colonial British Literature
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ENGL 1315	Literature and the Financial Imagination
ENGL 1320/1320W	Literature of the Americas
ENGL 1330/1330W	Myths of Britain
ENGL 1340/1340W	Essential Shakespeare
ENGL 2410	Introduction to English Literature I
or ENGL 2410W	Introduction to English Literature I
ENGL 2411	Introduction to English Literature II
or ENGL 2411W	Introduction to English Literature II
ENGL 2510	Introduction to American Literature I
or ENGL 2510W	Introduction to American Literature I
ENGL 2511	Introduction to American Literature II
or ENGL 2511W	Introduction to American Literature II
ENGL 2610	Introduction to Black Literature of America I
or ENGL 2610W	Introduction to Black Literature of America I
ENGL 2611	Introduction to Black Literature of America II
or ENGL 2611W	Introduction to Black Literature of America II
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 2830	Introduction to Tragedy
ENGL 2840	Introduction to Comedy

Remaining requirement

Five ENGL course (15 credits) in literature numbered 3000 or above. These may not include creative writing courses.

MINOR IN ENGLISH FOR BUSINESS STUDENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ENGL 1315	Literature and the Financial Imagination	
ENGL 3400	Topics in Literature and Finance	

Electives

Four elective courses (12 credits) in English (ENGL) courses at the 3000-level.

ENGLISH FOR ACADEMIC PURPOSES

OVERVIEW

The mission of the English for Academic Purposes (EAP) program is to help socialize international students who speak English as a second or additional language into the GW community. EAP helps prepare students to meet academic expectations for communication at a university level by offering core courses that focus on academic research and writing, as well as elective courses that target oral academic communication and other critical academic literacy skills. The program's instructional practices are grounded in the fields of TESOL, applied linguistics, and writing studies. Through their work in the program, students build an academic skill set that benefits them in their coursework and in their professional careers.

Visit the English for Academic Purposes program website (<https://eap.columbian.gwu.edu/>) for additional information.

FACULTY

Director M. Siczek

Teaching Assistant Professor N. Dolgova (Jacobsen)

Teaching Assistant Professor D. Stanchevici

Teaching Assistant Professor J. Paiz

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Students who are not placed into EAP 6110 Academic Writing and Research for International Graduate Students I and EAP 6111 Academic Writing and Research for International Graduate Students II require instructor's permission to register.

EAP 1010. Oral Academic Communication for International Students. 3 Credits.

Preparation for oral communication expectations of the U.S. undergraduate curriculum. Targets a variety of oral genres including in-class discussions, team and individual presentations, and multimodal assignments requiring the use of technology. Restricted to international students.

EAP 1015. Academic Writing for International Students. 3 Credits.

Structured academic writing course with a thematic focus on Washington, DC, culture. Development of academic literacy skills, source-based writing in a variety of genres, and drafting and revising written work. Followed by UW 1020. Restricted to international students.

EAP 1016. Academic Skills Workshop. 1 Credit.

Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree. Same As: EAP 6016.

EAP 1046. Independent Study. 1-4 Credits.

Individualized instruction in specific skill areas. Program director approval required. Credit for this course cannot be applied toward a degree.

EAP 3200. Special Topics in English for Academic Purposes. 3 Credits.

This special topics course targets academic communication in specialized or advanced contexts. Class activities and assignments reflect an analysis of student needs in disciplinary or professional fields. Course content draws on authentic materials and tasks to prepare students for success in written and oral communication.

EAP 6000. Academic Communication. 3 Credits.

Acclimation to the oral communication expectations of graduate school through developing listening and note-taking skills, expanding communicative vocabulary, leading and participating in class discussions, and preparing and delivering informal and formal presentations. Classroom activities directed toward scholarly and professional communication in students' fields of study whenever possible. Credit does not apply to any degree or certificate offered by GW.

EAP 6016. Academic Skills Workshop. 1 Credit.

Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree. (Same as EAP 1016).

EAP 6110. Academic Writing and Research for International Graduate Students I. 3 Credits.

An introduction to academic writing at the graduate level. Focus on developing rhetorical awareness, working with academic sources, drafting and revising academic writing assignments, using academic vocabulary, and improving grammatical accuracy. Credit for this course does not apply toward any degree or certificate offered by GW.

EAP 6111. Academic Writing and Research for International Graduate Students II. 3 Credits.

An academic writing and research course for international graduate students who demonstrate high proficiency in English. Focus on evaluating and using sources, reading and analysis of academic genres and discourse (including grammar and vocabulary), following appropriate process for writing and revising an independent research paper, small-group discussion, and oral presentations on research. Credit for this course does not apply toward any degree or certificate offered by GW.

EAP 6200. Special Topics in English for Academic Purposes. 3 Credits.

Academic communication in specialized or advanced contexts. Class activities and assignments reflect an analysis of student needs in disciplinary or professional fields. Course content draws on authentic materials and tasks to prepare students for success in written and oral communication.

ENVIRONMENTAL STUDIES

The Columbian College of Arts and Sciences offers an interdisciplinary program in environmental studies leading to the degree of bachelor of arts. Housed in the Department of Geography (<https://geography.columbian.gwu.edu/>), the major combines courses drawn from biological sciences, geological sciences, and geography, as well as American studies, anthropology, economics, English, history, public health, religion, sociology, and statistics.

Visit the Environmental Studies program website (<https://geography.columbian.gwu.edu/environmental-studies-major/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in environmental studies (p. 255)

Combined Program

- Dual Bachelor of Arts with a major in environmental studies and Master of Arts in the field of environmental resource policy (p. 257)

FACULTY

Director M. Keeley

Adviser G. Allington

BACHELOR OF ARTS WITH A MAJOR IN ENVIRONMENTAL STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Foundational courses		
BISC 1006	The Ecology and Evolution of Organisms	
or BISC 1112	Introductory Biology: The Biology of Organisms	
GEOG 1002	Introduction to Physical Geography	
GEOG 1003	Society and Environment	
GEOG 2104	Introduction to Cartography and GIS	
STAT 1053	Introduction to Statistics in Social Science	
or STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1111	Business and Economic Statistics I	
or STAT 1127	Statistics for the Biological Sciences	

Code	Title	Credits
Requirements for the major		
GEOG 2196	Field Methods in Geography (or equivalent)	
ENVR 4195	Environmental Studies Capstone	
Three of the following science courses:		
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior	
BISC 2010	Global Change Biology	
BISC 2401	Biodiversity in A Changing World	
BISC 2452	Animal Behavior	
BISC 2454	General Ecology	
BISC 3454	Marine Ecology	
BISC 3458	Plant Comparative Structure and Function	
BISC 3459	Field Biology *	
BISC 3460	Conservation Biology	
or BISC 3460W	Conservation Biology	
BISC 3461	Plant-Animal Interactions	
BISC 3464	Ecology and Evolution of Societies	
CHEM 2085	Environmental Chemistry	
GEOG 2129	Biogeography	
or GEOG 2129W	Biogeography	
GEOG 2136	Water Resources	
GEOG 3108	Weather and Climate	
GEOG 3128	Geomorphology	
GEOG 3218	Arctic Systems	
GEOL 2106	Oceanography	
GEOL 2151	Introduction to Paleontology	
GEOL 3128	Sedimentology and Stratigraphy	
GEOL 3138	Hydrogeology	
GEOL 3191	Geology of Energy Resources	
Three of the following society courses:		

ANTH 3407	Conservation in a Changing World: Human and Animal Behavior
ANTH 3502	Cultural Ecology
ECON 2136	Environmental and Natural Resource Economics
GEOG 2124	Urban Transportation
GEOG 2125	Transportation Systems and Networks
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
or GEOG 2134W	Energy Resources
GEOG 2137	Environmental Hazards
GEOG 2140	Cities and Societies
GEOG 2141	Cities in the Developing World
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
GEOG 3810	Planning Cities
HIST 3001	Special Topics (an environmental topic)
IA 3350	Basic Sustainability Design Strategies
PHIL 2281	Philosophy of the Environment
PPPA 2701	Sustainability and Environmental Policy
PUBH 3132	Health and Environment
PUBH 3150	Sustainable Energy and Environmental Health
SUST 2002	The Sustainable City

Electives

Two additional upper-level courses selected from the science and society course lists, above.

*May count as either a science requirement or the field method requirement, but not both.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education

curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may

count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

DUAL BACHELOR OF ARTS WITH A MAJOR IN ENVIRONMENTAL STUDIES AND MASTER OF ARTS IN THE FIELD OF ENVIRONMENTAL RESOURCE POLICY

The Department of Geography and the Trachtenberg School of Public Policy and Public Administration work in cooperation to offer a dual bachelor of arts with a major in environmental studies (p. 255) and master of arts in the field of environmental resource policy (p. 446) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://enrp.columbian.gwu.edu/combined-bama-degree/>) for additional information.

FILM STUDIES

Housed in the Columbian College of Arts and Sciences, film studies covers classical film aesthetics, surveys the history of world cinema, and takes an in-depth look at films from the United States, China, France, Germany, Japan, the Middle East, Russia, and the Spanish-speaking world.

Visit the Film Studies program website (<https://filmstudies.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Minor

- Minor in film studies (p. 257)

FACULTY

Committee on Film Studies E. Anker (*Director*), Y. Captain, H. Feigenbaum, K. Harvey, A. Hildebeitel, P. Rollberg, N. Seavey

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FILM 1099. Variable Topics. 1-36 Credits.

FILM 2151. Film Theory. 3 Credits.

A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee.

FILM 2152. Genres of Film. 3 Credits.

An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee.

FILM 2153. History of World Cinema I. 3 Credits.

A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2154. History of World Cinema II. 3 Credits.

Continuation of FILM 2153. A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2155. Screenwriting. 3 Credits.

Introduction to the art and craft of screenwriting—concept, genre, character, structure, dialogue, scene/sequence construction, and, ultimately, the preparation of scripts and treatments for a variety of screen formats.

FILM 2156. Advanced Screenwriting. 3 Credits.

Advanced phases of screenwriting culminating in the preparation of a full-length screenplay, with contextual study of contemporary, international, and classical films toward a fuller appreciation of movies as a cultural whole.

FILM 3099. Variable Topics. 1-12 Credits.

FILM 3390. Screenwriting. 3 Credits.

FILM 5099. Variable Topics. 1-99 Credits.

MINOR IN FILM STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 12 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
FILM 2151	Film Theory	

FILM 2152	Genres of Film
FILM 2153	History of World Cinema I
FILM 2154	History of World Cinema II
Electives	
Three from the following:	
AMST/AH 1070	The American Cinema
AMST 1100	Politics and Film
AMST 6190	Topics in American Studies (Democracy in Film)
ARAB 3502	Arab Film and Culture in English
CHIN 3162	Chinese Culture Through Film
CHIN 3163	Taiwanese Literature and Film
CLAS 3103	
CLAS 3114	Topics in Ancient Literatures and Cultures (Classics and Film)
CLAS 3202	
ENGL 1712	
ENGL 3445	Shakespeare on Film
ENGL 3730W	Topics in Global Postcolonial Literature and Film (Gender and Sexuality in PocoFilm)
ENGL 3810	Selected Topics in Literature (Disability and Film)
FILM 2155	Screenwriting
FILM 2156	Advanced Screenwriting
FREN 3560	Topics in Contemporary Francophone Literature and Cinema
FREN 3700	History of French Cinema
GER 3181	History of German Cinema—in English
GER 3187	German Cinema after 1945
ITAL 4183	History of Italian Film
JAPN 3162	Japanese Culture Through Film
KOR 3162	Korean Culture through Film
MUS 1104	Topics in Music (Music on Film, Film on Music)

MUS 3174	Topics in Music Theory and Composition (Composing for Film)
PERS 3502	Post-Revolutionary Iranian Cinema
PHIL 1062	Philosophy and Film
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II
SMPA 1000	Dean's Seminar (Hollywood and Politics)
SMPA 3194	Selected Topics in Political Communication *
or SMPA 3195	Selected Topics in Journalism and Mass Communication
SPAN 3560	
SPAN 3700	Cinema of Spain and Latin America
SMPA 6231	Documentary Filmmaking Practicum
SMPA 6274	Media and War

*Special topics courses must have the approval of the Program Director and will be considered only if the section covers a film-focused topic. SMPA 3194 and SMPA 3195 are offered on the same topic simultaneously. Topics offered include Film and Social Justice; Film and the American President; and War and Terrorism in Hollywood Film. For each section offered, students must choose to register under either SMPA 3194 or SMPA 3195.

FINE ARTS AND ART HISTORY

The Department of Fine Arts and Art History offers instruction in the visual and creative arts. Its programs strengthens a student's ability to develop visual literacy, as well as critical thinking and creative skills. Classroom study is supplemented by partnerships with the art museums and libraries of Washington, DC.

Fine Arts, an interdisciplinary program, fosters a rigorous, experimental approach to art as students cultivate creative pursuits in the studio and beyond.

Art History is rooted in direct, interpretive engagement with the visual arts. The program combines visual and historical analyses with philosophical hypotheses and theoretical, political debates. The curriculum promotes connections to the studio arts and interdisciplinary exchanges with other fields of inquiry. It also emphasizes the narrative qualities and rhetorical persuasiveness of art historical writing in dialogue with art objects, spaces, and performances.

Visit the Corcoran School of the Arts and Design website (<https://corcoran.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in art history (p. 263)
- Bachelor of Arts with a major in fine arts (p. 266)
- Bachelor of Arts with a dual major in art history and in fine arts (p. 259)

Minors

- Minor in art history (p. 270)
- Minor in fine arts (p. 270)
- Dual minor in art history and fine arts (p. 268)

Combined programs

- Dual Bachelor of Arts with a major in art history and Master of Arts in the field of art history (p. 267)
- Dual Bachelor of Arts with a major in fine arts and Master of Arts in the field of art therapy (p. 267)

GRADUATE

Master's programs

- Master of Arts in the field of art history (p. 268)
- Master of Fine Arts in the field of fine arts (p. 269)

FACULTY

Professors B. von Barghahn, D. Bjelajac, T. Ozdogan, P. Jacks, L.F. Robinson.

Associate Professors A.B. Dumbadze (*Chair*), D. Kessmann, B.K. Obler, S. Rigg.

Assistant Professors J. Brown, M. Natif, J.G.H. Sham.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Upper-division undergraduate fine arts Special Topics and Critical Practices courses may be repeated for credit when topic is different with approval of the undergraduate fine arts advisor or the department chair. A course fee is charged for

all fine arts courses listed here except FA 1075 East Asian Calligraphy, FA 4195 , and FA 4199 Internship.

Note: Core graduate fine arts courses may be repeated for credit with approval of the department. A course fee is charged for all fine arts courses listed here except FA 6295 and FA 6998 –FA 6999 Thesis Research.

- Art History (AH) (p. 1419)
- Fine Arts (FA) (<http://bulletin.gwu.edu/courses/fa/>)

BACHELOR OF ARTS WITH A DUAL MAJOR IN ART HISTORY AND IN FINE ARTS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Additional curriculum requirements:

Code	Title	Credits
Art History		
At least one course from six of the seven categories below and one additional course from any category for a total of 21 credits.		
Ancient		
AH 3101	Ancient Art of the Bronze Age and Greece	
AH 3102	Ancient Art of the Roman Empire	
AH 3103	Art and Archaeology of Egypt and the Near East	
AH 3104	Art and Archaeology of the Aegean Bronze Age	
AH 3105	Topics in Ancient Art and Archaeology	
AH 3106	Art and Archaeology of Israel and Neighboring Lands	
AH 4109	Topics in Ancient Art and Archaeology	
Medieval/Islamic World		
AH 3111		
AH 3112	Proseminar in Romanesque and Gothic Art and Architecture	

AH 3113	Islamic Art and Architecture
AH 3114	Art of the Book in the Medieval Muslim World
AH 4165	Topics in Islamic Art and Architecture
AH 3120	Italian Art and Architecture of the 13th through 15th Centuries
AH 3122	Topics in Early Northern Renaissance Art and Architecture
AH 3122W	Topics in Early Northern Renaissance Art and Architecture
AH 4119	Seminar in Medieval Art and Architecture
Renaissance/Baroque	
AH 2145	History of Decorative Arts: European Heritage
AH 3121	Italian Art and Architecture of the Sixteenth Century
AH 3123	Topics in Northern Renaissance Art and Architecture
AH 3123W	Topics in Northern Renaissance Art and Architecture
AH 3131	Italian Art and Architecture of the Seventeenth Century
AH 3132	Topics in Northern European Art and Architecture of the Seventeenth Century
AH 3134	Topics in Spanish and Portuguese Art through the Sixteenth Century
AH 3134W	Topics in Spanish and Portuguese Art through the Sixteenth Century
AH 3135	Topics in Seventeenth/Eighteenth Century Spanish and Portuguese Art
AH 4129	Seminar in Renaissance Art and Architecture
AH 4139	Seminar in Baroque Art and Architecture
18th/19th century	
AH 2071	Introduction to the Arts in America
AH 2145	History of Decorative Arts: European Heritage
AH 2154	American Architecture I

AH 2161	History of Decorative Arts: American Heritage
AH 3140	European Art of the Eighteenth Century
AH 3141	European Art of the Early Nineteenth Century
AH 3141W	European Art of the Early Nineteenth Century
AH 3142	
AH 3142W	
AH 3151	American Art in the Age of Revolution
AH 3152	American Art in the Era of National Expansion
Modern and contemporary	
AH 2155	American Architecture II
AH 2162	History of Photography
AH 2162W	History of Photography
AH 2071	Introduction to the Arts in America
AH 3143	Early Twentieth-Century Art
AH 3143W	Early Twentieth-Century Art
AH 3146	Modern Architecture in Europe and America
AH 3146W	Modern Architecture in Europe and America
AH 3153	American Art of the Twentieth Century
AH 3165	Later Twentieth-Century Art
AH 3165W	Later Twentieth-Century Art
AH 4149	Seminar in Modern European Art and Architecture
AH 4169	Seminar in Contemporary Art
Asian	
AH 2190	East Asian Art
AH 2191	South Asian Art
AH 2192	Art of Southeast Asia
AH 3181	Special Topics in Asian Art
AH 3182	Special Topics in South Asian Art

AH 4182	Topics in South Asian Art	FA 1102	
Pre-Columbian/Latin American/African		Sculpture	
AH 3107	Ancient Mexican Civilizations	FA 1201	
AH 3116	The Aztec Empire	Drawing	
AH 3117	Special Topics in Precolumbian Art and Archaeology	FA 1301	Drawing Fundamentals
AH 3160	Latin American Art and Architecture	Painting	
Junior/senior seminars		FA 1401	
At least two of the following for a total of 6 credits:		Photography	
AH 4109	Topics in Ancient Art and Archaeology	FA 1501	
AH 4119	Seminar in Medieval Art and Architecture	FA 1502	
AH 4129	Seminar in Renaissance Art and Architecture	New Media	
AH 4139	Seminar in Baroque Art and Architecture	FA 1601	
AH 4149	Seminar in Modern European Art and Architecture	Three courses at the 2000 or 3000 level including at least one course in two of the six studio areas below for a total of 9 credits:	
AH 4159	Seminar in American Art and Architecture	Ceramics	
AH 4159W	Seminar in American Art and Architecture	FA 2111	
AH 4165	Topics in Islamic Art and Architecture	FA 2112	
AH 4169	Seminar in Contemporary Art	FA 2113	
AH 4182	Topics in South Asian Art	FA 3101	
AH 4189	Seminar: Topics in Art History	Sculpture	
AH 4197	Senior Thesis	FA 2211	
Fine Arts		FA 2212	
Required		FA 2213	Digital Fabrication
FA 2001		FA 3201	
One introductory level course from three of the studio areas listed below for a total of 9 credits; for this purpose, FA 1000 counts as a studio area		Drawing	
FA 1000		FA 2311	
Ceramics		FA 2312	
FA 1101		FA 2313	Experimental Drawing
		FA 3301	
		Painting	
		FA 2411	
		FA 2412	

FA 2413

FA 2431

FA 3401

Photography

FA 2511

FA 2512

FA 2513

FA 2531

FA 3501

New Media

FA 2611

FA 2612

FA 2613

FA 3601

One of the following courses:

FA 3901

FA 3911

FA 3912

FA 3913 Painting Off the Wall

FA 3951

The following capstone course:

FA 4195 *

*A capstone exhibition is required concurrent with enrollment in FA 4195

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with

Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.3 overall. By the end of the junior year, students should consult their advisor regarding eligibility, area of study, and a director of the research or creative arts project.

BACHELOR OF ARTS WITH A MAJOR IN ART HISTORY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

36 credits in courses for the major. These include at least one course from six of the seven categories below and one additional course from any of these categories (21 credits); one fine arts course (3 credits); two junior senior seminars (3 credits); and two elective courses selected as outlined below (6 credits).

Code	Title	Credits
Required		
At least one course from six of the seven categories below and one additional course from any category for a total of 21 credits.		
Classical, ancient Near East, and medieval worlds		
CAH 3101	Ancient Art of the Bronze Age and Greece	
CAH 3102	Ancient Art of the Roman Empire	
CAH 3103	Art and Archaeology of Egypt and the Near East	
CAH 3104	Art and Archaeology of the Aegean Bronze Age	
CAH 3105	Topics in Ancient Art and Archaeology	
CAH 3106	Art and Archaeology of Israel and Neighboring Lands	
CAH 3111	Early Christian and Byzantine Art and Architecture	
CAH 3112	Proseminar in Romanesque and Gothic Art and Architecture	
CAH 4109	Topics in Ancient Art and Archaeology	
CAH 4119	Seminar in Medieval Art and Architecture	
Islamic spheres		

CAH 3113	Islamic Art and Architecture
CAH 3114	Art of the Book in the Medieval Muslim World
CAH 4165	Topics in Islamic Art and Architecture
Renaissance and global Baroque	
CAH 3120	Italian Art and Architecture of the 13th through 15th Centuries
CAH 3121	Italian Art and Architecture of the Sixteenth Century
CAH 3122	Topics in Early Northern Renaissance Art and Architecture
CAH 3122W	Topics in Early Northern Renaissance Art and Architecture
CAH 3123	Topics in Northern Renaissance Art and Architecture
CAH 3123W	Topics in Northern Renaissance Art and Architecture
CAH 3131	Italian Art and Architecture of the Seventeenth Century
CAH 3132	Topics in Northern European Art and Architecture of the Seventeenth Century
CAH 3134	Topics in Spanish and Portuguese Art through the Sixteenth Century
CAH 3134W	Topics in Spanish and Portuguese Art Through the Sixteenth Century
CAH 3135	Topics in Seventeenth and Eighteenth Century Spanish and Portuguese Art
CAH 4129	Seminar in Renaissance Art and Architecture
CAH 4139	Seminar in Baroque Art and Architecture
Eighteenth and nineteenth centuries	
CAH 2145	History of European Decorative Arts
CAH 2154	American Architecture I
CAH 2161	History of Decorative Arts: American Heritage
CAH 3140	European Art of the Eighteenth Century
CAH 3141	European Art of the Early Nineteenth Century

CAH 3141W	European Art of the Early Nineteenth Century
CAH 3142	European Art of the Late Nineteenth Century
CAH 3142W	European Art of the Late Nineteenth Century
CAH 3151	American Art in the Age of Revolution
CAH 3152	American Art in the Era of National Expansion
Modern and contemporary	
CAH 2071	Introduction to the Arts in America
CAH 2155	American Architecture II
CAH 2162	History of Photography
CAH 2162W	History of Photography
CAH 3060	History of Design
CAH 3065	Digital Media Culture
CAH 3143	Early Twentieth-Century Art
CAH 3143W	Early Twentieth-Century Art
CAH 3146	Modern Architecture in Europe and America
CAH 3146W	Modern Architecture in Europe and America
CAH 3150	Theories and History of Graphic Design
CAH 3150W	Theories and History of Graphic Design
CAH 3153	American Art of the Twentieth Century
CAH 3165	Later Twentieth-Century Art
CAH 3165W	Later Twentieth-Century Art
CAH 3530	Art and Architecture of Washington, D.C.
CAH 4149	Seminar in Modern European Art and Architecture
CAH 4150	Seminar in Modern Art
CAH 4150W	Seminar in Modern Art
CAH 4157	Seminar in Photography
CAH 4159	Seminar in American Art and Architecture

CAH 4159W Seminar in American Art and Architecture

CAH 4169 Seminar in Contemporary Art

CAH 4179 Topics in Design History and Theory

Asia and the Indian Ocean

CAH 2190 East Asian Art

CAH 2191 South Asian Art

CAH 2192 Art of Southeast Asia

CAH 3181 Special Topics in Asian Art

CAH 3182 Special Topics in South Asian Art

CAH 3182W Special Topics in South Asian Art

CAH 4181 Topics in Asian Art

CAH 4182 Topics in South Asian Art

Central and South America

CAH 3107 Ancient Mexican Civilizations

CAH 3116 The Aztec Empire

CAH 3117 Special Topics in Precolumbian Art and Archaeology

CAH 3160 Topics in Latin American Art and Architecture

Junior and senior seminars

At least two of the following seminars for a total of 6 credits:

CAH 4109 Topics in Ancient Art and Archaeology

CAH 4119 Seminar in Medieval Art and Architecture

CAH 4129 Seminar in Renaissance Art and Architecture

CAH 4139 Seminar in Baroque Art and Architecture

CAH 4149 Seminar in Modern European Art and Architecture

CAH 4159 Seminar in American Art and Architecture

CAH 4159W Seminar in American Art and Architecture

CAH 4165 Topics in Islamic Art and Architecture

CAH 4169	Seminar in Contemporary Art
CAH 4179	Topics in Design History and Theory
CAH 4182	Topics in South Asian Art
CAH 4189	Seminar: Topics in Art History

Fine arts

One Fine Arts (FA) course at any level for a total of 3 credits.

Electives

Any two courses from the categories above and/or from the following list for a total of 6 credits. With prior approval from the Director of Undergraduate Studies up to 6 of these credits may be from relevant coursework in another department.

CAH 1001	
CAH 1031	Survey of Art and Architecture I
CAH 1032	Survey of Art and Architecture II
CAH 1070	The American Cinema
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
CAH 1091	Art History II: Historical Perspectives in the Visual Arts
CAH 1099	Variable Topics
CAH 1135	History of Spanish Art From the Golden Age to Goya
CAH 1136	History of Spanish Art From Goya to the Present
CAH 2001	Special Topics
CAH 2001W	Special Topics
CAH 3099	Variable Topics
CAH 3170	Materials, Methods, and Techniques in Art History
CAH 4197	Senior Thesis
CAH 4198	Independent Study
CAH 4199	Internship in Art History

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC.

Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement.

and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

To be eligible to write a Senior Thesis and for Honors in Art History, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.3 overall. By the end of the junior year, students should consult the Director of Undergraduate Studies regarding eligibility and selection of an area of research and the appropriate faculty members to supervise the project. We recommend that students strongly consider taking the full two semesters to complete the thesis. If writing the thesis in one semester, students should consider basing their project on pre-existing research from a previous course. The student registers for AH 4197 Senior Thesis, which may count toward an elective in fulfillment of the major. The student works closely with a Thesis Advisor on the thesis, gaining additional feedback from one or two Readers at the draft stage. A faculty committee judges whether the Senior Thesis qualifies for Honors.

BACHELOR OF ARTS WITH A MAJOR IN FINE ARTS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
6 credits in foundational courses selected from the following:		
CFN 1090	First-Year Studio 1: Drawing and Surface	
CFN 1091	First-Year Studio 2: Form and Materials	
CFN 1092	First Year Studio 3: Time and Light	
CFN 1093	First-Year Studio 4: Interaction	
12 credits in fine art studio courses:		
CSA 1090	Fine Art Fundamentals I	
CSA 1091	Fine Art Fundamentals II	
CSA 2092	Fine Art Studio Experimental Materiality	
CSA 3093	Fine Art Studio Conceptual Strategies	

Studio electives	
3 credits in studio electives taken at any level, selected from subject areas CSA, CPJ, CDE, CGD, CIXD, or CIAR.	
Studio arts electives	
6 credits in studio arts electives taken at the 2000 level or above, selected from subject areas CSA or CPJ.	
Cross-disciplinary studio electives	
3 credits in cross-disciplinary studio electives selected from the following:	
CSA 3901	Special Topics: Cross-Disciplinary Studio Arts
CSA 3911	Collaborative Practices: Social Practices of Art
CSA 3912	The Cinematic in Contemporary Art
CSA 3913	Painting Off the Wall
CSA 3914	Art Outside the Gallery
CSA 3915	Public Spectacle in Socially Engaged Art
CSA 3951	Creative Photovoltaics
Professional practices	
3 credits in professional practices selected from the following:	
CSA 4070	Professional Practices for Lens-Based Media
CSA 4170	Professional Practices for Artists
Thesis	
6 credits in thesis:	
CSA 4092	Fine Art Thesis I
CSA 4093	Fine Art Thesis II
Art history	
9 credits in art history courses:	
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
and 6 additional credits in art history or CSA seminars selected from the following:	
CSA 3021W	Topics in Fine Art Seminar

CSA 3020W	Topics in Photography and Photojournalism
CSA 4020W	Photography and Photojournalism Studio Seminar
CSA 4021	Fine Art Studio Seminar

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).

- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.3 overall. By the end of the junior year, students should consult their advisor regarding eligibility, selection of an area of study, and a director of the research or creative arts project.

DUAL BACHELOR OF ARTS AND MASTER OF ARTS PROGRAMS IN FINE ARTS AND ART HISTORY

The Corcoran School of the Arts and Design offers two options for a dual bachelor's/master's degree:

- Bachelor of Arts with a major in art history (p. 263) and Master of Arts in the field of art history (p. 268)
- Bachelor of Arts with a major in fine arts (p. 266) and Master of Arts in the field of art therapy (p. 133)

The program allows students to take 9-12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Undergraduate students interested in the dual program confer with the department's graduate adviser early in their junior year. Visit the program website (<https://corcoran.gwu.edu/graduate-studies/>) for more details.

DUAL MINOR IN ART HISTORY AND FINE ARTS

REQUIREMENTS

The dual minor requires 9 to 12 credits of coursework in Art History and 9 to 12 credits in Fine Arts, for a total of 21 credits. The student's program of study is developed in consultation with the undergraduate advisors in the Department of Fine Art and Art History.

Visit the Corcoran School of the Arts and Design (<http://art.columbian.gwu.edu/combined-degree-fine-arts-art-history/>) website (<http://art.columbian.gwu.edu/combined-degree-fine-arts-art-history/>) for more information.

MASTER OF ARTS IN THE FIELD OF ART HISTORY

The Master of Arts degree in Art History offers students a curriculum that covers a range of historical, theoretical, geographic, and transcultural topics. For some students, the Master of Arts degree is a terminal degree in preparation for curatorial or education careers in galleries and museums; for others, it is preparation to enter a PhD program elsewhere. All students receive training that hones their critical analysis, research, and writing skills. They additionally have the opportunity to immerse themselves in the study of diverse creative practices and visual material.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits in required and elective courses.

Code	Title	Credits
Required		
CAH 6258	Art Historiography	
Elective		
At least one course from five of the following seven categories:		
Ancient		
CAH 6201	Proseminar in Ancient Art of the Bronze Age and Greece	
CAH 6202	Proseminar in Ancient Art of the Roman Empire	
CAH 6205	Topics in Ancient Art	

CAH 6270	Special Topics in Art History
Medieval/Islamic World	
CAH 6211	Proseminar in Early Christian and Byzantine Art and Architecture
CAH 6212	Proseminar in Romanesque and Gothic Art and Architecture
CAH 6213	Islamic Art and Architecture
CAH 6214	Art of the Book in the Medieval Muslim World
CAH 6215	Seminar in Medieval Art and Architecture
CAH 6265	Seminar in Islamic Art and Architecture
CAH 6270	Special Topics in Art History
Renaissance/Baroque	
CAH 6220	Proseminar in Italian Art and Architecture of the Thirteenth Through Fifteenth Centuries
CAH 6221	Proseminar in Italian Art and Architecture of the Sixteenth Century
CAH 6222	Proseminar in Early Northern Renaissance Art and Architecture
CAH 6223	Proseminar in Northern Renaissance Art and Architecture
CAH 6225	Seminar in Renaissance Art
CAH 6231	Proseminar in Italian Art and Architecture of the Seventeenth Century
CAH 6232	Proseminar in Northern European Art and Architecture of the Seventeenth Century
CAH 6234	Proseminar in Spanish and Portuguese Art through the Sixteenth Century
CAH 6236	Seminar in Baroque Art
CAH 6270	Special Topics in Art History
18th-19th Century	
CAH 6240	Proseminar in European Art of the Eighteenth Century
CAH 6245	Seminar in European Art of the Nineteenth Century

CAH 6251	Proseminar in American Art in the Age of Revolution
CAH 6252	Proseminar in American Art in the Era of National Expansion
CAH 6254	Seminar in American Art before 1900
CAH 6270	Special Topics in Art History
Modern/Contemporary	
CAH 6246	Proseminar in Modern Architecture in Europe and America
CAH 6250	Seminar in Modern Art
CAH 6255	Seminar Studies in American Art and History
CAH 6256	Seminar in American Art of the Twentieth Century
CAH 6257	Seminar in Photography
CAH 6269	Seminar in Contemporary Art
CAH 6270	Special Topics in Art History
CAH 6286	Preventive Conservation Concepts
CAH 6287	Preventive Conservation Techniques
CAH 6400	History of Exhibitions
Asian/African	
CAH 6260	Seminar in African Art
CAH 6261	Seminar in Asian Art
CAH 6262	Seminar in South Asian Art
CAH 6270	Special Topics in Art History
Pre-Columbian/Latin American	
CAH 6270	Special Topics in Art History
Internship/Independent Study	
CAH 6298	Independent Research in Art History
CAH 6299	Museum Internship
Up to 6 credits of graduate coursework may be completed outside the department with approval of the graduate advisor.	
One qualifying paper must be submitted in the spring semester of the second year. Part-time students will submit one qualifying paper at date set in consultation with the graduate advisor.	

Foreign language proficiency is not required for the master's degree. However, students have the option of taking an examination in one of the following foreign languages: Arabic, Dutch, French, German, Hindi, Italian, Latin, Persian, Portuguese, or Spanish.

Museum Training Concentration

Code	Title	Credits
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Prerequisites and requirements are the same as those for the MA in the field of art history. After completion of 18 credits in art history (AH) courses, students in the concentration take 6 credits of internship through enrollment in AH 6299.

Visit the program website (<https://corcoran.gwu.edu/art-history/>) for additional information.

MASTER OF FINE ARTS IN THE FIELD OF FINE ARTS

The MFA program at GW comprises a two-year commitment for emerging artists who wish to expand the material and intellectual dimensions of their work. The interdisciplinary nature of the program creates an environment where cross-pollination among fields flourishes. Simultaneously, graduate students enter into vibrant communities of peers, faculty, and visiting artists: intensive studio visits and critiques facilitate re-imagining the boundaries of art practice.

The MFA program in the Studio Arts Program is a 60 credit, full-time program. Students register for 15 credits per semester, per the standard recommended for a terminal degree by the College Art Association.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

60 credits, including 45 credits in required courses, 9 credits in elective courses, 6 credits in thesis, including a thesis exhibition.

Code	Title	Credits
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Required

CSA 6091	Contemporary Art and Theory for Artists I
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CSA 6092	Contemporary Art and Theory for Artists II
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CSA 6093	Professional Practices
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CSA 6094	Writing in Practice
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CSA 6095	Critical Practices (taken for a total of 21 credits)
CSA 6096	Studio Visits (taken for a total of 12 credits)
Thesis exhibition	
CSA 6998	Thesis Research
CSA 6999	Thesis Research

A thesis exhibition consisting of the execution of creative work along with a critical statement about this work must be completed under the supervision of a committee consisting of at least two full-time departmental faculty members.

Electives

9 credits in studio and seminar electives

Studio and art history electives should be taken at the 6000 level or above. In consultation with the Director of Graduate Studies, MFA students may elect to take up to 6 credits of upper-level and graduate courses in other academic departments, assuming prerequisites have been met. Students may take one 3000-level course in another academic area with approval.

Visit the program website (<https://corcoran.gwu.edu/mfa-fine-arts/>) for additional information.

MINOR IN ART HISTORY REQUIREMENTS

The following requirements must be fulfilled: 18 credits in art history courses

Code	Title	Credits
Required		
CAH 1031	Survey of Art and Architecture I	
CAH 1032	Survey of Art and Architecture II	

Electives

Four upper-level Art History (AH) courses for a total of 12 credits.

Visit the program website (<https://corcoran.gwu.edu/art-history-undergraduate-programs/>) for additional information.

MINOR IN FINE ARTS REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required course and 12 credits in elective courses.

Code	Title	Credits
Required		
6 credits (two courses) from the following. Both courses cannot be in the same studio area.		
Ceramics		
CSA 1101	Introduction to Handbuilt Ceramics	
CSA 1102	Introduction to Wheelthrown Ceramics	
Sculptures		
CFN 1091	First-Year Studio 2: Form and Materials	
CSA 1201	Sculpture Fundamentals: Material Investigations	
Drawing		
CFN 1090	First-Year Studio 1: Drawing and Surface	
CSA 1301	Drawing Fundamentals	
Painting		
CSA 1401	Painting: Visual Thinking	
Photography		
CFN 1092	First Year Studio 3: Time and Light	
CSA 1501	Black and White Photography Fundamentals	
CSA 1502	Introduction to Digital Color Photography	
New media		
CFN 1093	First-Year Studio 4: Interaction	
CSA 1601	New Media Digital Art	

3 credits in any studio electives subject area taken at any level, selected from the CFN, CPJ, OR CSA subject areas.

9 credits in studio electives at the 2000 level or above, selected from the CPJ or CSA subject areas.

FORENSIC SCIENCES

As part of the Columbian College of Arts and Sciences' natural, mathematical, and biomedical sciences programs, forensic sciences provides an understanding of the integration of forensic disciplines with the investigation of criminal activity, while providing an overview of the analytical methods, procedures, equipment, and data used by forensic specialists. Coursework emphasizes the identification and analysis of evidence as well as the interpretation and reporting of the results.

The master of forensic sciences (MFS) degree is offered in the fields of forensic chemistry and forensic molecular biology. The field of forensic chemistry is intended for students who are interested in a career in forensic drug analysis and/or trace evidence, while the field of forensic molecular biology is intended for students interested in a career in forensic DNA analysis. Students interested in pursuing a career as forensic scientists in other fields, for example latent fingerprint examination, firearm and toolmark identification, or questioned document examination, should complete the master of forensic sciences degree without selecting a field.

The master of science (MS) degree is offered in the field of crime scene investigation. In addition, a graduate certificate is offered in forensic investigation.

GRADUATE

Master's programs

- Master of Forensic Sciences (<https://current.bulletin.gwu.edu/arts-sciences/forensic-sciences/ma/>)
- Master of Forensic Sciences in the field of forensic chemistry (<https://current.bulletin.gwu.edu/arts-sciences/forensic-sciences/mfs-forensic-chemistry/>)
- Master of Forensic Sciences in the field of forensic molecular biology (<https://current.bulletin.gwu.edu/arts-sciences/forensic-sciences/mfs-forensic-molecular-biology/>)
- Master of Science in the field of crime scene investigation (<https://current.bulletin.gwu.edu/arts-sciences/forensic-sciences/ms-crime-scene-investigation/>)

Combined program

- Dual Bachelor of Science with a major in chemistry and Master of Forensic Sciences with a concentration in forensic chemistry (<https://current.bulletin.gwu.edu/arts-sciences/chemistry/combined-bs-mfs-forensic-chemistry/>)

CERTIFICATE

Certificate programs

- Graduate certificate in forensic investigation (p. 274)

FACULTY

Professors I.S. Lurie (*Research*), W.F. Rowe, M.S. Schanfield, V. Weedn

Associate Professor D. Podini (*Chair*)

Assistant Professor I. Marginean

Professorial Lecturers E. Bernard, S. Brazelle, H. Elliott, N. Galbreth, K. Gerber, J. Miller, D. O'Neil, L. O'Daniel

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORS 2102. Introduction to Forensic Science I. 3 Credits.

The application of science to the criminal justice system; crime scene processing, crime scene reconstruction, investigation of fires and explosions, impression evidence, trace evidence, and computer forensics. Completion of two semesters of a laboratory science other than astronomy and permission of the instructor are required prior to enrollment.

FORS 2104. Introduction to Forensic Sciences II. 3 Credits.

The application of science to the criminal justice system; personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisites: two semesters of a laboratory science other than astronomy and permission of instructor.

FORS 2104W. Introduction to Forensic Sciences. 3 Credits.

Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and FORS 2104.

FORS 2151. Crime Scene Investigation. 4 Credits.

Examination, analysis, and reconstruction of crime scenes; principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence.

FORS 2190. Topics in Forensic Science. 3 Credits.

. Restricted to juniors. Prerequisites: BISC 1005 or BISC 1006; and CHEM 1003 or CHEM 1004.

FORS 5099. Variable Topics. 1-99 Credits.**FORS 6004. Fundamentals of Forensic Science I. 3 Credits.**

This course surveys crime scene investigation techniques, medicolegal death investigation, and patterned evidence examination. This satisfies the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of crime scene investigation, physical evidence concepts, and pattern evidence. This course helps students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of firearms and toolmarks, fingerprints, and questioned documents. Lectures are given by faculty members and guest lecturers who are subject matter experts on the topic presented. This course includes a four hour laboratory (fingerprints). This is a required course for MFS and CSI students. This course, along with FORS 6005 Fundamentals of Forensic Science II, replaces FORS 6213, Elements of Forensic Science (3 Credits). Prerequisite: None.

FORS 6005. Fundamentals of Forensic Science II. 3 Credits.

This course surveys the traditional crime laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire debris, explosives, and forensic molecular biology. This satisfies the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of analytical chemistry and instrumental methods of analysis, drug chemistry/toxicology, microscopy and materials analysis, and forensic biology. This course helps students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of forensic biology, trace evidence, fire debris, controlled substances, and toxicology/ blood alcohol determinations.

FORS 6010. Bloodstain Pattern Analysis I. 3 Credits.

Human blood in flight and the patterns it makes on target surfaces. Crime scene investigation, crime scene analysis, and crime scene reconstruction. Laboratory fee. Restricted to graduate students. Recommended background: FORS 6251 and FORS 6256.

FORS 6011. Bloodstain Pattern Analysis II. 3 Credits.

Continuation of the concepts learned in FORS 6010. Serving as an expert witness; refining blood pattern analysis and documentation skills; effectively communicating observations, analysis, and conclusions in the courtroom. Laboratory fee. Restricted to graduate students. Prerequisites: FORS 6010. Recommended background: FORS 6251 and FORS 6256.

FORS 6020. Ethics, Professional Responsibility, and Quality Assurance. 2 Credits.

Issues of forensic science laboratory professional responsibility, including ethics, public policy, and quality assurance. Satisfies 10 hours of instruction for a Forensic Science Education Programs Accreditation Commission (FEPAC) accredited MFS degree in the core topics of ethics and professional responsibility and quality assurance; also assists in preparation for the American Board of Criminalistics examination in the area of ethics. Taken online during the summer session.

FORS 6201. Forensic Biology. 3 Credits.

Principles of the forensic analysis of blood and other biological materials. Specific procedures and techniques used in forensic biology and serology. Laboratory fee.

FORS 6203. Examination of Questioned Documents. 3 Credits.

Theory and principles of handwriting and handprinting, duplicating processes, paper manufacture and fiber analysis; studies of paper and methods of examining questioned documents. Laboratory fee.

FORS 6204. Firearms and Toolmark Identification. 3 Credits.

Methods for identifying firearms, bullet cartridge casings, toolmarks, gunshot residue, obliterated serial numbers, tire marks, and footprints. Laboratory fee.

FORS 6206. Trace Evidence Analysis. 3 Credits.

Principles that govern the analysis of trace evidence, including recovery, transference, interpretation, and comparison. Assessment of evidentiary value, reporting, and court testimony. Laboratory fee.

FORS 6207. Photography in the Forensic Sciences. 3 Credits.

Basic use of forensic photography, including selection and use of equipment, photographs as evidence, close-up work, and common misconceptions. Laboratory fee.

FORS 6210. Advanced Instrumental Analysis. 3 Credits.

Theory and practice of modern instrumental methods used in forensic laboratories, including mass spectrometry, optical spectroscopy, microscopy, chromatographic and electrophoretic separations. It is a required course for MFS students with concentration in Forensic Chemistry and Forensic Toxicology. Recommended background: undergraduate analytical methods.

FORS 6213. Elements of Forensic Sciences. 3 Credits.**FORS 6215. Science of Fingerprints. 3 Credits.**

A general overview of the history and biology of and principles underlying the science of fingerprints. Latent print development methods, recording, classification, and methodology of comparison of fingerprints and palm prints to include latent prints. Subject matter is covered at an introductory level; additional study is required to develop expertise as a latent fingerprint examiner.

FORS 6216. Development of Latent Prints. 3 Credits.

This Advanced Fingerprint Science Course provides the students an increased understanding of the main principles of fingerprint identification: uniqueness and persistence. The course is broken down into three main sections, which address the chemistry behind processing fingerprints, the anatomy and physiology of friction ridge skin and the extensive research that has been conducted in the field of fingerprint science. The students are required to complete a skills processing exam to assess their understanding and ability to develop latent prints on items of evidence. In addition, there is a written examination covering the topics of biology and development of friction ridge skin and a final comprehensive exam. Upon conclusion of this course, each student should have a firm grasp of why friction ridge skin can be used as a means of identification. Recommended background: FORS 6215.

FORS 6217. Fingerprint Comparisons. 3 Credits.

In-depth study of analysis, comparison, evaluation, and verification (ACE-V) methodology; assessing the quality and quantity of information and establishing a tolerance for comparison using the effects of distortion; uniqueness and persistence; anatomy and embryology of friction ridge skin. Laboratory fee. Prerequisites: FORS 6215.

FORS 6219. Digital Image Processing. 3 Credits.

Digital images of marginal value can be processed to reveal details which had been in the original, but were difficult to see. These changes must be done in ways to survive court challenges. Best practices for doing so are provided. Prerequisites: FORS 6207 or permission of the instructor. Recommended background: graduate level work in MS/CSI, MFS/FRA, MS/FRA or Grad Cert in Forensic Investigations; graduate-level work in crime scene investigation and/or friction ridge analysis, or in the graduate certificate program in forensics investigations.

FORS 6224. Criminal Law for Forensic Scientists. 3 Credits.

This course provides an overview of criminal law offenses, criminal law procedures, issues of evidence recovery, admissibility of scientific evidence, and expert testimony, with an emphasis on the interaction between the criminal process and forensic science. A moot court experience is integral to this course. (This course combines and replaces Crim Law I and III.).

FORS 6225. Statistics for Forensic Scientists. 3 Credits.

Statistics with a focus on forensic applications. Emphasis on the Bayesian approach. Logical, probabilistic statistical reasoning skills, and R software skills. Course content is the basis for an examination question on the comprehensive examination. Prerequisite: An undergraduate statistics course.

FORS 6231. Principles of Toxicology. 3 Credits.

Concepts of toxicology, including its historical development and modern applications, drug disposition, mechanisms of toxicity; factors that influence toxicity and toxicity evaluation.

FORS 6232. Analytical Toxicology. 3 Credits.

Principles and procedures used in the isolation, identification, and quantitation of drugs of abuse from human samples.

FORS 6234. Medicinal Chemistry I. 3 Credits.

Theory and principles of classification, synthesis, and structure activity relationships of drugs. Discussion of the complex chemical events that take place between administration of a drug and its action on the user, with emphasis on drugs of abuse.

FORS 6235. Medicinal Chemistry II. 3 Credits.

Chemical, pharmacological, toxicological, and pathological characteristics of commonly abused drugs, including ethanol, barbiturates, narcotics, stimulants, and hallucinogens.

FORS 6236. Forensic Toxicology I. 3 Credits.

Biological, chemical, and pharmacological principles that underlie forensic toxicology. Prerequisites: FORS 6235 or permission of the instructor.

FORS 6237. Forensic Toxicology II. 3 Credits.

Lectures, student seminars, and projects dealing with topics of current interest in forensic toxicology. Prerequisites: FORS 6236 or permission of the instructor.

FORS 6238. Forensic Chemistry I. 3 Credits.

Examination of glass and soils. Laboratory exercises include refractive index measurements using immersion methods; polarized light observations of minerals; x-ray diffraction analysis of minerals; and classical chemical and physical methods of analysis. Laboratory fee.

FORS 6239. Forensic Chemistry II. 3 Credits.

Examination of arson accelerants, textile fibers, plastics, and paints. Laboratory exercises include infrared spectrometry and pyrolysis-gas-liquid chromatography of polymeric materials, as well as classical chemical and physical methods of analysis. Laboratory fee. Prerequisites: FORS 6238 or permission of the instructor.

FORS 6240. Forensic Drug Analysis. 3 Credits.

Examination of dosage forms of drugs. Laboratory exercises include color spot tests, crystal tests, infrared spectrometry and gas chromatography-mass spectrometry. Laboratory fee.

FORS 6241. Forensic Molecular Biology I. 3 Credits.

Techniques of molecular biology applied to the collection, examination, analysis, and interpretation of biological evidence.

FORS 6242. Forensic Molecular Biology II. 3 Credits.

Advanced methods of forensic molecular biology. Laboratory examinations and classifications of dried blood and other biological materials through a variety of nuclear and mitochondrial markers. Laboratory fee. Prerequisites: FORS 6241 and permission of the instructor.

FORS 6243. Forensic Molecular Biology III. 3 Credits.**FORS 6246. Human Genetic Variation. 3 Credits.**

The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as ANTH 6406.

FORS 6247. Population Genetics. 3 Credits.

Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as BISC 6228.

FORS 6250. Crime Scene Investigation for Lab Personnel. 3 Credits.

A condensed offering of the subject matter of FORS 6251–FORS 6252. FORS 6250 cannot be taken for credit toward the crime scene investigation concentration. Laboratory fee.

FORS 6251. Crime Scene Investigation I. 3 Credits.

Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6252. Crime Scene Investigation II. 3 Credits.

Continuation of FORS 6251. Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6254. Forensic Psychiatry. 3 Credits.

Introduction to the constructs of dynamic psychiatry, psychiatric treatment, and the nomenclature of mental disorders. Consideration of expert testimony, direct examination, and cross-examination in hospitalization and criminal cases.

FORS 6255. Investigation of Child Abuse. 3 Credits.

This course integrates medical, scientific, psychological, sociological and legal information for investigators and professionals involved in the field of child abuse. Special emphasis is placed on the application of research-supported data to situations involving the murder, abuse and exploitation of children.

FORS 6256. Forensic Pathology. 3 Credits.

Terminology and scientific techniques used in medico-legal investigations, sudden or unexpected deaths, homicides, suicides, accidental deaths, and trauma.

FORS 6257. Medicolegal Death Investigation. 3 Credits.

Medical, scientific, sociological, and legal methodologies applied to forensic investigations. Aspects of death scene analysis by a medical examiner, including autopsy procedures, unidentified remains, child death investigations, and mass disaster investigations. Laboratory fee. Prerequisites: FORS 6256 and permission of the instructor.

FORS 6258. The Investigation of Sexual Assault and Other Sex Crimes. 3 Credits.

This course integrates medical, psychological, sociological and legal information for investigators and professionals involved in the field of sex crime investigation. Special emphasis is placed on the application of research-supported data to situations involving the sexual exploitation and victimization of adults.

FORS 6290. Selected Topics. 3 Credits.

Current issues in research, investigation, and law.

FORS 6291. Computer Forensics III: Advanced Techniques. 3 Credits.

Further examination of methods and techniques used to conduct and report high-technology crime investigations. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6278.

FORS 6292. Graduate Seminar. 1 Credit.

Students in designated forensic sciences degree programs must register for this course in their first semester and again after completion of the required independent research project.

FORS 6295. Research. 1-12 Credits.

Research on problems approved by the department, under the supervision of an appropriate member of the program faculty. Admission by permission only.

FORS 6298. Forensic Sciences Practicum. 1-3 Credits.

Internship experience in a forensic science laboratory or criminal justice agency, under the supervision of an appropriate member of the program faculty. Students must preregister for this course. Admission by permission only.

FORS 6998. Thesis Research. 3 Credits.**FORS 6999. Thesis Research. 3 Credits.**

GRADUATE CERTIFICATE IN FORENSIC INVESTIGATION

The graduate certificate in Forensic Investigation is designed for forensic sciences professionals who want to enhance their credentials and advance their careers. Proficiency in crime scene investigation and mastery of the techniques used to collect evidence are essential to success in the field. To foster this expertise, students pursue coursework including homicide investigation, forensic pathology and crime scene photography.

As part of GW's prestigious Department of Forensic Sciences, students in the Forensic Investigation program learn from a faculty comprised of experts and experienced forensic sciences practitioners. Students also have access to the department's state-of-the-art laboratories, and are in close proximity to federal crime labs and investigatory agencies in the Washington, DC area.

Upon completion of the Forensic Investigation graduate certificate, students can apply to GW's Master of Science (MS) in Crime Scene Investigation program after taking the GRE examination. Coursework from the Forensic Investigation graduate certificate program can count toward 18 credits of the MS program.

The graduate certificate in Forensic Investigation is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 15 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6251	Crime Scene Investigation I	
FORS 6252	Crime Scene Investigation II	
FORS 6257	Medicolegal Death Investigation	
Elective		
One of the following:		
FORS 6203	Examination of Questioned Documents	
FORS 6204	Firearms and Toolmark Identification	
FORS 6254	Forensic Psychiatry	
FORS 6255	Investigation of Child Abuse	

Alternate courses can be selected with approval of advisor.

MASTER OF FORENSIC SCIENCES

As part of the Columbian College of Arts and Sciences’ natural, mathematical and biomedical sciences programs, the forensic sciences program provides an understanding of the integration of forensic disciplines with the investigation of criminal activity, along with an overview of the analytical methods, procedures, equipment and data used by forensic specialists. Coursework emphasizes the identification and analysis of evidence as well as the interpretation and reporting of the results.

In addition to forensic sciences, an MFS is available in the following programs of study: forensic chemistry and forensic molecular biology. An M.S. degree is available in crime scene investigation. The program’s location in Washington, D.C., provides students with opportunities to interact with federal, state and local agencies.

This is a STEM-designated degree program

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

37 credits, including 18 credits in required courses, 19 credits in courses selected in consultation with the advisor, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6225	Statistics for Forensic Scientists	
FORS 6292	Graduate Seminar (taken twice) *	

Code	Title	Credits
Electives		
19 elective credits are selected in consultation with the departmental advisor.		

Additional requirements

Successful completion of an independent research project is required.

Successful completion of a master’s comprehensive examination is required.

*Students must register for FORS 6292 in their first semester and again after or during the completion of the required independent research project.

MASTER OF FORENSIC SCIENCES IN THE FIELD OF FORENSIC CHEMISTRY

As part of the Columbian College of Arts and Sciences’ natural, mathematical and biomedical sciences programs, the forensic sciences program provides an understanding of the integration of forensic disciplines with the investigation of criminal activity, along with an overview of the analytical methods, procedures, equipment and data used by forensic specialists. Coursework emphasizes the identification and analysis of evidence as well as the interpretation and reporting of the results.

Forensic Chemistry teaches students to be lab analysts in drug chemistry and trace evidence analysis to include

analysis of hairs and fibers, glass and soil, ignitable liquids and explosive residues. With five full-time faculty members, GW now boasts the world's largest group of forensic chemists located at a university. The department has also acquired mass spectrometers and a new laboratory to support chemistry and toxicology.

This is a STEM-designated degree program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

37 credits, including 31 credits in required courses and 6 credits in elective courses, successful completion of a master's comprehensive examination, and successful completion of an independent research project.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6206	Trace Evidence Analysis	
FORS 6210	Advanced Instrumental Analysis	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6225	Statistics for Forensic Scientists	
FORS 6238	Forensic Chemistry I	
FORS 6239	Forensic Chemistry II	
FORS 6240	Forensic Drug Analysis	
FORS 6292	Graduate Seminar (taken twice) *	
Electives		
6 credits in elective courses selected in consultation with the departmental advisor.		
Additional requirements		
Successful completion of the master's comprehensive examination.		
Successful completion of an independent research project.		

*Students must register for FORS 6292 in their first semester and again during or after completion of the required independent research project.

Program correction 9/6/19: FORS 6234 and FORS 6235 removed from the required curriculum and replaced with 6 elective credits.

MASTER OF FORENSIC SCIENCES IN THE FIELD OF FORENSIC MOLECULAR BIOLOGY

As part of the Columbian College of Arts and Sciences' natural, mathematical and biomedical sciences programs, the forensic sciences program provides an understanding of the integration of forensic disciplines with the investigation of criminal activity, along with an overview of the analytical methods, procedures, equipment and data used by forensic specialists. Coursework emphasizes the identification and analysis of evidence as well as the interpretation and reporting of the results.

The molecular biology program prepares students to work in crime laboratories as DNA analysts and technical leaders. Students learn chemical, physical, immunological and microscopic methods using state-of-the-art lab facilities, and the theoretical and practical aspects of advanced methods, such as DNA extraction and data interpretation. The program is particularly strong in population genetics and human genetic variation.

This is a STEM-designated degree program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

37 credits, including 31 credits in required courses and 6 credits in elective courses selected in consultation with the advisor. Successful completion of an independent study project and a master's comprehensive examination also is required.

Code	Title	Credits
Required		
FORS 6004	Fundamentals of Forensic Science I	
FORS 6005	Fundamentals of Forensic Science II	
FORS 6020	Ethics, Professional Responsibility, and Quality Assurance	
FORS 6201	Forensic Biology	
FORS 6224	Criminal Law for Forensic Scientists	

FORS 6225	Statistics for Forensic Scientists
FORS 6241	Forensic Molecular Biology I
FORS 6242	Forensic Molecular Biology II
FORS 6243	Forensic Molecular Biology III
FORS 6247	Population Genetics
FORS 6292	Graduate Seminar (taken twice) *

Electives

Six additional credits selected in consultation with the departmental advisor

Other requirements

Successful completion of an independent research project is required.

Successful completion of a master's comprehensive examination is required.

*Students must register for FORS 6292 in their first semester and again after or during the completion of the required independent research project.

MASTER OF SCIENCE IN THE FIELD OF CRIME SCENE INVESTIGATION

Increased proficiency in crime scene investigation is essential to all forensic sciences.

The Master of Science in Crime Scene Investigation teaches the scientific knowledge, skills, and abilities essential to investigative work. Designed for investigators, detectives, lawyers, special agents, medicolegal death investigators, crime scene technicians, and aspiring forensic investigators, the program trains students in techniques used to document crime scenes and to collect evidence. Students emerge from the program with skills in homicide investigation, forensic pathology, trace evidence analysis, crime scene photography, and examination of questioned documents, among other areas.

The MS is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits, including 27 credits in required courses and 9 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORS 6005	Fundamentals of Forensic Science II	
FORS 6207	Photography in the Forensic Sciences	
FORS 6215	Science of Fingerprints	
FORS 6219	Digital Image Processing	
FORS 6224	Criminal Law for Forensic Scientists	
FORS 6251	Crime Scene Investigation I	
FORS 6252	Crime Scene Investigation II	
FORS 6256	Forensic Pathology	
FORS 6257	Medicolegal Death Investigation	

Electives

9 credits selected in consultation with the departmental advisor. Suggested electives include:

FORS 6010	Bloodstain Pattern Analysis I
FORS 6203	Examination of Questioned Documents
FORS 6204	Firearms and Toolmark Identification
FORS 6255	Investigation of Child Abuse
FORS 6290	Selected Topics (Crime Scene Investigation III)

Other requirements

Successful completion of a master's comprehensive examination is required.

GEOGRAPHY

The Department of Geography is dedicated to achieving excellence in research and education through the diffusion of geographic knowledge that focuses on the relationships between the physical world and its occupation and modification by humans. Students trained in geography understand society and environmental dynamics, the significance of scale, the uneven distribution of resources and levels of development, and the uses of geospatial techniques, including GIS (geographic information systems) and remote sensing.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in geography (p. 283)
- Bachelor of Arts with a major in environmental studies (p. 255)
- Bachelor of Science with a major in environmental and sustainability science (p. 285)

Minors

- Minor in geographic information systems (p. 288)
- Minor in geography (p. 289)

GRADUATE

Master's program

- Master of Science in the field of geography (p. 287)

Combined program

- Dual Master of Science in the field of geography and Graduate Certificate in geographical information systems (p. 288)

CERTIFICATE

Graduate certificate

- Graduate certificate in geographical information systems (p. 287)

FACULTY

Professors L. Benton-Short (*Chair*), E. Chacko, M.D. Price, N. Shiklomanov

Associate Professors M. Atia, R. Engstrom, M. Keeley, M. Mann, D. Rain, D. Streletskiy

Assistant Professors G. Allington, D. Cullen, B. Hurley, A. Luthra, M. Kansanga

Professorial Lecturers R. Hinton, S. Johnson, W. Reisser, S. Sklar, D. Squire

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOG 1000. Dean's Seminar. 3 Credits.

GEOG 1001. Introduction to Human Geography. 3 Credits.

A systematic survey of human geography; spatial perspectives on demographic, social, cultural, economic, and political changes around the world.

GEOG 1002. Introduction to Physical Geography. 4 Credits.

A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, and resource geography. Laboratory fee.

GEOG 1003. Society and Environment. 3 Credits.

An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

GEOG 1099. Variable Topics. 1-36 Credits.

GEOG 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

GEOG 2104. Introduction to Cartography and GIS. 3 Credits.

Fundamentals of cartography; geographic data structure and information systems. Laboratory fee.

GEOG 2120. World Regional Geography. 3 Credits.

Practical approach to the themes, concepts, and tools appropriate for in-depth examination of the geography of the world's. Historical and physical regional geographies; contemporary regional issues; and intra- and interregional issues.

GEOG 2124. Urban Transportation. 3 Credits.

The relationship between freight and passenger transportation systems and urban land use patterns and structure. Prerequisite: GEOG 1001.

GEOG 2125. Transportation Systems and Networks. 3 Credits.

The structure and evolution of transportation networks and their impact on regional development.

GEOG 2127. Population Geography. 3 Credits.

Patterns of world population; factors contributing to population pressures, growth, and migrations.

GEOG 2129. Biogeography. 3 Credits.

The spatial and temporal patterns of biological diversity and the processes that cause those patterns. Combines ecology, evolutionary biology, paleontology, and climatology.

GEOG 2129W. Biogeography. 3 Credits.

The spatial and temporal patterns of biological diversity and the processes that cause those patterns. Combines ecology, evolutionary biology, paleontology, and climatology. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GEOG 2133. People, Land, and Food. 3 Credits.

The relationship between humans and their food sources through exploration of nutritional dynamics, food sourcing, agricultural land use, and food markets.

GEOG 2134. Energy Resources. 3 Credits.

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations.

Prerequisite: GEOG 1002.

GEOG 2134W. Energy Resources. 3 Credits.

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1002.

GEOG 2136. Water Resources. 3 Credits.

Analysis of the global spatial patterns, development, use, and quality of water resources. Prerequisite: GEOG 1002.

GEOG 2137. Environmental Hazards. 3 Credits.

Examination of environmental hazards with an emphasis on physical geography, economics, and the basics of geographic information systems (GIS).

GEOG 2140. Cities and Societies. 3 Credits.

The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: GEOG 1001.

GEOG 2140W. Urban Geography. 3 Credits.

The design and function of cities in the United States; contemporary, economic, political, and social change. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1001.

GEOG 2141. Cities in the Developing World. 3 Credits.

Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues. Prerequisite: GEOG 1001.

GEOG 2144. Explorations in Historical Geography. 3 Credits.

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as AMST 2144.

GEOG 2147. Military Geography. 3 Credits.

An examination of environmental and locational factors and their impact on military planning and operations.

GEOG 2148. Economic Geography. 3 Credits.

Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance. Prerequisite: GEOG 1001.

GEOG 2196. Field Methods in Geography. 3 Credits.

For geography and environmental studies majors in their junior or senior year. Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee.

GEOG 3099. Variable Topics. 1-12 Credits.**GEOG 3105. Techniques of Spatial Analysis. 3 Credits.**

Quantitative methods, tools, and approaches in spatial analysis to describe and test hypotheses about observations that have a spatial component. Prerequisites: GEOG 2104; and STAT 1051 or STAT 1053.

GEOG 3106. Intermediate Geographic Information Systems. 3 Credits.

Principles of geographic information systems and their use in spatial analysis and information management. Prerequisites: GEOG 2104.

GEOG 3107. Introduction to Remote Sensing. 3 Credits.

Remote-sensing techniques using digital satellite imagery and aerial photography; application to rural and urban settings, vegetation, and environmental monitoring. Prerequisites: GEOG 3105.

GEOG 3108. Weather and Climate. 3 Credits.

Fundamental physical principles that govern the Earth's climate; the science of global climate change and the impact of anthropogenic and natural phenomenon on the climate. Prerequisite: GEOG 1002.

GEOG 3128. Geomorphology. 3 Credits.

The influence of landforms and landscapes on human activities and the impact of humans on landscapes throughout history. Prerequisites: GEOG 1002 or GEOL 1005.

GEOG 3132. Environmental Quality and Management. 3 Credits.

The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: GEOG 1002.

GEOG 3133. Social-Ecological Systems. 3 Credits.

Exploration of social processes and ecological dynamics by using interdisciplinary approaches that borrow tools and techniques from the social and natural sciences, as well as traditional knowledge systems. Prerequisites: GEOG 1001; and GEOG 1002 or GEOG 1003.

GEOG 3143. Urban Sustainability. 3 Credits.

Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3143W. Urban Sustainability. 3 Credits.

Relationship between urban spaces and the environment through the lens of sustainability. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1001.

GEOG 3145. Cultural Geography. 3 Credits.

Themes, concepts, and tools appropriate for an in-depth geographic examination of the Earth's cultural landscape and of culture as a process. Prerequisite: GEOG 1001.

GEOG 3145W. Cultural Geography. 3 Credits.

Themes, concepts, and tools appropriate for an in-depth geographic examination of the Earth's cultural landscape and of culture as a process. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1001. Same As: GEOG 3145.

GEOG 3146. Political Geography. 3 Credits.

The uneven distribution and exercise of political power in the world; interrelationships among the human and physical environment and political systems. Prerequisite: GEOG 1001.

GEOG 3154. Geography of the Middle East and North Africa. 3 Credits.

Cultural and physical regional patterns of the Middle East and North Africa. Prerequisites: GEOG 1001 or GEOG 1002.

GEOG 3161. Geography of Latin America. 3 Credits.

Examination of spatial characteristics of physical and cultural phenomena in Latin America.

GEOG 3164. The Geography of Africa. 3 Credits.

Human and environmental geography of Africa south of the Sahara desert, including study of patterns and processes, culture and environment, and development issues. Prerequisites: GEOG 1001 or GEOG 1002.

GEOG 3165. Geography of South Asia. 3 Credits.

An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

GEOG 3189. Readings in Geography I. 1-12 Credits.

. Prerequisites: 12 credits of geography and permission of the instructor.

GEOG 3190. Readings in Geography II. 1-12 Credits.

Continuation of GEOG 3189. Prerequisites: 12 credits of geography and permission of the instructor.

GEOG 3193. Environmental Law and Policy. 3 Credits.

An introduction to selected pieces of major environmental legislation. The role of the courts and bureaucracy in implementing and interpreting legislation and their impacts on decision making. Designed for students with no training in law. Prerequisites: None.

GEOG 3194. Special Topics in Physical Geography. 3 Credits.

Topics covering physical principles of the Earth's physical geography and natural environment including the hydrosphere, atmosphere, biosphere, and lithosphere. Enrollment requires permission of the instructor.

GEOG 3195. Special Topics in Human Geography. 3 Credits.

Topics in human geography including population, urban, cultural, political and economic issues amongst others. Enrollment requires permission of the instructor.

GEOG 3196. Special Topics in Techniques. 3 Credits.

Topics covering specific skills in geographic information systems and field methods. Enrollment requires permission of the instructor.

GEOG 3197. Special Topics in Regional Geography. 3 Credits.

Various topics in regional geography, including world regional geography as well studies of specific regions of interest. Enrollment requires permission of the instructor.

GEOG 3198. Special Topics. 3 Credits.

Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: GEOG 1001 or GEOG 1002.

GEOG 3218. Arctic Systems. 3 Credits.

Arctic regions examined from an interdisciplinary perspective, linking different elements of physical and human geography; Arctic climate, oceans, landscapes, and ecosystems; key issues involving interaction between humans and the environment; climate change and its effects in the Arctic. Prerequisite: GEOG 1002.

GEOG 3810. Planning Cities. 3 Credits.

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as AMST 3810. Prerequisite: GEOG 1001.

GEOG 4195. Proseminar in Geographic Thought. 3 Credits.

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4195W. Proseminar in Geographic Thought. 3 Credits.

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Permission of the advisor required prior to enrollment.

GEOG 4199. Internship. 1-3 Credits.

Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. May be repeated for credit to a maximum of 6 credits. Prerequisites: 12 credits of geography courses and permission of the instructor.

GEOG 4307. Digital Image Processing and Analysis. 3 Credits.

Land use/land cover change analysis using satellite and aircraft platforms. Digital image processing techniques, analysis, and applications. Prerequisites: GEOG 2104, GEOG 3105, and GEOG 3107.

GEOG 4308. Programming for Geospatial Applications. 3 Credits.

Fundamental concepts for creating Python scripts in ArcGIS; guidelines for proper Python syntax, troubleshooting common errors, and using loops to test for conditions and execute different code based on the results. Prerequisites: GEOG 2104, GEOG 3105, and GEOG 3106.

GEOG 4309. GIS for Emergency Management. 3 Credits.

Introduction to the theoretical principles of geographic information systems and examination of its history, current uses, and potential for emergency management through case studies, guest lectures, and hands-on training on various GIS products. Prerequisites: GEOG 3106.

GEOG 4310. Geovisualization and Cartography. 3 Credits.

Introduction to cartographic design from gathering data to the final visualization; specific components involved in mapmaking, including purpose, generalization, and symbolization. Prerequisites: GEOG 2104 and GEOG 3106. Same As: GEOG 6310.

GEOG 4311. Open Source Solutions for Geospatial Project Management. 3 Credits.

Geospatial project management, from design through implementation. Students work exclusively with open source technology for data capture, management, analysis, and communication; open source solutions and the effectiveness and sustainability of project management. Prerequisite: GEOG 3106. Same As: GEOG 6311.

GEOG 5099. Variable Topics. 1-99 Credits.

GEOG 6201. Geographic Thought. 3 Credits.

For first-year master's students, a survey of geographic thought and theories. Emphasis on contemporary issues in geography and on the development of research.

GEOG 6207. Urban Planning and Development. 3 Credits.

Selected problems in urban and regional planning: applications of zoning, environmental controls, and other techniques for achieving sustainable urban development.

GEOG 6208. Land Use and Urban Transportation Planning. 3 Credits.

Relationships between land use and the movement of goods and people. Examination of land use and transportation planning principles, issues, and techniques. Roles of public and private interests in land use and transportation planning and management.

GEOG 6218. Arctic Systems. 3 Credits.

Aspects of Arctic regions from an interdisciplinary perspective that links elements of physical and human geography; Arctic climate, oceans, landscapes, and ecosystems; interaction between humans and environment; climate change. Prerequisite: GEOG 1002.

GEOG 6219. Seminar: Climatology. 3 Credits.

Inadvertent climate modification due to urbanization and impacts on environmental and human health.

GEOG 6220. Seminar: Climatic Change. 3 Credits.

Examination of natural and human-induced climatic change, at global, regional, and local scales.

GEOG 6222. Seminar: Resources and the Environment. 3 Credits.

Topics related to the spatial variations and interrelationships of resources and the environment; applications of geographic information systems and remote sensing. Prerequisite: permission of instructor.

GEOG 6223. Seminar: Population and Health. 3 Credits.

Interrelationships between population characteristics and dynamics and impacts on human health.

GEOG 6224. Seminar: Political Geography. 3 Credits.

Examination of political factors in location theory and analysis of the nature of political territories and conflict.

GEOG 6225. Seminar: Transportation and Development. 3 Credits.

Transportation and communication in the organization of space.

GEOG 6226. Water Resources Policy and Management. 3 Credits.

The history and practice of water resources policy and management in an integrated context; the impact of urban and agricultural runoff on water quality; provision of wastewater and water quality services; water supply, water allocation, and scarcity; and modification of waterbodies for the purposes of flood control, hydropower, navigation, and recreation.

GEOG 6230. Seminar: Environmental Issues in Development. 3 Credits.

A consideration of the geographical dimensions of the links between development and the environment.

GEOG 6232. Migration and Development. 3 Credits.

Analysis of migration's impact on development at various scales for both the sending and receiving localities.

GEOG 6233. Social-Ecological Systems. 3 Credits.

Exploration of social processes and ecological dynamics using interdisciplinary approaches that borrow tools and techniques from the social and natural sciences and traditional knowledge systems.

GEOG 6243. Seminar: Urban Geography. 3 Credits.

Topics concerning social, political, economic, and environmental issues in U.S. cities.

GEOG 6244. Urban Sustainability. 3 Credits.

Urban sustainability and environmental issues in developed and developing cities.

GEOG 6245. Water Resources Policy and Management. 3 Credits.

This course examines the history and practice of water resources policy and management in the context of integrated water resource management. Thus, the course addresses management issues and policy responses to such topics as the impacts of urban and agricultural runoff on water quality; provision of wastewater and water quality services; water supply, water allocation and scarcity; and modification of waterbodies for the purposes of flood control, hydropower, navigation, and recreation. In addition, non-human water requirements: e.g. for fish and wildlife, as well as the need to preserve the natural ecosystems that provide and sustain water resources are central to each discussion. Management and policy issues in the United States and worldwide at a range of scales (local, state, federal and international) will be examined. In the course of these examinations, students gain an understanding of how current issues such as growing populations, increasing affluence, and climate change may impact water resource policy and management.

GEOG 6250. Geographical Perspectives on Development. 3 Credits.

Theory and debates surrounding economic development in a globalizing world, with case studies.

GEOG 6261. Geographical Perspectives on Latin America. 3 Credits.

Natural resources, the environment, and population dynamics through time.

GEOG 6262. Geographical Perspectives on the Middle East. 3 Credits.

Examination of selected topics related to political, economic, social, cultural, and geographic patterns and processes in the region.

GEOG 6265. Geography of Russia and Its Neighbors. 3 Credits.

A deeper understanding of Post-Soviet geography with a focus on the physical and environmental characteristics of the region, geography of natural and human resources, ethnic, cultural and religious diversity, characteristics of economic and political regions, and recent geopolitical developments.

GEOG 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ SOC 6290/ STAT 6290.

GEOG 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ SOC 6291/ STAT 6291.

GEOG 6292. Qualitative Methods in Geography. 3 Credits.

Qualitative research methods, including questionnaires, focus groups, in-depth interviews, repeat photography, observation, reflective mapping, coding, and map interpretation that help appreciate the human experience and build upon ways to produce knowledge.

GEOG 6293. Special Topics. 3 Credits.

Consideration of geographic aspects of topical social or environmental problems. May be repeated for credit provided the topic differs. Credit cannot be earned for this course and IAFF 6118.

GEOG 6295. Research. 1-12 Credits.

May be repeated for credit.

GEOG 6299. Internship. 1-3 Credits.**GEOG 6300. Geography Capstone Internship. 3 Credits.**

This course provides hands-on experiential learning in a local government agency, NGO, or corporation while allowing the candidate to use his/her geographical skills in a real world setting. Restricted to graduate students in the geography program. Prerequisite: GEOG 6201.

GEOG 6303. Introduction to Remote Sensing. 3 Credits.

Theoretical, technical, and applied aspects of remote sensing as a tool for monitoring and managing Earth's resources.

GEOG 6304. Geographical Information Systems I. 3 Credits.

Fundamentals of cartography; geographic data structure and geographic information systems.

GEOG 6305. Geospatial Statistics. 3 Credits.

Nature of geographical inquiry and the analytical and statistical methods used in the study of spatial processes and patterns.

GEOG 6306. Geographical Information Systems II. 3 Credits.

Advanced principles of geographic information systems and their use in spatial analysis and information management. Prerequisites: GEOG 6304 and GEOG 6305.

GEOG 6307. Digital Image Processing. 3 Credits.

This course introduces students to the theoretical, technical and applied aspects of remote sensing as a tool for monitoring and managing earth resources. This course provides students with the knowledge for analyzing and applying remotely sensed data for problem solving as it applies to land cover. Prerequisite: GEOG 6304.

GEOG 6308. Programming for Geospatial Applications. 3 Credits.

Fundamental concepts for creating Python scripts in ArcGIS; guidelines for proper Python syntax, techniques to troubleshoot common errors, and using loops to test for conditions and execute code based on results. Prerequisites: GEOG 6304 and GEOG 6305.

GEOG 6309. GIS for Emergency Management. 3 Credits.

This course introduces students to the theoretical principles of geographic information systems and examines its history, current uses and potential for emergency management through case studies, guest lectures and hands-on training on various GIS products. Prerequisite: GEOG 6304.

GEOG 6310. Geovisualization and Cartography. 3 Credits.

Introduction to cartographic design; components of mapmaking, including purpose, generalization, and symbolization; spatial thinking and effective audience-specific communication Prerequisite: GEOG 6304.

GEOG 6311. Open Source Solutions for Geospatial Project Management. 3 Credits.

Geospatial project management, from design through implementation. Students work exclusively with open source technology for data capture, management, analysis, and communication; open source solutions and the effectiveness and sustainability of project management. Prerequisite: GEOG 6304. Same As: GEOG 4311.

GEOG 6998. Thesis Research. 3 Credits.

GEOG 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN GEOGRAPHY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

For the major, 37 credits, including 16 credits in required courses, 18 credits in courses taken from among three subject groups, and one 3-credit elective course.

Code	Title	Credits
Required		
GEOG 1001	Introduction to Human Geography	
GEOG 1002	Introduction to Physical Geography	
GEOG 2104	Introduction to Cartography and GIS	
GEOG 3106	Intermediate Geographic Information Systems	
GEOG 4195	Proseminar in Geographic Thought *	

Group A: Physical Geography

At least two courses from the following, one of which must be taken at the 3000 level.

GEOG 2129 Biogeography

GEOG 2134 Energy Resources

GEOG 2136 Water Resources

GEOG 2137 Environmental Hazards

GEOG 3108 Weather and Climate

GEOG 3128 Geomorphology

GEOG 3194 Special Topics in Physical Geography

Group B: Human Geography

At least two courses from the following, one of which must be taken at the 3000 level.

GEOG 2124 Urban Transportation

GEOG 2125 Transportation Systems and Networks

GEOG 2127 Population Geography

GEOG 2133 People, Land, and Food

GEOG 2140 Cities and Societies

GEOG 2141 Cities in the Developing World

GEOG 2144 Explorations in Historical Geography

GEOG 2147 Military Geography

GEOG 2148 Economic Geography

GEOG 3145 Cultural Geography

GEOG 3146 Political Geography

GEOG 3195 Special Topics in Human Geography

GEOG 3810 Planning Cities

Group C: Techniques **

GEOG 2196 Field Methods in Geography

GEOG 3105 Techniques of Spatial Analysis

GEOG 3107 Introduction to Remote Sensing

GEOG 3196 Special Topics in Techniques

GEOG 4307 Digital Image Processing and Analysis

GEOG 4308 Programming for Geospatial Applications

GEOG 4309	GIS for Emergency Management
GEOG 4310	Geovisualization and Cartography
GEOG 4311	Open Source Solutions for Geospatial Project Management

Group D: Nature and Society

At least two courses from the following, one of which must be taken at the 3000 level.

GEOG 1003	Society and Environment
GEOG 2120	World Regional Geography
GEOG 3132	Environmental Quality and Management
GEOG 3133	Social-Ecological Systems
GEOG 3143	Urban Sustainability
GEOG 3154	Geography of the Middle East and North Africa
GEOG 3161	Geography of Latin America
GEOG 3164	The Geography of Africa
GEOG 3165	Geography of South Asia
GEOG 3193	Environmental Law and Policy
GEOG 3197	Special Topics in Regional Geography
GEOG 3218	Arctic Systems

Elective

Any one course selected from Group A, B, C, or D.

* Offered in the fall semester only.

** All students take two techniques courses, GEOG 2104 and GEOG 3106, as part of the required major curriculum. Their elective course selection may be an additional techniques course or a course from one of the other three groups.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible

citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have a minimum grade-point average of 3.75 in geography courses and a 3.5 average overall.

BACHELOR OF SCIENCE WITH A MAJOR IN ENVIRONMENTAL AND SUSTAINABILITY SCIENCE REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs.

The program-specific curriculum:

Code	Title	Credits
Required		
Foundational courses		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
GEOG 1002	Introduction to Physical Geography	
or GEOL 1005	Environmental Geology	
GEOG 1003	Society and Environment	
or SUST 1001	Introduction to Sustainability	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
or STAT 1127	Statistics for the Biological Sciences	
Two of the following course sets:		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II	
or MATH 1231	Single-Variable Calculus I	

PHYS 1011 & PHYS 1012	General Physics I and General Physics II
or PHYS 1021 & PHYS 1022	University Physics I and University Physics II
or PHYS 1025 & PHYS 1026	University Physics I with Biological Applications and University Physics II with Biological Applications
Upper-level major requirements	
Required courses	
GEOG 2104	Introduction to Cartography and GIS
GEOG 2196	Field Methods in Geography
or GEOG 3128	Geomorphology
or BISC 3459	Field Biology
ENVR 4195	Environmental Studies Capstone
Additional upper-level course requirements	
18 credits in courses in the major taken at or above the 2000 level. A minimum of 12 of these credits should be within one of the two concentrations below and include at least one 3000-level course. The remaining two courses can be selected from the other concentration or from the "other upper level courses in the major" category below.	
Earth and environmental science concentration	
CHEM 2085	Environmental Chemistry
CHEM 3140	Geochemistry
GEOG 2136	Water Resources
GEOG 3105	Techniques of Spatial Analysis
GEOG 3108	Weather and Climate
GEOG 3128	Geomorphology *
GEOG 3218	Arctic Systems
GEOL 2106	Oceanography
GEOL 2151	Introduction to Paleontology
GEOL 3138	Hydrogeology
GEOL 3191	Geology of Energy Resources
Ecological management concentration	
ANTH 3407	Conservation in a Changing World: Human and Animal Behavior
BISC 2010	Global Change Biology

BISC 2401	Biodiversity in A Changing World
BISC 2454	General Ecology
BISC 3454	Marine Ecology
BISC 3459	Field Biology *
BISC 3460W or BISC 3460	Conservation Biology
BISC 3461	Plant-Animal Interactions
BISC 3464	Ecology and Evolution of Societies
GEOG 2129W or GEOG 2129	Biogeography
GEOG 3132	Environmental Quality and Management
Other upper-level courses in the major **	
ECON 2136	Environmental and Natural Resource Economics
GEOG 3105	Techniques of Spatial Analysis
GEOG 3106	Intermediate Geographic Information Systems
GEOG 3107	Introduction to Remote Sensing
GEOG 3193	Environmental Law and Policy
GEOG 4309	GIS for Emergency Management
PHIL 2281	Philosophy of the Environment
PPPA 2701	Sustainability and Environmental Policy
PUBH 3132	Health and Environment

*BISC 3459 and GEOG 3128 cannot be double counted as concentration courses if already used to fulfill the upper-level major requirement.

**May be used to fulfill the total number of required credits in the major.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication

competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

GRADUATE CERTIFICATE IN GEOGRAPHICAL INFORMATION SYSTEMS

Geographical Information Systems (GIS) allow us to capture, manage, query, analyze and model geospatially referenced data. GIS ties the idea of location to information, making it possible to visualize it all in map form. Using geospatial techniques we combine and overlay data to show complex scenarios from a geographic perspective. GIS also allows us to integrate data from diverse sources, helping identify relationships, trends, and patterns of distribution.

Our certificate program provides students with a solid grounding in geospatial theory and techniques, combined with the practical skills to apply these techniques to real world problems. Students are exposed to a combination of industry standard software and open source programs in classes that encourage an extensive hands-on approach. We feature service learning components in our courses that increasingly incorporate the growing field of open source GIS.

The demand for geospatial science skills is exploding in today's job market, and GIS is increasingly popular in many different disciplines and industries, such as; scientific investigation, resource management, marketing, archaeology, environmental research, urban planning, demography, development, policy, public health, emergency management, and logistics.

Certificate students have an opportunity to pick from a broad range of electives that match their interests. Our state-of-the-art Spatial Analysis Lab is available for student research and our faculty members have expertise in GIS, remote sensing and spatial analysis.

The certificate requires the completion of 12 graduate credit hours. Students take three required courses and one elective class. All students are expected to complete the program in two years (four semesters).

This is a STEM-designated degree program.

Visit the program website (<https://geography.columbian.gwu.edu/graduate-certificate-geographical-information-systems/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
GEOG 6304	Geographical Information Systems I	

GEOG 6305 Geospatial Statistics

Electives

Two of the following:

GEOG 6303	Introduction to Remote Sensing
GEOG 6306	Geographical Information Systems II
GEOG 6307	Digital Image Processing
GEOG 6308	Programming for Geospatial Applications
GEOG 6309	GIS for Emergency Management
GEOG 6310	Geovisualization and Cartography
GEOG 6311	Open Source Solutions for Geospatial Project Management

MASTER OF SCIENCE IN THE FIELD OF GEOGRAPHY

Part of the social and behavioral sciences in the Columbian College of Arts and Sciences, the program investigates societal and environmental dynamics, focusing on questions of sustainability, urbanization and uneven resource distribution. Our graduates pursue rewarding careers in governmental and non-governmental agencies and in the private sector.

The graduate program has three core areas that reflect the research interests of the geography faculty 1) urbanization, migration and development; 2) global environmental change and sustainability; and 3) geospatial techniques. Geography faculty members also have regional expertise in North America, Latin America, South Asia, Africa, the Middle East and the Arctic.

The MS program consists of required coursework and electives. The two-year program has both thesis and non-thesis options. Funding is available to support thesis-related summer field research through geography's Campbell Endowment. A number of fellowships and graduate student assistant-ships support students.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Thesis option—30 credits, including 6 credits in required courses, 18 credits in elective courses, and 6 credits in thesis; non-thesis option—36 credits, including 6 credits in required courses, 18 credits in elective courses, 9 credits in research, and a 3-credit capstone internship.

Code	Title	Credits
Required		
GEOG 6201	Geographic Thought	
GEOG 6304	Geographical Information Systems I	
Thesis option		
GEOG 6292	Qualitative Methods in Geography	
or GEOG 6305	Geospatial Statistics	
GEOG 6998	Thesis Research	
GEOG 6999	Thesis Research	
Non-thesis option		
Degree candidates selecting the non-thesis option must take 3 credits of directed research.		
GEOG 6292	Qualitative Methods in Geography	
or GEOG 6305	Geospatial Statistics	
GEOG 6295	Research	
or GEOG 6300	Geography Capstone Internship	
Electives		
18 credits of elective courses to include at least one of the following:		
GEOG 6226	Water Resources Policy and Management	
GEOG 6232	Migration and Development	
GEOG 6250	Geographical Perspectives on Development	
GEOG 6306	Geographical Information Systems II	
GEOG 6307	Digital Image Processing	
GEOG 6308	Programming for Geospatial Applications	
GEOG 6309	GIS for Emergency Management	
GEOG 6310	Geovisualization and Cartography	
GEOG 6311	Open Source Solutions for Geospatial Project Management	
GEOG 6300	Geography Capstone Internship	

Depending upon the chosen field of specialization, each student will select electives from appropriate courses within the department or from related programs and departments within the University or the Consortium of Universities.

The student's program of study is developed in consultation with the advisor and graduate committee.

Visit the program website (<https://geography.columbian.gwu.edu/masters-geography/>) for additional information.

DUAL MASTER OF SCIENCE IN THE FIELD OF GEOGRAPHY AND GRADUATE CERTIFICATE IN GEOGRAPHICAL INFORMATION SYSTEMS

REQUIREMENTS

The Department of Geography offers a dual master of science in the field of geography (p. 287) and graduate certificate in geographical information systems (p. 287) program. The 12 credits earned in the certificate program may be applied toward the master's degree.

Visit the Department of Geography website (<https://geography.columbian.gwu.edu/>) for additional information.

MINOR IN GEOGRAPHIC INFORMATION SYSTEMS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
GEOG 2104	Introduction to Cartography and GIS	
GEOG 3105	Techniques of Spatial Analysis	
GEOG 3106	Intermediate Geographic Information Systems	
GEOG 3107	Introduction to Remote Sensing	
Electives		
One of the following:		
GEOG 3196	Special Topics in Techniques	

GEOG 4307	Digital Image Processing and Analysis
GEOG 4308	Programming for Geospatial Applications
GEOG 4309	GIS for Emergency Management
GEOG 4310	Geovisualization and Cartography
GEOG 4311	Open Source Solutions for Geospatial Project Management

MINOR IN GEOGRAPHY

REQUIREMENTS

The following requirements must be fulfilled: 19 credits, including 7 credits in required courses and 12 credits selected from among four groups.

Code	Title	Credits
Required		
GEOG 1001	Introduction to Human Geography	
GEOG 1002	Introduction to Physical Geography	
One course from each of the following groups:		
Group A: Physical Geography		
GEOG 2129	Biogeography	
GEOG 2134	Energy Resources	
GEOG 2136	Water Resources	
GEOG 2137	Environmental Hazards	
GEOG 3108	Weather and Climate	
GEOG 3128	Geomorphology	
GEOG 3194	Special Topics in Physical Geography	
Group B: Human Geography		
GEOG 2124	Urban Transportation	
GEOG 2125	Transportation Systems and Networks	
GEOG 2127	Population Geography	
GEOG 2133	People, Land, and Food	
GEOG 2140	Cities and Societies	
GEOG 2141	Cities in the Developing World	
GEOG 2144	Explorations in Historical Geography	

GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3145	Cultural Geography
GEOG 3146	Political Geography
GEOG 3195	Special Topics in Human Geography
GEOG 3810	Planning Cities

Group C: Techniques

GEOG 2104	Introduction to Cartography and GIS
GEOG 2196	Field Methods in Geography
GEOG 3105	Techniques of Spatial Analysis
GEOG 3106	Intermediate Geographic Information Systems
GEOG 3107	Introduction to Remote Sensing
GEOG 3196	Special Topics in Techniques
GEOG 4307	Digital Image Processing and Analysis
GEOG 4308	Programming for Geospatial Applications
GEOG 4309	GIS for Emergency Management
GEOG 4310	Geovisualization and Cartography
GEOG 4311	Open Source Solutions for Geospatial Project Management

Group D: Nature and Society

GEOG 1003	Society and Environment
GEOG 2120	World Regional Geography
GEOG 3132	Environmental Quality and Management
GEOG 3133	Social-Ecological Systems
GEOG 3143	Urban Sustainability
GEOG 3154	Geography of the Middle East and North Africa
GEOG 3161	Geography of Latin America
GEOG 3164	The Geography of Africa
GEOG 3165	Geography of South Asia
GEOG 3193	Environmental Law and Policy

GEOLOGICAL SCIENCES

The geological sciences program offers undergraduate instruction in rigorous research techniques. It allows students to work directly with faculty in research on the geology and paleontology of the Appalachian mountains, the Rocky mountains, Asia, and elsewhere. The student-faculty partnership provides a broad education and hands-on training.

Visit the Department of Geological Sciences website (<https://geology.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in geological sciences (p. 291)
- Bachelor of Science with a major in geological sciences (p. 293)

Minor

- Minor in geological sciences (p. 294)

FACULTY

Committee on Geological Sciences C. E. Brown, C. Chazen, C. A. Forster, G. Mattiotti-Kysar, P. Nassar, R. P. Tollo

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOL 1001. Physical Geology. 4 Credits.

Lecture and laboratory. Introduction to the principal features of the composition and structure of the earth. The nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Credit cannot be earned for this course and GEOL 1005.

GEOL 1002. Historical Geology. 4 Credits.

Lecture and laboratory. Introduction to the history of the earth. Sedimentary environments, plate tectonics, origin of life, and evolution.

GEOL 1005. Environmental Geology. 4 Credits.

Lecture and laboratory. Introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments. Population evolution, natural hazards, and mineral resources.

GEOL 1099. Variable Topics. 1-36 Credits.

GEOL 2106. Oceanography. 3 Credits.

The ocean with its many environments represents the last largely unexplored frontier on earth. Origin of the ocean systems and plate tectonics, ocean habitats and their biota, marine hydrology and ocean currents; air-sea interaction and climate control; ocean mapping techniques; environmental regulations covering marine resources. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 2111. Mineralogy. 4 Credits.

Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and ore minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Laboratory fee. Prerequisites: GEOL 1001 or GEOL 1005; or permission of the instructor.

GEOL 2112. Igneous and Metamorphic Petrology. 4 Credits.

Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an introduction to petrologic analysis of igneous and metamorphic mineral systems. Prerequisite: GEOL 2111 or permission of the instructor. Laboratory fee.

GEOL 2122. Structural Geology. 3 Credits.

Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisites: GEOL 1001 or GEOL 1002 or GEOL 1005.

GEOL 2151. Introduction to Paleontology. 3 Credits.

Review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Prerequisites: GEOL 1002.

GEOL 2190. Special Topics in Geology. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

GEOL 2333. Evolution and Extinction of Dinosaurs. 3 Credits.

The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 and BISC 1112; or GEOL 1001 and GEOL 1002; or GEOL 1002 and GEOL 1005. Credit cannot be earned for this course and BISC 2333.

GEOL 3099. Variable Topics. 1-12 Credits.

GEOL 3118. Volcanology. 3 Credits.

Fundamental principles and geologic processes associated with volcanism. Eruptive styles, processes leading to magma production and transport, triggering mechanisms, plate tectonic settings, volcanic hazards, and disaster mitigation. Case histories of selected volcanic eruptions examined in detail. Laboratory fee. Prerequisites: GEOL 2111 or permission of the instructor.

GEOL 3119. Field Experience in Volcanology. 1 Credit.

Weeklong field exercise at a major volcanic center in the western United States; field-based interpretation and analysis of volcanic and related rocks. Classroom discussion focuses on the processes responsible for volcanism. Deposit for expenses is required. Recommended background: Prior completion or concurrent enrollment in GEOL 2112 and GEOL 3118.

GEOL 3123. Crustal Dynamics. 3 Credits.

Basic plate tectonic processes and features; the plate tectonic paradigm in historical evolutionary framework. Students present an original research project orally and in writing. Prerequisite: GEOL 2122. Laboratory fee.

GEOL 3128. Sedimentology and Stratigraphy. 3 Credits.

Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 1001.

GEOL 3129. Sedimentology and Stratigraphy Lab. 1 Credit.

Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 2112.

GEOL 3131. Global Climate Change. 3 Credits.

Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change.

GEOL 3138. Hydrogeology. 3 Credits.

Principles and theory of basic and applied hydrology: surface water hydrology, geology of groundwater systems, groundwater flow, surface water-groundwater interactions, contamination and remediation technologies, conservation, management, and regulations. Laboratory fee. Prerequisites: GEOL 2111 and GEOL 2122; and MATH 1221 or MATH 1231; or permission of the instructor.

GEOL 3140. Geochemistry. 3 Credits.

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Prerequisites: GEOL 1001 or GEOL 1005; and CHEM 1111 and CHEM 1112. (Same as CHEM 3140).

GEOL 3189. Geophysics. 3 Credits.

Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: GEOL 2122 or permission of instructor.

GEOL 3191. Geology of Energy Resources. 3 Credits.

Principles of geology applied in energy exploration, exploitation, and production; the geology of energy resources in ocean basins; borehole and surface geophysical applications and reconnaissance mapping techniques; management and regulation of energy resources; sustainability, efficiency, and conservation issues. Laboratory fee. Prerequisites: GEOL 2122 or permission of the instructor.

GEOL 4195. Geological Field Methods. 4 Credits.

Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains and the plate tectonic processes responsible for their formation emphasized. Field trip fee. Prerequisites: GEOL 2111 and GEOL 2122.

GEOL 4195W. Geological Field Methods. 4 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GEOL 4199. Undergraduate Research or Reading. 1-12 Credits.

Problems approved by the staff. May be repeated for credit.

GEOL 5099. Variable Topics. 1-99 Credits.

BACHELOR OF ARTS WITH A MAJOR IN GEOLOGICAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
Two courses selected from the following:		
GEOL 1002	Historical Geology	
GEOL 1001	Physical Geology	
GEOL 1005	Environmental Geology	
Code	Title	Credits
Required courses in related areas		
CHEM 1111	General Chemistry I	

Required courses for the major

GEOL 2111	Mineralogy
GEOL 2112	Igneous and Metamorphic Petrology
GEOL 2122	Structural Geology
GEOL 3128	Sedimentology and Stratigraphy
GEOL 3129	Sedimentology and Stratigraphy Lab
GEOL 4195	Geological Field Methods

Three upper-level elective courses selected from the following:

GEOL 2106	Oceanography
GEOL 2151	Introduction to Paleontology
GEOL 2190	Special Topics in Geology (3 credits only)
GEOL 2333	Evolution and Extinction of Dinosaurs
GEOL 3118	Volcanology
GEOL 3123	Crustal Dynamics
GEOL 3131	Global Climate Change
GEOL 3138	Hydrogeology
GEOL 3140	Geochemistry
GEOL 3191	Geology of Energy Resources
GEOL 4199	Undergraduate Research or Reading (3 credits only)

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, candidates must maintain a cumulative grade-point average of 3.3 both overall and for courses in the major, and must submit an approved Honors thesis.

BACHELOR OF SCIENCE WITH A MAJOR IN GEOLOGICAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
Two courses selected from the following:		
GEOL 1001	Physical Geology	
GEOL 1002	Historical Geology	
GEOL 1005	Environmental Geology	
Code	Title	Credits
Required courses in related areas		
CHEM 1111 & CHEM 1112	General Chemistry I and General Chemistry II	
PHYS 1011 & PHYS 1012	General Physics I and General Physics II	
or ASTR 1001 & ASTR 1002	Stars, Planets, and Life in the Universe and Origins of the Cosmos	
One course selected from the following:		
MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II	
MATH 1231	Single-Variable Calculus I	
STAT 1051	Introduction to Business and Economic Statistics	
STAT 1053	Introduction to Statistics in Social Science	
STAT 1111	Business and Economic Statistics I	
STAT 1127	Statistics for the Biological Sciences	
Required courses for the major		
GEOL 2111	Mineralogy	
GEOL 2112	Igneous and Metamorphic Petrology	

GEOL 2122	Structural Geology
GEOL 3128	Sedimentology and Stratigraphy
GEOL 3129	Sedimentology and Stratigraphy Lab
GEOL 4195	Geological Field Methods
Four courses selected from the following and approved by the program advisor:	
GEOL 2106	Oceanography
GEOL 2151	Introduction to Paleontology
GEOL 2190	Special Topics in Geology (3 credits only)
GEOL 2333	Evolution and Extinction of Dinosaurs
GEOL 3118	Volcanology
GEOL 3131	Global Climate Change
GEOL 3138	Hydrogeology
GEOL 3140	Geochemistry
GEOL 3189	Geophysics
GEOL 3191	Geology of Energy Resources
GEOL 4199	Undergraduate Research or Reading (3 credits only)

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.

- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, candidates must maintain a cumulative grade-point average of 3.3 both overall and for courses in the major, and must submit an approved Honors thesis.

MINOR IN GEOLOGICAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled: 19 credits for the minor and successful completion of all prerequisite courses.

Code	Title	Credits
Program prerequisites		
Two courses from the following:		
GEOL 1002	Historical Geology	
GEOL 1001	Physical Geology	
GEOL 1005	Environmental Geology	
Code	Title	Credits
Required for the minor		
GEOL 2111	Mineralogy	
Two upper-level GEOL courses from the following:		
GEOL 2106	Oceanography	
GEOL 2112	Igneous and Metamorphic Petrology	
GEOL 2122	Structural Geology	
GEOL 2151	Introduction to Paleontology	
GEOL 2333	Evolution and Extinction of Dinosaurs	
GEOL 3118	Volcanology	
GEOL 3128	Sedimentology and Stratigraphy	
GEOL 3138	Hydrogeology	
GEOL 3189	Geophysics	
GEOL 3191	Geology of Energy Resources	
GEOL 4195	Geological Field Methods	

HISTORY

The Department of History offers a curriculum that includes a wide range of geographical, thematic, and temporal fields. Students can choose from courses in American, European, Asian, Middle Eastern, Latin American, and African history in the early modern and modern time periods, as well as courses centering on cross-national themes such as the history of colonialism and imperialism, the Cold War, the Atlantic World, immigration, women's history, and military history. The program strengthens students' ability to understand the past in political, social, and cultural context and the relationship of the past to the present. It is also designed so that students gain experience in writing and acquire the knowledge and analytical tools necessary for success in a range of careers and professions.

Visit the Department of History website (<https://history.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in history (p. 308)

Combined program

- Dual Bachelor of Arts with a major in history and Master of Education in the field of secondary education with a concentration in social studies (p. 656)

Minor

- Minor in history (p. 312)

GRADUATE

Master's program

- Master of Arts in the field of history (p. 311)

Doctoral programs

- Doctor of Philosophy in the field of history (p. 311)
- Doctor of Philosophy in the field of American religious history (p. 310)

FACULTY

Professors H.L. Agnew, E. Arnesen, M.A. Atkin, N. Blyden, G.A. Brazinsky, E.H. Cline, R.J. Cottrol, H.M. Harrison, J. Hershberg, D.K. Kennedy, D.R. Khoury, D. Schwartz (*Chair*), D. Silverman, R. Thornton, J. Weissman Joselit, A. Zimmerman

Associate Professors P.M. Alonso-Gortari, D. Brunsman, E. Chapman, D. Cline, A. Dubnov, B. Hopkins, J. Kim, C. Klemek, J. Krug, S. McHale, S.N. Robinson, A.M. Smith II, K. Schultheiss, D. Yang

Assistant Professors A. Abigail Agresta, J. Blecher, S. Brady, T. Christov, T.W. Jackson, C.T. Long, S. Matthiesen, E. Schluessel, T. Shenk, J. Wells

Adjunct Professor A. Howard

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Course Accessibility: All listed undergraduate courses are open to students without history course prerequisites with the exception of HIST 3095 Internship, HIST 4098 Thesis Seminar, and HIST 4099 Senior Honors Thesis Tutorial.

HIST 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

HIST 1011. World History, 1500-Present. 3 Credits.

An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

HIST 1020. Approaches to Women's History. 3 Credits.

Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as WGSS 1020.

HIST 1099. Variable Topics. 1-36 Credits.

HIST 1110. Foundations of Europe to 1715. 3 Credits.

Course examines more than 4,000 years of human history, and the processes, ideas, and events from ancient Mesopotamia to 1715 that formed European societies and culture, emphasizing primary sources and their interpretation.

HIST 1120. Europe in the World Since 1715. 3 Credits.

Introduction to the history of Europe from the early eighteenth century to the mid-twentieth century, emphasizing primary sources and their interpretation.

HIST 1120W. European Civilization in its World Context. 3 Credits.

European history from the early eighteenth century to the present; mutual influence and impact between Europe and the rest of the world. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 1121. The War of Ideas in European and International History, 1750-Present. 3 Credits.

The ideas that made people fight, from the French Revolution to the worldwide uprisings of the 1960s and beyond. Key texts whose ideas of freedom and slavery, tradition and progress, state authority and revolutionary violence changed the world. The political, economic, and social contexts and effects of these texts.

HIST 1310. Introduction to American History from the Pre-Columbian Era to 1877. 3 Credits.

The political, social, economic, and cultural history of the United States from pre-Columbian America to 1877.

HIST 1311. Introduction to American History since 1877. 3 Credits.

The political, social, economic, and cultural history of the United States. Since 1877.

HIST 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the schedule of classes for more details. Instructor's permission is required.

HIST 2001. Special Topics. 3-4 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2005. Majors' Introductory Seminar. 3 Credits.

Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Same As: HIST 2005W.

HIST 2005W. Majors' Introductory Seminar. 3 Credits.

Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HIST 2005.

HIST 2006. Digital History. 3 Credits.

How the Internet and electronic technology have transformed the ways in which historians conduct research, present their work, and record, store, organize, and disseminate their findings; computational tools for data analysis.

HIST 2010. Early American Cultural History. 3 Credits.

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same As: AMST 2010.

HIST 2011. Modern American Cultural History. 3 Credits.

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as AMST 2011.

HIST 2015. Global Economic History From the Industrial Revolution to the Present. 3 Credits.

How governments and international organizations relied on market mechanisms and expert planning to spur economic growth, while at the same time creating new problems; Industrial Revolution, imperialism, Great Depression, postwar welfare state, economic development, and recent financial crises.

HIST 2016. Capitalism and Inequality from the Industrial Revolution to Present. 3 Credits.

History of global inequality and how it relates to capitalism. Introduces students to modern economic history through the lens of inequality.

HIST 2020. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same As: AMST 2020, AMST 2020W, HIST 2020W.

HIST 2020W. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2020, AMST 2020W, HIST 2020.

HIST 2050. History of Jewish Civilization: From the Bible to Modernity. 3 Credits.

Introduction to the richness and diversity of Jewish civilization from antiquity to the present. Examination of evolving notions of "who" or "what" is Jewish. Key concepts including "chosenness," community, peoplehood, diaspora, redemption, and Torah. How the boundaries of Jewishness have been formed, contested, and revised over time; how Jews managed to retain their identity throughout their millennial history of migration, dispersion, and persecution; what unites Jewish civilization; and whether a unified Jewish history over centuries and continents can be traced, as distinct from multiple "histories" of the Jews in the myriad times and places in which they lived. Emphasis on analysis of primary texts and cultural objects along with contextual understanding of Jews and Judaism.

HIST 2051. Antisemitism from Origins to the Present. 3 Credits.

Thematic and theoretical survey of the history of antisemitism from the late antique period to the twentieth century.

HIST 2060. Modern Jewish History. 3 Credits.

Survey of Jewish history from the seventeenth century to the present, focusing on Europe, America, and the Middle East. The myriad political, economic, and intellectual challenges of modernity to Jewish life and how Jews responded to these challenges through various religious and secular movements and with new concepts of identity and community.

HIST 2061. Ghetto: History of a Concept. 3 Credits.

The history of the ghetto from the sixteenth century to the present. Case studies from Europe and the United States illustrate the different stages in the genealogy of the ghetto as a word, concept, metaphor, and place.

HIST 2105. Majors' Introductory Seminar: Europe. 3 Credits.**HIST 2105W. Majors' Introductory Seminar: Europe. 3 Credits.**

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2112. History of Ancient Greece. 3 Credits.

A political and social survey of Bronze Age Minoan and Mycenaean civilizations, the Iron Age, Archaic Period, Classical Greece through Alexander the Great. (Same as CLAS 2112).

HIST 2113. The Roman World to 337 A.D.. 3 Credits.

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same As: CLAS 2113.

HIST 2114. Sport and Society in Ancient Greece. 3 Credits.

The place of athletics and sports in ancient Greek civilization. Religious, political, and economic contexts of athletics. Issues of class, gender, nationalism, and ethnicity.

HIST 2124. Nineteenth-Century Europe. 3 Credits.

Exploration of primary source documents and works of professional historians to introduce important issues of nineteenth-century European history.

HIST 2125. Twentieth-Century Europe. 3 Credits.

Diplomatic, political, and cultural developments from the turn of the century to the present.

HIST 2131. History of England Since 1689. 3 Credits.

Development of English civilization and its impact on Western culture.

HIST 2141. History of France Since 1789. 3 Credits.

Breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

HIST 2160. History of Germany. 3 Credits.

Political, social, and cultural development.

HIST 2180. Russia to 1801. 3 Credits.

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power; political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 2181. Russia Since 1801. 3 Credits.

Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era; contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 2301. Topics in U.S. History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

HIST 2305. Majors' Introductory Seminar: United States. 3 Credits.**HIST 2305W. Majors' Introductory Seminar: United States. 3 Credits.**

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

The period 1824-1950 as a crucial era in American history; popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem.

HIST 2312. The American Civil War and Reconstruction, 1850-1877. 3 Credits.

Examination of the political crises of the 1850s to determine how and why the issue of slavery led to the American Civil War; the war's important battles, including how generals and common soldiers shaped outcomes; Reconstruction and the aftermath of the war, including how it shapes politics and race relations to the present day.

HIST 2313. History of the American West. 3 Credits.

A history of the trans-Mississippi West from first settlement by American Indians to the present; the pre-contact West, the coming of the Spanish, American settlement, the Indian Wars, women in the West, labor and racial conflict, and the West in the twentieth century.

HIST 2320. U.S. Media and Cultural History. 3 Credits.

History and analysis of twentieth-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. (Same as AMST 2320).

HIST 2321. U.S. History, 1890-1945. 3 Credits.

A survey of modern U.S. history from the late nineteenth century to the end of WWII. Emphasis on politics, public policy, and culture. Basic readings include biography, autobiography, and contemporary novels.

HIST 2322. U.S. History since 1945. 3 Credits.

Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, "silent" '50s, and disrupted '60s.

HIST 2340. U.S. Diplomatic History. 3 Credits.

American foreign relations in the twentieth century.

HIST 2340W. U.S. Diplomatic History. 3 Credits.

American foreign relations in the twentieth century. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2341. History of FBI Counterintelligence. 3 Credits.

The issues, controversies, and personalities that have played critical roles in the history of FBI foreign counterintelligence development.

HIST 2350. U.S. Religion and Politics. 3 Credits.

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as AMST 2350.

HIST 2367. The American Jewish Experience. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ WGSS 2380.

HIST 2410. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same As: AMST 2410, AMST 2410W, HIST 2410W.

HIST 2410W. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2410, AMST 2410W, HIST 2410.

HIST 2440. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as AMST 2440.

HIST 2440W. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2440.

HIST 2490. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 2490.

HIST 2490W. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AMST 2490W).

HIST 2505. Majors' Introductory Seminar: Africa. 3 Credits.**HIST 2520. Africans in the Making of the Atlantic World. 3 Credits.**

The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 2601. Topics: Asian History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2605. Majors' Introductory Seminar: Asia. 3 Credits.**HIST 2605W. Majors' Introductory Seminar: Asia. 3 Credits.**

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2610. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late nineteenth century to the present. Same As: AMST 2610, AMST 2610W, HIST 2610W.

HIST 2610W. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late nineteenth century to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2610, AMST 2610W, HIST 2610.

HIST 2630. History of Korea. 3 Credits.

An introduction to the history and culture of Korea from antiquity to the present.

HIST 2705. Majors' Introductory Seminar: Latin America. 3 Credits.

HIST 2705W. Majors' Introductory Seminar: Latin America. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2710. The United States in the World. 3 Credits.

U.S. cultural and political engagement with the rest of the world in the twentieth and twenty-first centuries. Global culture, transnational ideas and social movements, travel and tourism, and the impact of media. Same As: AMST 2710.

HIST 2730. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2730W. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AMST 2730).

HIST 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Credit cannot be earned for this course and CLAS 2803.

HIST 2804. History of Ancient Israel. 3 Credits.

The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as CLAS 2804.

HIST 2805. Majors' Introductory Seminar: Middle East. 3 Credits.

HIST 2805W. Majors' Introductory Seminar: Middle East. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2809. Imperial Islam. 3 Credits.

The history of the Ottoman, Safavid/Qajar, and Mughal Empires from their formation and expansion as effective military and bureaucratic states until the late nineteenth century.

HIST 2810. Jihad: Love and War in Islamic History. 3 Credits.

The evolving justifications for war in Islamic history; close readings of classical (Qur'an and hadith), medieval (fatwas, legal treatises), and contemporary sources (writings of ISIS, Bin Laden, and others).

HIST 2811. The Formation of Islam to 1500. 3 Credits.

Political, social, and intellectual history of the Islamic world from the seventh to fifteenth centuries; cultural contexts of Southern Europe, North Africa, the Near East, Central Asia, South Asia, and across the Indian Ocean.

HIST 2812. History of Zionism. 3 Credits.

Critical historical survey of the development of Jewish nationalist thought in general and Zionism in particular, from its genesis in the 1880s up until the establishment of the State of Israel in May 1948. Same As: JSTD 2812.

HIST 2850. Modernization in Russia, Turkey, and Iran. 3 Credits.

Interrelated aspects of modernization, such as social and cultural issues, issues of power, and national identity, in Russia, Turkey, and Iran.

HIST 3001. Special Topics. 4 Credits.

May be repeated for credit provided the topic differs. Credit cannot be earned for this course and AMST 2490.

HIST 3001W. Special Topics. 4 Credits.

May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AMST 2490W.

HIST 3030. Military History to 1860. 3 Credits.

The causes, conduct, and consequences of conflict in the ancient, medieval, renaissance, and early modern world. Examination of the Anglo-Dutch and Anglo-French wars leading to the Seven Years' War, American Revolution (including a "virtual staff ride" of the Saratoga Campaign), French Revolution, and Napoleonic Wars.

HIST 3031. Military History since 1860. 3 Credits.

Causes, conduct, and consequences of conflict from the American Civil War through the Austro- and Franco-Prussian Wars, Spanish-American War, Sino- and Russo-Japanese Wars, World Wars I and II (including a "virtual staff ride" of the Normandy Campaign), Korea, Vietnam, and modern "small wars".

HIST 3033. War and the Military in American Society from the Revolution to the Gulf War. 3 Credits.

Social and psychological dimensions of war and military service.

HIST 3035. The United States and the Wars in Indochina, 1945-1975. 3 Credits.

The American role in the Indochina Wars, emphasizing the period 1961 to 1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

HIST 3038. Naval History to 1815. 3 Credits.

Causes, conduct, and consequences of war at sea from the Age of Reconnaissance and Conquest through the War of 1812 (including a "virtual staff ride" of the Battle of Trafalgar). Consideration of issues including technology, the impact of the environment, and theories of warfare associated with each period.

HIST 3039. Naval History since 1815. 3 Credits.

Causes, conduct, and consequences of war at sea in the Civil War, counterinsurgency operations of so-called small wars, World Wars I and II, and the post-Cold War period. The transition from sail to steam, asymmetric warfare, and the role of sea power in modern geopolitics. Students participate in a virtual staff ride of the Battle of Leyte Gulf.

HIST 3044W. The Price of Freedom: Normandy 1944. 4 Credits.

The causes, conduct, and consequences of warfare, considered through examination of the campaign in Normandy that began with the allied landings on D-Day. Assignments include researching and writing a biography of a member of the military who died in the campaign and presenting a eulogy at the soldier's graveside during a "staff ride" exploration of the battlefield conducted over spring break. The biography paper is submitted to and retained in the archives of the American Cemetery in Normandy. Permission of the Office for Study Abroad and interview with the instructor required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3045. International History of the Cold War. 3 Credits.

Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

HIST 3046. The Cold War in the Third World. 3 Credits.

The evolution of the Cold War in Asia, Africa, and Latin America. Decolonization and the response of the Great Powers, the political economy of the Third World, and American and Soviet interventions.

HIST 3047. Writing Cold War History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3047W. Writing Cold War History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of the Cold War. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3061. The Holocaust. 3 Credits.

The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

HIST 3062. War Crimes Trials. 3 Credits.

The Nuremberg trial and its legacy in subsequent international and hybrid tribunals. The need for judicial accountability for genocide, crimes against humanity, and war crimes.

HIST 3095. Internship. 1-3 Credits.

Study of history through internships in museums, libraries, the U.S. Congress, or other appropriate institutions and agencies. Prior approval of a departmental faculty member is required.

HIST 3097. Independent Study. 1-3 Credits.

Permission of instructor required.

HIST 3099. Variable Topics. 1-12 Credits.**HIST 3101. Topics: Europe. 3 Credits.****HIST 3101W. Topics: Europe. 3 Credits.**

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3103. European Intellectual History I. 3 Credits.

The "Century of Genius" and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution.

HIST 3104. European Intellectual History II. 3 Credits.

Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3104W. European Intellectual History II. 3 Credits.

Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3111. Topics in Ancient History. 3 Credits.

May be repeated for credit provided the topic differs. Same as CLAS 3111.

HIST 3116. Identity in the Greco-Roman World. 3 Credits.

Questions of identity surrounding the Romans and non-Romans who populated the ancient Mediterranean world in classical antiquity and whose culture is considered the cornerstone of Western civilization. (Same as CLAS 3116).

HIST 3117. Alexander The Great. 3 Credits.

Close reading of ancient primary sources reveal the complex personality and remarkable deeds of Alexander the Great (356-323 BCE); the nature of Alexander's military success, lasting effects of his conquests, and long-term impact on the varied people and lands of his empire. Prerequisites: AH 3101 or HIST 2112. (Same as CLAS 3117).

HIST 3118. The Middle Ages: 500-1500. 3 Credits.

The evolution of European society from the end of the Roman Empire to the Renaissance. The nature of political power, role of religion, place of gender, cultural production, and changing social structures.

HIST 3119. The Ancient Economy. 3 Credits.

Economic history of ancient Greece and Rome; environment and ecology of the Mediterranean region, trade and transport, the invention of coinage and monetization, taxation, food production, consumption, and slavery. (Same as CLAS 3119).

HIST 3126. European Integration: A History. 3 Credits.

An examination of the origins and development of the European Union.

HIST 3130. History of England I. 3 Credits.

Development of English civilization and its impact on Western culture. To 1689.

HIST 3132. Tudor England. 3 Credits.

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485-1603.

HIST 3132W. Tudor England. 3 Credits.

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485 to 1603. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3134. Stuart England. 3 Credits.

The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603-1714.

HIST 3135. Victorian Britain. 3 Credits.

Major themes in nineteenth-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.

HIST 3137. The British Empire. 3 Credits.

The British Empire from its rise in the seventeenth century to its demise in the twentieth century.

HIST 3139. Twentieth-Century Britain. 3 Credits.

Major themes of twentieth-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3139W. Twentieth-Century Britain. 3 Credits.

Major themes of twentieth-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3140. History of France. 3 Credits.

Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3140W. History of France to 1814. 3 Credits.

Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3145. The French Revolution. 3 Credits.

Social, political, economic, and cultural history of the decade of revolution, 1789-1799. Attention to its structural consequences in France and in Europe at large.

HIST 3145W. The French Revolution. 3 Credits.

Social, political, economic, and cultural history of the decade of revolution, 1789 to 1799. Attention to its structural consequences in France and in Europe at large. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3148. El Camino de Santiago. 3 Credits.

Walking the Camino de Santiago is a cultural phenomenon that has lasted over a thousand years. An important part of Spain's cultural and political history, the Camino has affected the structures that form Spain's political and institutional systems, society, economy, and ideology as well as artistic forms of expression. Students may earn their Pilgrim's passport by walking the last 100 kilometers of the Camino after the formal classes have ended. Offered at GW Madrid Study Center.

HIST 3149. History of Spain. 3 Credits.

Familiarizes students with the important milestones of Spain's history. Discusses the regime of the 40-year dictatorship, concluding with the advent of democracy through an exemplary transition that has served as an example to other nations. Offered only at GW Madrid Study Center.

HIST 3150. Spain and Its Empire, 1492-1700. 3 Credits.

Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.

HIST 3168. Divided and United Germany Since 1945. 3 Credits.

Why was Germany divided after World War II? Why did it stay divided for 45 years? How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.

HIST 3173. The Habsburgs in East Central Europe. 3 Credits.

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3173W. The Habsburgs in East Central Europe. 3 Credits.

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3178. The Making of the Modern Balkans. 3 Credits.

States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

HIST 3180. Russia to 1801. 3 Credits.

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention is given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 3181. Russia Since 1801. 3 Credits.

Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era. Attention is given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 3301. Topics: U.S. History. 4 Credits.

HIST 3301W. Topics: U.S. History. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3302. America Before 1764. 3 Credits.

An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

HIST 3303. Revolutionary America. 3 Credits.

The American revolutionary era from the movement for independence through the establishment of the new federal government under the Constitution. Emphasis on changes to the inhabitants of North America, including Native Americans, African Americans, and European Americans, as well as to the broader Atlantic world.

HIST 3304. George Washington and His World. 3 Credits.

George Washington's life as soldier, politician, entrepreneur, slave holder, and national icon. Emphasis on the interpretation of original sources, including historical documents and the material culture of Washington's Mount Vernon estate, with tours and lectures by curators and historians. Departmental permission is required for registration.

HIST 3311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

Focus on 1824 to 1850 as a crucial era in American history. Popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem. Same As: HIST 3311W.

HIST 3311W. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

Study of 1824 to 1850 as an era in American history marked by widespread change. Impact of social and political reforms caused by the growth of the market economy; emergence of two national political parties; and new reforms increasingly focused on slavery as America's greatest problem. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HIST 3311.

HIST 3322. The Modern American Presidency. 3 Credits.

Development of the modern American presidency from Theodore Roosevelt to Barack Obama. Examination of the lives of the presidents, revealing the intersection of personal and impersonal forces in the creation of modern politics and modern America.

HIST 3324. U.S. Urban History. 3 Credits.

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same As: AMST 3324.

HIST 3332. History of American Foreign Policy Since World War II. 3 Credits.

Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. World War II to the Vietnam .

HIST 3333. History of American Foreign Policy Since World War II. 3 Credits.

Continuation of HIST 3332. Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Vietnam to the "New World Order."

HIST 3334. The Nuclear Arms Race. 3 Credits.

Political, military, diplomatic, scientific, and cultural consequences of the advent of nuclear weapons. The development and uses of the atomic bomb during World War II and the course and legacy of the U.S.-Soviet nuclear arms race during the Cold War.

HIST 3351. U.S. Social History. 3 Credits.

Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as AMST 3351).

HIST 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

HIST 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3353. U.S. Women's History II. 3 Credits.

Continuation of HIST 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. Same as AMST 3353/WGSS 3353. (Same as AMST 3353, WGSS 3353).

HIST 3356. Epidemics in American History. 3 Credits.

Epidemics in American history.

HIST 3360. African American History to 1865. 3 Credits.

Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as AMST 3360).

HIST 3361. African American History Since 1865. 3 Credits.

African American efforts to realize full freedom after emancipation from slavery. Gender politics, cultural expression, labor organizing, and radicalisms; dynamics of racism within major eras of African American activity from Reconstruction through the Great Migration; and the history of civil rights, Black Power, and black feminism. (Same as AMST 3361).

HIST 3362. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late twentieth century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. (Same as AMST 3362, AMST 3362W, HIST 3362W, WGSS 3362, WGSS 3362W).

HIST 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late twentieth century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same as AMST 3362W/WGSS 3362W.

HIST 3363. Race, Medicine, and Public Health. 3 Credits.

The experiences of African Americans as patients and health care providers; the history of the relationship between race, American medicine, and public health. Emphasis on the importance of understanding the historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care. Restricted to . Same As: AMST 4702W.

HIST 3366. Immigration, Ethnicity, and the American Experience. 3 Credits.

Immigrant life in America from 1607 to the present. Focus on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree.

HIST 3366W. Immigration, Ethnicity, and the American Experience. 3 Credits.

Immigrant life in America from 1607 to the present, focusing on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HIST 3366.

HIST 3367. The American Jewish Experience. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 3370. U.S. Constitutional History. 3 Credits.

Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

HIST 3501. Topics: Africa. 3 Credits.

A survey of African history from 1880 to the present.

HIST 3510. African History to 1880. 3 Credits.

Survey of the history of the African continent with emphasis on the history of sub-Saharan Africa.

HIST 3520. Africans in the Making of the Atlantic World. 3 Credits.

The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WGSS 3530.

HIST 3530W. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 3530, WGSS 3530, WGSS 3530W).

HIST 3540. West Africa to Independence. 3 Credits.

A thematic survey of West African history, focusing on the diversity of African culture, West African kingdoms and empires, Islam, the trans-Saharan trade, African contact with Europe, slavery and the slave trade, and the colonization of Africa.

HIST 3601. Topics: Asian History. 3 Credits.**HIST 3610. China to 1800. 3 Credits.**

Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

HIST 3611. History of Modern China. 3 Credits.

China since 1840, with particular attention to political developments.

HIST 3614. Writing Modern Chinese History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3614W. Writing Modern Chinese History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of modern China. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3615. History of Chinese Communism. 3 Credits.

Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.

HIST 3621. History of Modern Japan. 3 Credits.

Japan's dramatic transformation from an isolated island country to Asia's only modern colonial empire, from unprecedented defeat to postwar "economic miracle." Emphasis on historical, political, economic, and cultural trends.

HIST 3631. History of Modern Korea. 3 Credits.

Modern Korean history from 1876 to contemporary society. Emphasis on colonialism, nationalism, the division of peninsula, the Cold War, and globalization.

HIST 3640. History of Southeast Asia. 3 Credits.

An examination of Vietnam and its neighbors from the pre-colonial period to the present.

HIST 3650. Modern South Asia, 1750-Present. 3 Credits.

The South Asian subcontinent, including Afghanistan, Pakistan, India, and Bangladesh, since the mid-eighteenth century. The period of British rule, from the late eighteenth to the mid-twentieth century. The different trajectories of the independent nation-states of South Asia following decolonization.

HIST 3701. Topics in Latin American History. 3 Credits.**HIST 3710. History of Latin America I. 3 Credits.**

Analysis of Spanish and Portuguese imperialism in the New World, 1492-1820.

HIST 3711. History of Latin America II. 3 Credits.

Continuation of HIST 3710. A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, caudillismo, modernization, populism, and revolution.

HIST 3801. Topics in Middle Eastern History. 3 Credits.**HIST 3810. History of the Middle East to 1800. 3 Credits.**

Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

HIST 3811. The Emergence of the Modern Middle East. 3 Credits.

The state system established after World War I; effects of colonialism, the rise of nationalism, the Cold War, and the oil industry; modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3820. History of Israel. 3 Credits.

Survey of the history of Israel from the origins of Zionism to the present; Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state.

HIST 3820W. The History of Israel. 3 Credits.

Survey of the history of Israel from the origins of Zionism to the present. Topics include Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HIST 3820.

HIST 3825. Land and Power in Israel/Palestine. 3 Credits.

Intensive reading seminar surveying key debates and turning points in the history of the Zionist-Palestinian conflict. Approach strikes a balance between structure and agency in understanding the ways in which people make their own history, but not under conditions of their choosing.

HIST 3830. History of Iraq. 3 Credits.

Modern Iraq's Ottoman background; its incorporation into a world market dominated by Europe, British influence and preconceptions in the creation of Iraq, and the emergence and survival of the Ba'ath dictatorship. Reforms in economic, political, and educational spheres.

HIST 3840. History of Central Asia. 3 Credits.

Introduction to the political, cultural, religious, and social history of the region, including Afghanistan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan.

HIST 3850. Modern Iran. 3 Credits.

Political, diplomatic, religious, and other developments in Iran from about 1800 to 1989.

HIST 4098. Thesis Seminar. 3 Credits.

For history majors only. Preparation of a research paper using primary sources.

HIST 4098W. Thesis Seminar. 3 Credits.

History majors identify an original research topic in an area of their interest and complete a major research paper based largely on primary sources. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HIST 4098.

HIST 4099. Senior Honors Thesis Tutorial. 3 Credits.

Required of and restricted to undergraduate honors candidates in history. Prior approval of the instructor is required.

HIST 4099W. Senior Honors Thesis Tutorial. 3 Credits.

Required of and restricted to undergraduate honors candidates in history. Prior approval of the instructor is required. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ FREN 4135.

HIST 5099. Variable Topics. 1-99 Credits.**HIST 6001. Special Topics. 3-9 Credits.**

Open to doctoral and master's candidates and qualified undergraduates. May be repeated for credit provided the topic differs. Same As: SMPP 6290. Credit cannot be earned for this course and AMST 6190.

HIST 6005. History and Historians. 3 Credits.

Historiography and historical method for graduate students. Readings and discussions on major trends in history; selections from classics of historical literature.

HIST 6006. Teaching History. 3 Credits.

Pedagogic techniques and strategies particular to the discipline. Admission by permission of instructor.

HIST 6007. Writing History. 3 Credits.

Designed to improve graduate students' writing skills. Student strengths and weaknesses as writers are assessed through short assignments such as book reviews. Students prepare an article manuscript for submission to a refereed journal. Restricted to graduate students in history.

HIST 6011. Reading and Research in History and Public Policy. 3 Credits.

The use of historical insights and methods in policymaking, with emphasis on domestic issues.

HIST 6012. Internship in History and Public Policy. 3,6 Credits.

Supervised participation in an office or agency concerned with the formulation of public policy; terms of the internship are arranged with the director of the history and public policy program. Restricted to students in the history and public policy program.

HIST 6030. History and Its Uses in International Affairs. 3 Credits.

The multiple interconnections among history, politics, and international affairs, including how policymakers use or misuse "lessons" of history and how countries attempt to deal with difficult aspects of their past. Specific cases may vary.

HIST 6031. History of International Economic Systems. 3 Credits.

Development of arrangements and institutions designed to manage the international economy since the nineteenth century, with a focus on the period since World War II.

HIST 6032. Reading and Research Seminar: Strategy and Policy. 3 Credits.

A study of the historical development of strategy and the relationship of military thought to national policy.

HIST 6040. Topics in Modern Military and Naval History. 3 Credits.

Discussion, readings, and research in twentieth-century European and American military and naval history.

HIST 6041. The Age of the Battleship: An Introduction to Modern Naval History. 3 Credits.

The rich and varied literature of naval history, with emphasis on interactions among technology, nationalism, and domestic political/social developments in the late nineteenth and early twentieth century. The social history of navies is included.

HIST 6042. Seminar: World War II. 3 Credits.

Examination of statecraft and the management of force before, during, and after World War II. Special attention to broad aspects of military policy and strategy and their interaction with international politics and diplomacy.

HIST 6050. Modernization, Imperialism, Globalization. 3 Credits.

Readings seminar in classic and recent theories of modernization, imperialism, and globalization.

HIST 6051. Re-thinking Cold War History. 3 Credits.

A reading and research course that relies heavily on documents from formerly closed communist archives and recently declassified Western materials. Various issues and events of the Cold War; old and new historiographical controversies. Students write a primary-source research paper to elucidate one of the many aspects of the Cold War about which new evidence is available.

HIST 6097. Independent Readings and Research. 3 Credits.

Written permission of instructor required. May be repeated for credit with permission.

HIST 6101. Topics: Europe. 3 Credits.

HIST 6105. Seminar: European Intellectual History. 3 Credits.

Topics in eighteenth- and nineteenth-century European thought, with an emphasis on France. Specific topic announced in the Schedule of Classes.

HIST 6120. Seminar: Early Modern European History. 3 Credits.

Topics selected from Western European history of the fourteenth through seventeenth centuries.

HIST 6121. Reading and Research Seminar: Modern European History. 3 Credits.

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HIST 6122. Reading and Research Seminar: 20th-Century History. 3 Credits.

Research or readings on selected topics.

HIST 6128. Europe and the World, 1500-Present. 3 Credits.

An introduction to some of the key debates and scholarship concerning European imperialism.

HIST 6130. Early Modern Britain. 3 Credits.

Analysis of some current issues in early modern historiography; contextualization of recent works in the field; consideration of different methodologies and the types of evidence on which they rely or that they illuminate.

HIST 6133. English People and Institutions. 3 Credits.

Selected topics in the political, social, intellectual, and economic history of England. Focus upon one time period and special area of interest. May be taken for research credit with instructor's approval.

HIST 6135. British Imperialism. 3 Credits.

Research seminar. Major debates and schools of thought on the history of British imperialism.

HIST 6138. Folger Institute Seminars I. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6139. Folger Institute Seminars II. 3 Credits.

Continuation of HIST 6138. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6170. Eastern European History I. 3 Credits.
1772-1918.

HIST 6171. Eastern European History II. 3 Credits.
Continuation of HIST 6170. 1919-1945.

HIST 6180. History of Modern Russia and the Soviet Union. 3 Credits.

Selected topics in the domestic history of modern Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar.

HIST 6181. Research Seminar: Russian and Soviet Empires. 3 Credits.

HIST 6185. Seminar: Russian and Soviet Thought. 3 Credits.

Selected topics in the intellectual and cultural history of eighteenth to twentieth-century Russia and Soviet Union. May be taken as a readings seminar or, with permission of the instructor, as a research seminar. Permission of the instructor required prior to enrollment.

HIST 6188. The Soviet Union and the World, 1917 to 1991. 3 Credits.

Concepts and perceptions guiding Soviet relations with the outside world. From the blockade and intervention, through years of isolation, World War II, the Cold War, to "peaceful coexistence."

HIST 6301. Topics: U.S. History. 3 Credits.

HIST 6302. Colonial North America. 3 Credits.

The complex and turbulent world of colonial North America from the late sixteenth century to the late eighteenth century. Inter-cultural negotiations, Atlantic world connections, imperial conflict, gender construction, and race consciousness.

HIST 6303. Revolutionary America. 3 Credits.

The political and social conditions of the revolutionary era: the spiral of events that led to the American independence movement, the various meanings of the war to its participants, and the consequences of victory for the nation, its various subgroups, and other peoples of the colonial Atlantic world.

HIST 6304. American Indian History to 1890. 3 Credits.

North American Indian history from indigenous societies on the eve of first contact with Europeans until the conclusion of the Great Plains Wars of the late nineteenth century.

HIST 6310. Readings in Nineteenth-Century American History. 3 Credits.

Important trends in historical writing about nineteenth-century America.

HIST 6311. The Era of the Civil War, 1850-1877. 3 Credits.

Consideration of how and why the issue of slavery led to the American Civil War. Conflict on the battlefield and the political and social impact of the war in both the North and the South. Examination of the Reconstruction period as a means of understanding how the conflict and its aftermath continue to shape American politics and race relations to the present.

HIST 6312. The Law of Race and Slavery. 3 Credits.

The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as SOC 6286 and LAW 6596.

HIST 6320. Readings/Research Seminar: Recent U.S. History. 3 Credits.

Research or readings, depending on students' interests and curricular needs. Prerequisites: 6 credits of upper-level undergraduate American history courses.

HIST 6321. Readings/Research Seminar: Recent U.S. History. 3 Credits.

Continuation of HIST 6320. Research or readings, depending on students' interests and curricular needs. Prerequisites: 6 credits of upper-level undergraduate American history courses.

HIST 6322. American Business History. 3 Credits.

The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention is given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. (Same as SMPP 6293).

HIST 6330. Modern U.S. Foreign Policy. 3 Credits.

Readings, lectures, discussion on major developments in the conduct of American diplomacy from 1898 to 9/11.

HIST 6350. American Social Thought Since World War II. 3 Credits.

Consideration of C. Wright Mills, Daniel Bell, Abraham Maslow, Christopher Lasch, Paul Goodman, Martin Luther King, Jr., Barbara Ehrenreich, and other major social critics.

HIST 6360. Immigration and Ethnicity in the United States. 3 Credits.

The history of immigrant life in the United States; focus on the mass migration from Europe that began with the Irish Potato Famine of the 1840s and ended with the immigration restrictions of the 1920s that created the concept of the illegal immigrant.

HIST 6370. U.S. Legal History. 3 Credits.

The legal history of the United States from the seventeenth century to the present. The course examines legal change within the broader context of political, social, and economic change. Permission of the instructor required prior to enrollment. (Same as LAW 6591).

HIST 6410. Readings in American Cultural History. 3 Credits.

Studies in the cultural history of the United States, focusing on major historiographic debates and interventions. Examples of possible topics include cultural contact, the public sphere, and systems of religious and political belief. Same as AmSt 6410.

HIST 6420. Religion and American Culture. 3 Credits.

Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as AMST 6420.

HIST 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

HIST 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of HIST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/WGSS 6431.

HIST 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST 6435/WGSS 6435.

HIST 6450. Race in America. 3 Credits.

Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as AMST 6450.

HIST 6455. American Social Movements. 3 Credits.

The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as AMST 6455.

HIST 6470. Cityscapes. 3 Credits.

Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as AMST 6470.

HIST 6475. U.S. Urban History. 3 Credits.

History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 6475.

HIST 6480. Theory and Practice of Public History. 3 Credits.

Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as AMST 6480.

HIST 6485. Contemporary Jewish Life. 3 Credits.

The changing nature of Jewish life, domestically and transnationally, from the 1950s through the present; how contemporary Jews, especially those in the United States, reckon with rupture, dissent, and freedom. Restricted to graduate students. Prerequisite: None. (Same as AMST 6190, JSTD 6001).

HIST 6495. Historic Preservation: Principles and Methods. 3 Credits.

The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6495.

HIST 6496. Historic Preservation: Principles and Methods. 3 Credits.

Continuation of HIST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6496.

HIST 6501. Topics: Africa. 3 Credits.

HIST 6502. Western Representations of Africa. 3 Credits.

Representations of Africa by non-Africans from the earliest contact to more recent encounters.

HIST 6601. Topics: Asian History. 3 Credits.

HIST 6602. Asia: History, Memory, and Violence. 3 Credits.

Violence has been a defining experience for many of the populations and polities of Asia over the past century and a half. Focusing on the themes of violence and historical memory, the course takes a comparative approach, looking at how these issues have played out in different arenas throughout East, Southeast, and South Asia.

HIST 6610. Readings Seminar: Late Imperial China. 3 Credits.

Selected topics in the history of modern China in the late imperial period, with a particular focus on the internal and external challenges to the last Chinese dynasty in the nineteenth century.

HIST 6611. Readings Seminar: Twentieth-Century China. 3 Credits.

Selected topics in the history of modern China from the 1911 Revolution to the Cultural Revolution.

HIST 6621. Readings Seminar: Modern Japanese History. 3 Credits.

Selected topics in modern Japanese history from the Meiji Restoration of 1868 to the present. Research or readings depending on students' interests. Emphasis on how interpretations of the past are shaped by the present.

HIST 6625. Japan's Empire and Its Legacies. 3 Credits.

History of modern Japan's overseas expansion and empire building. Focus on issues including colonial modernity, resistance and collaboration, and postwar legacies such as politics of memory and prospects of reconciliation.

HIST 6630. Special Topics in Korean History. 3 Credits.

Intensive exploration of the history of Korea in modern times (1850–present). Korean identity and the challenges of foreign imperialism, industrialization, modernization, and globalization.

HIST 6641. Modern Southeast Asia. 3 Credits.

The modern history of Southeast Asia from the 1800s to 1975. Colonialism, rise of postcolonial states, revolutions and persistence of the past.

HIST 6701. Topics in Latin American History. 3 Credits.

HIST 6801. Topics in Middle Eastern History. 3 Credits.

HIST 6805. The Modern Middle East in World History. 3 Credits.

Draws on recent works that situate the social, economic, cultural, political, and environmental transformations that have swept the region over the past two centuries within broader global trends.

HIST 6811. Research Seminar: Modern Middle East. 3 Credits.

Readings, discussion, and research in selected political, economic, social, cultural, and intellectual trends.

HIST 6821. Islam and Social Movements. 3 Credits.

An examination of the relationship of religion and religious symbols to social and political movements in the Islamic world.

HIST 6822. Nationalism in the Middle East. 3 Credits.

Different interpretations of nationalism and their applicability to nationalism in the Middle East.

HIST 6823. Imperialism in the Middle East. 3 Credits.

An exploration of the process of European and American expansion in the Middle East.

HIST 6824. Reading/Research Seminar: Modern Iran. 3 Credits.

HIST 6998. Thesis Research. 3 Credits.

HIST 6999. Thesis Research. 3 Credits.

HIST 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

HIST 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN HISTORY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

A minimum of thirteen history (HIST) courses, including one to three introductory courses, one Majors' Introductory Seminar, eight to ten upper-level courses, and a thesis or capstone project, as described below:

Code	Title	Credits
General requirements for the major		

A minimum of 13 History (HIST) courses, some of which may be waived by examination, as follows:

Introductory course requirements

At least one but no more than three introductory courses numbered in the 1000s. These might include, but are not limited to, HIST 1011, HIST 1120, HIST 1121, HIST 1310, and HIST 1311.

Alternatively, the introductory course requirement may be fulfilled by examination as follows: Scoring 4 or 5 on the U.S. (6 credits combined for HIST 1310 and HIST 1311), European (3 credits for HIST 1120), and World (3 credits for HIST 1011) Advanced Placement Examination; or by scoring 7 or above in an appropriate International Baccalaureate program. In addition, the following courses may be waived by scoring 650 or above on the SAT II World (HIST 1011) or U.S. History (HIST 1310 and HIST 1311).

Majors' Introductory Seminar

One Majors' Introductory Seminar, selected from the following:

HIST 2005	Majors' Introductory Seminar
HIST 2105	Majors' Introductory Seminar: Europe
or HIST 2105W	Majors' Introductory Seminar: Europe
HIST 2305	Majors' Introductory Seminar: United States
or HIST 2305W	Majors' Introductory Seminar: United States
HIST 2505	Majors' Introductory Seminar: Africa
HIST 2605	Majors' Introductory Seminar: Asia
or HIST 2605W	Majors' Introductory Seminar: Asia
HIST 2705	Majors' Introductory Seminar: Latin America
or HIST 2705W	Majors' Introductory Seminar: Latin America
HIST 2805	Majors' Introductory Seminar: Middle East
or HIST 2805W	Majors' Introductory Seminar: Middle East

Senior or Honors thesis or capstone

Thesis

HIST 4098	Thesis Seminar
or HIST 4098W	Thesis Seminar

or

HIST 4099	Senior Honors Thesis Tutorial
or HIST 4099W	Senior Honors Thesis Tutorial

Students with an overall GPA of 3.3 and a GPA of 3.5 in completed History courses may write a Special Honors Thesis. Students must find a thesis advisor who is a full-time member of the faculty.

Capstone

An equivalent capstone project approved by the thesis instructor may be completed in lieu of the thesis.

Upper-level course requirements

In addition to the Majors' Introductory Seminar, eight to ten upper-level courses numbered in the 2000s and 3000s, taken as follows:

Topical courses

Of the upper-level courses (including, for this purpose, the Majors' Introductory Seminar), at least one course must be taken from three of the following groups. At least one of these courses must focus on the period before 1750.

HIST Group A: Europe (courses numbered in the 2100s or 3100s)

HIST Group B: North America (courses in the 2300s or 3300s)

HIST Group C: Africa (courses in the 2500s or 3500s)

HIST Group D: Asia (courses in the 2600s or 3600s)

HIST Group E: Latin America (courses in the 2700s or 3700s)

HIST Group F: Middle East (courses in the 2800s or 3800s)

HIST Group G: Theory/Methods

Dean's Seminars and Honors (HONR) courses taught by members of the History Department faculty, Majors' Introductory Seminars, and HIST 2001, HIST 2005 and HIST 3001 may count toward the topical requirement, to be determined on a case-by-case basis.

Specialization

With the approval of the Director of Undergraduate Studies or departmental delegate, a history major may, but is not required to, declare a specialization by having at least six courses contribute to the student's knowledge of a specific field. An area of specialization might be a geographic region, chronological period, or other topic (such as women's history, legal history, or military history), or a combination thereof. Up to two courses counting for the specialization may be taken in other departments with the approval of the Director of Undergraduate Studies or departmental delegate.

Foreign language

A foreign language is not required, but majors are strongly encouraged to take at least two semesters of a foreign language, particularly if they plan to pursue a graduate degree in history.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in

addition to the one course in this category required by the University General Education Requirement.

- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have an overall GPA of 3.3 and a GPA of 3.5 in the major at the time of graduation; and complete HIST 4099 Senior Honors Thesis Tutorial with a grade of A or A-.

DOCTOR OF PHILOSOPHY IN THE FIELD OF AMERICAN RELIGIOUS HISTORY

REQUIREMENTS

This program is offered in cooperation with the Department of Religion.

The following requirements must be fulfilled:

The requirements for the Doctor of Philosophy Program (p. 87).

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77), and the specific requirements of the Doctor of Philosophy in the field of history (p. 311).

Of the three fields required for the General Examination, one field must come from the list of major American fields noted below and one from the Department of Religion (typically history of religion in America). Major fields in American history include: Early America (to 1815), 19th-century America (1815-1900), and 20th-century America (1900-). The third field is normally topical (e.g. U.S. Cultural History, Historic Preservation, Gender and Women's History).

All candidates may choose to be examined in one minor field other than history if it is relevant to the program of study.

DOCTOR OF PHILOSOPHY IN THE FIELD OF HISTORY

Students delve into history with GW's world-renowned scholars. The program's proximity to some of the most important research repositories in the world, including the National Archives, the Folger Shakespeare Library, the National Security Archive and the Smithsonian museums, makes GW an ideal place to examine a variety of fields, from Renaissance Europe to the Cold War, and from imperial and colonial studies to modern American political and social history. Because GW's programs are relatively small, students work closely with faculty and graduate with the knowledge, analytical tools, and writing skills for a range of professions.

The PhD program in history offers full tuition remission and a full fellowship to cover living expenses for five years. During that period, doctoral candidates master relevant historiography and write a dissertation. PhD students gain teaching experience by serving as teaching assistants for undergraduate lecture courses.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77), including the satisfactory completion of the General Examination.

The requirements for the Doctor of Philosophy Program (p. 87).

All students must take HIST 6005 History and Historians. Some students must pass language exams appropriate to their field and dissertation topic. Students must maintain a GPA of at least 3.5 to remain in the program.

Candidates in American history must select two major fields from early America (to 1815), 19th-century America (1815–1900), and 20th-century America (1900–). The minor field will normally be topical (e.g., U.S. social, U.S. diplomatic, historic preservation).

Candidates in imperial and colonial history take HIST 6128 Europe and the World, 1500–Present and HIST 6050 Modernization, Imperialism, Globalization and select two major and one minor field. Fields can include, but are not limited to, such combinations as Europe and the Americas (1500–1900), Europe and Asia, Europe and the Middle East, Europe and Africa, the U.S. and Asia, and China and Japan.

Candidates in Asian history select two major fields from modern China, modern Japan, modern Korea, and modern Southeast Asia. The minor field is chosen in consultation with the advisor.

Candidates concentrating in areas other than those outlined above must select one major and two minor fields. Major fields

are early modern Europe, modern Europe, Latin America, modern Middle East, modern Eastern Europe, modern Russia, and military history. The minor fields may be either topical (e.g., European intellectual) or chronological (e.g., Tudor and Stuart England, colonial Latin America).

All candidates may choose to be examined in one minor field other than history if it is relevant to the program of study.

MASTER OF ARTS IN THE FIELD OF HISTORY

Students delve into history with GW's world-renowned scholars. The program's proximity to some of the most important research repositories in the world—the National Archives, the Folger Shakespeare Library, the National Security Archive and the Smithsonian museums—makes GW an ideal place to examine a variety of fields, from Renaissance Europe to the Cold War, and from imperial and colonial studies to modern American political and social history. Because our programs are relatively small, students work closely with faculty and graduate with the knowledge, analytical tools and writing skills for a range of professions.

The MA program offers students the opportunity to focus on an area of their choice. Alternatively, students may opt to specialize in one of the departments concentrations: History and Public Policy; Imperial and Colonial Studies; and US Legal History. The program prepares students for PhD work and careers that range from teaching high school, working for the government or conducting research within the private sector.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Visit the program website (<https://history.columbian.gwu.edu/graduate/>) for additional information.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

A minimum of 36 credits in upper-division undergraduate and graduate-level courses, including completion of 9-credit field of focus*. 18 credits (six courses) must be taken at the graduate level.

Students must maintain a minimum GPA of 3.3 to remain in good standing and to earn the degree.

Code	Title	Credits
Required		
HIST 6005	History and Historians (taken in the first semester)	
Thesis students		
HIST 6998	Thesis Research	
HIST 6999	Thesis Research	
Note that HIST 6998 and HIST 6999 do not count toward the required six graduate-level courses.		
Non-thesis students		
Students choosing the non-thesis option must complete two research seminars for which a research paper is required.		
For all students, remaining credits are selected in consultation with the advisor. A minimum of six courses (18 credits) must be taken at the graduate level. To receive graduate credit for an undergraduate course, which must be taken at the 3000 level or above, students must arrange with the instructor for extra work. Unless otherwise stated under one of the concentrations listed below, a maximum of 6 credits in approved courses may be taken outside of the Department of History. Students may take up to four courses (12 credits) as part of the Consortium of Universities of the Washington Metropolitan area**.		

Code	Title	Credits
Concentrations		
Students may choose to complete one of the following concentrations as part of their program of study.		
Historic preservation		
The concentration in historic preservation combines courses in U.S. history and historic preservation. A minimum of 18 credits in courses in U.S. social history, U.S. urban history, man-made America, and the seminar sequence in historic preservation is required.		
Imperial and colonial studies		
The concentration in imperial and colonial studies emphasizes the comparative study of empires. HIST 6128 and HIST 6050, a 15-credit major regional field, and a 6 to 9 credit minor regional field are required. Up to 9 credits may be taken in related disciplines outside of the Department of History. Students should take HIST 6128 and HIST 6050 in the first semester they are offered, as they are taught only in alternate years.		
Public policy		

The concentration in public policy emphasizes the study of history as it relates to the analysis and conduct of public policy. An internship completed in conjunction with HIST 6012 is required. One-third of the coursework for this concentration is taken outside the Department of History in a discipline relevant to the student's policy interests.

U.S. legal history

The concentration in U.S. legal history combines a major field in U.S. history with a focus in U.S. legal history. Students may take up to 9 credits in courses in legal history offered by the Law School.

*A field of focus is centered on a specific period, region, or theme. Students work with the MA advisor to decide the specifics of their field of focus.

**Students may take up to four courses (12 credits) offered through the Consortium of Universities of the Washington Metropolitan Area (<https://www.consortium.org/>). Transfer credits for graduate courses taken at other institutions before matriculating at GW are deducted from the total consortium credits allowed. Students may not enroll in a consortium course if it duplicates a GW course offered in the same semester.

MINOR IN HISTORY REQUIREMENTS

Undergraduate students who select a minor in history must declare their intention to a departmental advisor no later than the beginning of their senior year.

Code	Title	Credits
Required		
One of the following:		
HIST 1011	World History, 1500-Present	
HIST 1110	Foundations of Europe to 1715	
HIST 1120	Europe in the World Since 1715	
HIST 1121	The War of Ideas in European and International History, 1750-Present	
HIST 1310	Introduction to American History from the Pre-Columbian Era to 1877	
HIST 1311	Introduction to American History since 1877	
At least five upper-division history courses numbered 2000 and higher		

HUMAN PALEOBIOLOGY

The Columbian College of Arts and Sciences offers an interdisciplinary program leading to the doctor of philosophy in the field of hominid paleobiology. The program features training in molecular and developmental biology, evolutionary anatomy, hominid paleontology, and archaeology. It emphasizes problem-based learning and training and internships. Participating faculty are drawn from the Departments of Anthropology, Speech and Hearing Science, Biological Sciences, and Anatomy and Regenerative Biology at GW; the Departments of Anthropology and Paleobiology at the National Museum of Natural History, Smithsonian Institution; the Department of Physiology and Biophysics at Howard University; and the National Institutes of Health.

GRADUATE

Master's program

- Master of Science in the field of human paleobiology (p. 315)

Doctoral program

- Doctor of Philosophy in the field of human paleobiology (p. 313)

FACULTY

Center for Advanced Study in Human Paleobiology: B. Wood (*Director*), W.A. Barr, K. Behrensmeyer, B.J. Bradley, D.R. Braun, A.S. Brooks, S.C. McFarlin, C.M. Murray, B. Pobiner, R. Potts, C.C. Sherwood, F. Subiaul

DOCTOR OF PHILOSOPHY IN THE FIELD OF HUMAN PALEOBIOLOGY

The human paleobiology doctoral program is the graduate education and training effort of GW's Center for the Advanced Study of Human Paleobiology (<https://cashp.columbian.gwu.edu/>), which promotes interdisciplinary research on human evolution. Because fossils, artifacts, and genomes are complex and mostly indirect sources of data for testing evolutionary hypotheses, research questions in human evolutionary studies exemplify the importance of an interdisciplinary approach.

This five-year program features rigorous core training in human paleontology, archaeology, molecular biology, genomics, behavior, ecology, and statistical methods. It emphasizes problem-based learning and training and internships in how science is communicated to the public—for example, through television, news media, museums, and the internet. The first two years of the program primarily consist of coursework, a professional skills and ethics seminar, a grant-writing course focused on preparing a dissertation proposal, and practical experiences that integrate original research and coursework

from the earliest stages of graduate training. During the second and third years, students participate in two topically distinct laboratory rotations to broaden their research skills. Following the second year, students begin directed research on their doctoral dissertations while participating in a capstone seminar. Students are encouraged to submit their dissertation in a ready-to-publish format by the end of the fifth year.

There are two separate PhD programs affiliated with the Department of Anthropology, in the fields of anthropology (p. 129) and human paleobiology (p. 313). These programs have separate admissions procedures; prospective students should be sure to submit their application to the correct program.

The PhD in human paleobiology is a STEM-designated degree program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy program (p. 87).

72 credits.

Recommended Preparatory Courses

Code	Title	Credits
Advanced undergraduate courses in biology, including courses in evolution and any two of the following: genetics, developmental biology/embryology, anatomy, physiology, ethology, ecology, and paleontology. GW courses that correspond to these subjects are:		
BISC 2207	Genetics	
BISC 2208	Genetics Laboratory	
BISC 2214	Developmental Biology	
BISC 2332	Comparative Vertebrate Anatomy	
BISC 2450	Organic Evolution	
BISC 2451	History of Life	
BISC 2452	Animal Behavior	
BISC 2454	General Ecology	
BISC 3122	Human Physiology	

Advanced undergraduate courses in anthropology, including courses in any two of the following: osteology, human biology, paleoanthropology, primatology, and Paleolithic archaeology corresponding to:

ANTH 3832	Paleoanthropological Field Program
ANTH 3401	Human Functional Anatomy
ANTH 3402	Human Evolutionary Anatomy
ANTH 3403	Forensic Anthropology Laboratory
ANTH 3404	Human Variation
ANTH 3412	Hominin Evolution
ANTH 3411	Primatology
ANTH 3491	Topics in Biological Anthropology
ANTH 3801	African Roots from Australopithecus to Zimbabwe
ANTH 3802	Human Cultural Beginnings
One course in statistics corresponding to:	
STAT 1127	Statistics for the Biological Sciences
One course in mathematics, including precalculus, corresponding to:	
MATH 1220	Calculus with Precalculus I
MATH 1221	Calculus with Precalculus II

Advanced undergraduate courses in one or more of the following subjects: chemistry, biochemistry, physics, geoscience, and calculus

Doctoral Program

Code	Title	Credits
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The following requirements must be fulfilled: 72 credits, including 6 to 24 credits in dissertation research.

Students complete a program of study including a minimum of 48 credits of coursework developed in consultation with the advisor prior to advancing to PhD candidacy.

Required

Foundations core (5 to 7 credits)

ANTH 6491	Topics in Biological Anthropology (Special Topics: Grant-Writing)
HOMP 6202	Lab Techniques: Paleoanthropology
HOMP 6203	Ethics and Professional Practice I

Modern and paleobiology core (12 credits)

One exemption may be allowed depending upon prior education. Program approval is required.

ANTH 6407	Anthropological Genetics
ANTH 6801	Paleolithic Archaeology
HOMP 6201	Hominid Paleobiology
In addition, one 3-credit course in animal/primate biology, behavior, or ecology such as ANTH 6404, BISC 6206, or another approved course chosen in consultation with the advisor.	
Statistical methods core (3 credits)	
ANTH 6413	Analytical Methods in Human Evolutionary Studies
or an alternative course selected in consultation with the advisor.	
Engagement and application core (9 credits)	
HOMP 8302	Public Understanding of Science Internship
HOMP 8303	Paleobiology Lab Rotation (taken twice for 3 credits for a total of 6 credits)
Electives	
The remainder of credits in coursework selected in consultation with the advisor from among various interdisciplinary courses, including but not limited to, the following:	
ANTH 3401	Human Functional Anatomy
ANTH 3408	The Evolution of Human Families
ANTH 3411	Primatology
ANTH 3413	Evolution of the Human Brain
ANTH 3801	African Roots from Australopithecus to Zimbabwe
ANTH 3802	Human Cultural Beginnings
ANTH 6406	Human Genetic Variation
ANTH 6491	Topics in Biological Anthropology
BISC 6210	Methods of Study of Evolution
BISC 6215	Vertebrate Phylogeny
BISC 6216	Morphological Systematics
BISC 6228	Population Genetics
BISC 6230	Human Genetics
BISC 6249	Seminar: Developmental Biology

BMSC 8210	Genes to Cells
GEOL 3140	Geochemistry
HOMP 6995	Independent Research
Or, any 6000-level course in ANAT, ANTH, BISC, BIOCHEM, BIOSTAT, CHEM, GEOL, HOMP, PHYS, or PSYC.	
Dissertation research (6 to 24 credits)	
HOMP 8999	Dissertation Research (6 to 24 credits)

Advanced Requirements

Students must successfully complete general comprehensive examinations, a dissertation proposal defense and examination, and a final dissertation defense and examination.

General examinations prior to PhD candidacy

General examinations, including the dissertation proposal defense, must be successfully completed before the end of the third year of the program, prior to advancing to candidacy. These comprise two written comprehensive examinations, and a dissertation proposal defense and examination.

The first comprehensive examination includes written questions that integrate comprehension across all core thematic areas (hominid paleobiology; paleolithic archaeology; anthropological genetics; and primate biology, behavior, and ecology) and tests foundational knowledge, concepts, theory, and/or methods learned in the core curriculum.

The second comprehensive examination is written in the form of an authoritative review of a chosen topic, including a history of previous relevant research, discussion of theoretical issues, and identification of outstanding questions or directions for future research.

For the dissertation proposal defense, students must prepare a research proposal that meets funding agency guidelines and successfully complete an oral defense and examination of this proposal.

After PhD candidacy

After candidacy, students proceed to completing their doctoral research plan and writing the dissertation. Successful completion of a final dissertation defense and oral examination is required to earn the PhD degree.

MASTER OF SCIENCE IN THE FIELD OF HUMAN PALEOBIOLOGY

Students enrolled in the Master of Science in Human Paleobiology program investigate the origins and evolution of humankind through interdisciplinary research using the latest instrumentation.

The STEM-designated program works in tandem with the Anthropology Department's Center for the Advanced Study of Human Paleobiology (<http://cashp.columbian.gwu.edu/>) and incorporates faculty from the GW Departments of Biological Sciences; Speech, Language and Hearing Sciences; and Anatomy and Regenerative Biology. MS students also benefit from the program's ties to the Smithsonian Institution's Human Origins Program and other research centers in the greater Washington, D.C., area.

Master's level coursework includes small-group seminars, original research in our state-of-the-art facilities and two laboratory rotations or fieldwork (<https://anthropology.columbian.gwu.edu/fieldwork/>) at institutions outside of GW.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits in a program developed in consultation with the advisor.

Code	Title	Credits
Required		
ANTH 6413	Analytical Methods in Human Evolutionary Studies	
HOMP 6202	Lab Techniques: Paleoanthropology	
HOMP 6203	Ethics and Professional Practice I	
ANTH 6801	Paleolithic Archaeology	
or HOMP 6201	Hominid Paleobiology	
ANTH 3411	Primatology	
or ANTH 6407	Anthropological Genetics	
Electives		
17 to 19 credits in elective courses. Courses should be selected in consultation with the faculty, and may include a combination of the following: independent laboratory or field-based research; a field course; relevant courses in Anatomy, Anthropology, Biological Sciences, Geography, Geology, Human Paleobiology, Psychology, and Speech, Language, and Hearing Science available at GW; and/or relevant courses from the Consortium of Universities of the Washington Metropolitan Area.		
Thesis		
HOMP 6999	Thesis Research (taken for 6 credits)	

*In order to maintain a 9-credit per semester courseload, students register for 1 to 3 credits in HOMP 6202, depending on the other courses for which they are concurrently enrolled.

INTERIOR ARCHITECTURE

OVERVIEW

The goal of the Department of Interior Architecture is to foster an environment that encourages creativity and pushes the boundaries of design with an emphasis on conceptual thinking and the design process. The studio-based curriculum, the core of the program, is where students learn to design three-dimensional space through the use of dynamic concepts, leading-edge materials, and innovative methods and techniques.

Visit the program website (<https://corcoran.gwu.edu/mfa-interior-architecture/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Fine Arts with a major in interior architecture (p. 318)

GRADUATE

Master's program

- Master of Fine Arts in the field of interior architecture (p. 319)

FACULTY

Associate Professor S. Travis (*Director*)

Assistant Professors E. Speck, N. Evans, C. Anderson, N. Volchansky

Adjunct Professors M. Abrams

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Enrollment in interior architecture courses requires candidacy in the degree program or permission of the program director. A course fee is charged for all IA courses.

IA 1099. Variable Topics. 1-36 Credits.

IA 2100. Studio 1. 6 Credits.

Introduction to design through study and application of fundamental design principles and elements to two- and three-dimensional projects. Restricted to undergraduate IA majors.

IA 2125. Introduction to Graphic Communications. 3 Credits.

Introduction to a variety of techniques used in communicating design ideas; image creation, logo design and branding, rendering, basic layouts, modeling, printed and digital presentation skills.

IA 2150. Beginning Sketching for Designers. 3 Credits.

Freehand sketching developed and applied as a tool in all phases of the creative design process.

IA 3200. Studio 2. 6 Credits.

All phases of design, from development of a concept through producing a complete presentation; implementing the different aspects of the design process. Restricted to undergraduate IA majors. Prerequisite: IA 2100.

IA 3225. Understanding Materials and Color. 3 Credits.

The visual perception and interaction of color; interior and exterior materials for use in residential and commercial environments.

IA 3250. Introductory Digital Design Tools. 3 Credits.

Introduction to CAD technology, two-dimensional drawings, plotting, and enhancement of presentations; using CAD for the production of construction drawings. Restricted to undergraduate IA majors.

IA 3300. Studio 3. 6 Credits.

Studio course emphasizing continued refinement of the design process as applied to multifaceted and complex problems in non-residential space. Restricted to undergraduate IA majors. Prerequisite: IA 3200.

IA 3325. Concepts in Modern Architecture. 3 Credits.

Introduction to the history and concepts of architecture, interiors, and furniture, from the Bauhaus movement to the present. Emphasis on creative thinking and cross-cultural perspectives. Credit cannot be earned for this course and CIAR 3325.

IA 3350. Basic Sustainability Design Strategies. 3 Credits.

Introduction to sustainable design and to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Rating Systems for Interior Design and Construction.

IA 4400. Studio 4. 6 Credits.

Continuation and refinement of the design process to further advance conceptual thinking for development of larger-scale and more complex design problems. Restricted to undergraduate IA majors. Prerequisite: IA 3300.

IA 4425. Fundamentals of Lighting and Acoustics. 3 Credits.

Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Restricted to undergraduate IA majors.

IA 4450W. Pre-Design for Studio 5. 3 Credits.

Research methodology applied to development of the senior project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate IA majors. Prerequisite: IA 4300.

IA 4500. Studio 5. 6 Credits.

Culmination of skills and knowledge gained through the program as demonstrated by the development of an interior design project covering all aspects from conception through presentation. Restricted to undergraduate IA majors. Prerequisite: IA 4400.

IA 4525W. Professional Practice and Internship. 3 Credits.

Industry professionals provide students with guidance concerning the roles and responsibilities of the professional interior designer; written business procedures and practices, legal implications, ethics, trade relations, and designer-client relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate IA majors.

IA 4550. Building Systems: Methods and Processes. 3 Credits.

Organization and preparation of construction documents; methods and materials; application of codes; building systems (mechanical, electrical, plumbing) relevant to function and design of interior spaces. Restricted to undergraduate IA majors.

IA 4560. Selected Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details.

IA 4570. Independent Study. 1-3 Credits.

Independent research and special projects. Students must submit a written plan of study and obtain approval of the faculty member directing the study prior to enrollment. Restricted to junior and senior IA majors.

IA 6100. Studio 1 Graduate. 6 Credits.

Introduction to the theory and application of design principles and elements in the built environment and to two- and three-dimensional projects; understanding the design process while adhering to a concept or parti. Restricted to graduate IA majors.

IA 6125. Graphic Communications. 3 Credits.

Concepts and techniques used successfully in communicating design; graphic design principles, including hierarchy, emphasis, balance, rhythm and contrast, tools used in creating two-dimensional communication ideas; image creation, logo design and branding, rendering, basic layouts, three-dimensional modeling, printed and digital presentation skills.

IA 6150. Sketching Architecture and Design. 3 Credits.

Three-dimensional mechanical drafting and free-hand sketching developed and applied as a tool in all phases of the creative design process; using line value, 2D and 3D representation of the built environment.

IA 6200. Studio 2 Graduate. 6 Credits.

Application of fundamental knowledge of design to complex three-dimensional projects and small scale interior projects. Restricted to graduate IA majors. Prerequisite: IA 6100.

IA 6225. Interior Materials and Color Theory. 3 Credits.

Visual perception and interaction of color; interior and exterior materials for residential and commercial environments; interior building methods and materials as they relate to interior build-outs, furniture grade materials, and construction; materials qualities, strengths, weaknesses, and appropriate usage.

IA 6250. Digital Drafting and Modeling. 3 Credits.

Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Restricted to graduate IA majors.

IA 6300. Studio 3 Graduate. 6 Credits.

Continued exploration of the design process as applied to medium scale projects. Restricted to graduate IA majors. Prerequisite: IA 6200.

IA 6325. Case Studies: Bauhaus to Bilbao. 3 Credits.

Modern and contemporary architectural ideas and concepts explored through key buildings and interiors of the twentieth and twenty-first centuries; focus on modernist works in Washington, DC. Credit cannot be earned for this course and CIAR 6325.

IA 6350. Sustainability and the Built Environment. 3 Credits.

The application of sustainable design; introduction to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system, the Living Building Challenge, and the WELL Building Standard.

IA 6400. Studio 4 Graduate. 6 Credits.

Continued refinement of the design process to further advance conceptual thinking for development of larger-scaled and more complex design problems. Restricted to graduate IA majors. Prerequisite: IA 6300.

IA 6425. Lighting and Acoustics. 3 Credits.

Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Restricted to graduate IA majors.

IA 6450. Research Seminar for Studio 5. 3 Credits.

Students synthesize knowledge and define an area of interest that is well established or newly emerging within the discipline in preparation for the capstone project in Studio 5. Restricted to graduate IA majors. Prerequisite: IA 6300.

IA 6500. Studio 5 Graduate. 6 Credits.

Students create and design an individual capstone interior design project that meets the learning objectives, accreditation standards, and requirements of the program. Restricted to graduate IA majors. Prerequisite: IA 6400.

IA 6525. Practicum and Internship. 3 Credits.

Students work with professional interior designers, architects, or industry-related professionals participating in a project based setting. Roles and responsibilities of the professional interior designer; business procedures, legal-implications, ethics, trade relations, and designer-client-contractor relations. Restricted to graduate IA majors. Prerequisite: IA 6400.

IA 6550. Structures and Building Systems. 3 Credits.

Organization and preparation of construction documents; methods and materials; application of codes; mechanical, electrical, and plumbing building systems as related to function and design of interior spaces. Restricted to graduate IA majors.

IA 6560. Selected Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

BACHELOR OF FINE ARTS WITH A MAJOR IN INTERIOR ARCHITECTURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeeregulationtext>).

60 credits in program-specific coursework.

Code	Title	Credits
Sophomore year		
Spring semester		
CIAR 2100	Studio 1	
CIAR 2125	Introduction to Graphic Communications	
CIAR 2150	Beginning Sketching for Designers	
Junior year		
Fall semester		
CIAR 3200	Studio 2	
CIAR 3225	Understanding Materials and Color	
CIAR 3250	Introductory Digital Design Tools	

Spring semester

CIAR 3300	Studio 3
CIAR 3325	Concepts in Modern Architecture
CIAR 3350	Basic Sustainability Design Strategies

Senior year

Fall semester	
CIAR 4400	Studio 4
CIAR 4425	Fundamentals of Lighting and Acoustics
CIAR 4450W	Pre-Design for Studio 5
Spring semester	
CIAR 4500	Studio 5
CIAR 4525W	Professional Practice and Internship
CIAR 4550	Building Systems: Methods and Processes

Additional coursework

9 credits in art or design courses.

9 credits in art, architecture, or design history courses; 3 of these credits may be from IA program short-term summer study abroad.**

Internship requirement *

All students are required to complete a 120-hour internship as part of CIAR 4525 Professional Practice and Internship. The student's work in the internship counts toward the final grade in the course.

Optional courses

**CIAR 4560 Special Topics: Reserved for enrollment in IA program short-term summer study abroad.

CIAR 4570 Independent Study: Advanced research proposed by the student, whose proposal must be accepted by the faculty.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible

citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

MASTER OF FINE ARTS IN THE FIELD OF INTERIOR ARCHITECTURE

Students in the MFA program in the field of Interior architecture learn about habitable environments ranging from small, basic residential interiors to larger, more complex commercial and institutional spaces. With projects focusing on current design issues as well as lectures and visits from professionals to enhance assignments, the curriculum is a carefully sequenced series of courses building on theoretical, technical, and creative competencies.

Because of the program's location in Washington DC, students benefit from viewing exhibitions at the National Building Museum, pursuing research at the Library of Congress, attending trade shows such as NeoCon East, attending lectures offered by the Washington Design Center, and visiting organizations such as the United States Green Building Council. Taking advantage of these offerings moves learning outside the classroom and into the industry with practicing professionals in interior design.

The program is for candidates who have completed undergraduate work at an accredited institution in an area of study other than interior design or a related field, such as architecture. Students explore theory and research as they build toward a culminating final project.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

60 credits in required courses and a 120-hour internship.

Code	Title	Credits
Required		
First year		
Fall semester		
CIAR 6100	Studio 1 Graduate	
CIAR 6125	Graphic Communications	
CIAR 6150	Sketching Architecture and Design	
Spring semester		
CIAR 6200	Studio 2 Grad	
CIAR 6225	Interior Materials and Color Theory	

CIAR 6250	Digital Drafting and Modeling
Summer session	
CIAR 6300	Studio 3 Graduate
CIAR 6325	Case Studies: Bauhaus to Bilbao
CIAR 6350	Sustainability and the Built Environment
Second year	
Fall semester	
CIAR 6400	Studio 4 Graduate
CIAR 6425	Lighting and Acoustics
CIAR 6450	Research Seminar for Studio 5
Spring semester	
CIAR 6500	Studio 5 Graduate
CIAR 6525	Practicum and Internship
CIAR 6550	Structures and Building Systems
Internship requirement	

All students are required to complete a 120-hour internship. Students must be enrolled in the first semester of the program before the internship begins, and it must be completed before the end of their final semester. The internship is a part CIAR 6525 and counts toward the final grade in the course.

Visit the program website (<https://corcoran.gwu.edu/mfa-interior-architecture/>) for additional information.

JUDAIC STUDIES

At the undergraduate level, the Department of Judaic Studies offers the bachelor of arts with a major in Judaic Studies. The purview of the program extends from the ancient Near East to modern-day America, and showcases and interprets the artistic expression, history, languages, literatures, philosophy, politics, and religion of the Jews over time and place. A minor in the field is also offered.

At the graduate level, students may opt for the master of arts in the field of Jewish cultural arts or master of arts in the field of experiential education and Jewish cultural arts.

Visit the Department of Judaic Studies website (<https://judaic.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in Judaic studies (p. 321)

Minor

- Minor in Judaic studies (p. 323)

GRADUATE

Master's program

- Master of Arts in Education and Human Development in the field of experiential Jewish education (p. 647)

Certificate program

- Graduate certificate in Jewish cultural arts (p. 322)

FACULTY

Committee on Judaic Studies A. Agresta, E. Brown, N. Brown, C. Chiswick, E. Cline, A. Dubnov (*Director*), R. Eisen, B. Jacobs, J. Weissman Joselit, W. Reich, J. Richter, C. Rollston, D. Schwartz, O. Zakai

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

A full list of courses for the Judaic Studies Program may be found on the Judaic Studies website and under the designations of CLAS, ENGL, HEBR, HONR, HIST and REL.

JSTD 1099. Variable Topics. 1-36 Credits.

JSTD 2001. Topics in Judaic Studies: Pre-modern. 3 Credits.

Focus on the pre-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 2002. Topics in Judaic Studies: Modern. 3 Credits.

Focus on the post-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 2060. Modern Jewish History. 3 Credits.

Survey of Jewish history from the seventeenth century to the present, focusing on Europe, America, and the Middle East. The myriad political, economic, and intellectual challenges of modernity to Jewish life and how Jews responded to these challenges through various religious and secular movements and with new concepts of identity and community. Same As: HIST 2060.

JSTD 2812. History of Zionism. 3 Credits.

Critical historical survey of the development of Jewish nationalist thought in general and Zionism in particular, from its genesis in the 1880s up until the establishment of the State of Israel in May 1948. Same As: HIST 2812.

JSTD 3099. Variable Topics. 1-12 Credits.

JSTD 4018. Senior Thesis. 1 Credit.

For Judaic studies majors. Students choose a topic in any major subfield of Judaic studies, select a faculty advisor who specializes in the subfield, conduct research, and produce an annotated bibliography and a proposal that previews the main arguments of the thesis.

JSTD 4019. Senior Thesis. 3 Credits.

Continuation of JSTD 4018. For Judaic studies majors. Completion of the thesis and oral presentation before Judaic studies students and faculty.

JSTD 5099. Variable Topics. 1-99 Credits.

JSTD 6001. Topics in Judaic Studies. 3 Credits.

JSTD 6097. Independent Readings/Research. 1-3 Credits.

Written permission of the instructor required prior to enrollment. May be repeated for credit with permission.

JSTD 6154. Internship. 1-6 Credits.

Elective internship in areas related to Jewish cultural study.

JSTD 6201. Jewish Life in Contemporary America. 3 Credits.

JSTD 6211. Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience. 3 Credits.

JSTD 6298. Capstone Seminar in Jewish Cultural Arts. 3 Credits.

The culminating experience for graduate students in the Jewish Cultural Arts program, the capstone synthesizes the skills and knowledge gained in the course of the degree program. Students conceptualize, develop, and execute a public cultural event of their own devising. Taken in the final spring semester of the student's program.

BACHELOR OF ARTS WITH A MAJOR IN JUDAIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Foreign language requirement		
Two semesters of study in a single foreign language (or the equivalent)		
Code	Title	Credits
Required		
REL 2201	Judaism	
HIST 2050	History of Jewish Civilization: From the Bible to Spinoza	
JSTD 4019	Senior Thesis	
One course (3 credits) from the following:		
ANTH 3805	Archaeology of Israel and Neighboring Lands	
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.	
CLAS 2804	History of Ancient Israel	
HIST 2051	Antisemitism from Origins to the Present	
HIST 2116	Muslims, Christians, and Jews in Medieval Spain	
JSTD 2001	Topics in Judaic Studies: Pre-modern	
REL 1009	The Hebrew Scriptures	
REL 2211	Rabbinic Thought and Literature	
REL 3923	Violence and Peace in Judaism, Christianity, and Islam	
One course (3 credits) from the following:		
HEBR 3101	Modern Hebrew Literary Classics in Translation	
HEBR 3301	Modern Hebrew Fiction	
HEBR 3302	The Israeli Media	
HIST 2060	Modern Jewish History	
HIST 2061	Ghetto: History of a Concept	
HIST 2812	History of Zionism	
HIST 3061	The Holocaust	
HIST 3062	War Crimes Trials	
HIST 3367	The American Jewish Experience	

JSTD 2002	Topics in Judaic Studies: Modern
PSC 2379	Politics and Foreign Policy of Israel
PSC 2476	The Arab-Israeli Conflict
or PSC 2476W	The Arab-Israeli Conflict
REL 3291	Modern Jewish Thought

Five additional courses (15 credits) from the two lists above.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one

course in this category required by the University General Education Requirement).

- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Judaic Studies, a candidate must attain a GPA of at least 3.7 in courses counted toward the major in Judaic Studies and 3.3 overall, and earn a grade of A both for JSTD 4018 Senior Thesis–JSTD 4019 Senior Thesis and for the senior thesis. Having fulfilled these requirements, the student may be recommended for graduation with Special Honors.

GRADUATE CERTIFICATE IN JEWISH CULTURAL ARTS

This program, a response to the growing prominence of art and culture within the contemporary Jewish community, offers both emerging and seasoned professionals an opportunity to deepen their understanding of Jewish cultural expression and its relationship to community building and civic engagement. Students are exposed to a wide range of issues and institutions as well as to leaders in the fields of Jewish cultural arts and experiential education and emerge from their training with the skills necessary to be an effective advocate for and proponent of the arts.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits

Code	Title	Credits
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Required

Four courses from the following:

EDUC 6803	Introduction to Experiential Jewish Education
HIST 6001	Special Topics (Contemporary Jewish Life)
or JSTD 6001	Topics in Judaic Studies
HIST 6001	Special Topics (Multiple Lives: The Fate(s) of Jewish Cultural Expression)
or JSTD 6001	Topics in Judaic Studies
HIST 6001	Special Topics (Displaying Jewish Culture)
or JSTD 6001	Topics in Judaic Studies
HIST 6001	Special Topics (Soundscapes: The Sonic Turn in Jewish History and Culture)
or JSTD 6001	Topics in Judaic Studies

MINOR IN JUDAIC STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
HIST 2050	History of Jewish Civilization: From the Bible to Spinoza	
or REL 2201	Judaism	
Electives		
Five of the following:		
ANTH 3805	Archaeology of Israel and Neighboring Lands	
CLAS 2803	The Ancient Near East and Egypt to 322 B.C.	
CLAS 2804	History of Ancient Israel	
ENGL 3970	Jewish American Literature	
HEBR 3101	Modern Hebrew Literary Classics in Translation	
HEBR 3301	Modern Hebrew Fiction	
HEBR 3302	The Israeli Media	

HIST 2050	History of Jewish Civilization: From the Bible to Spinoza
HIST 2051	Antisemitism from Origins to the Present
HIST 2060	Modern Jewish History
HIST 2061	Ghetto: History of a Concept
HIST 2116	Muslims, Christians, and Jews in Medieval Spain
HIST 3061	The Holocaust
HIST 3062	War Crimes Trials
HIST 3367	The American Jewish Experience
HIST 3820	History of Israel
JSTD 2001	Topics in Judaic Studies: Pre-modern
JSTD 2002	Topics in Judaic Studies: Modern
PSC 2379	Politics and Foreign Policy of Israel
PSC 2476	The Arab-Israeli Conflict
PSC 2476W	The Arab-Israeli Conflict
REL 1009	The Hebrew Scriptures
REL 2201	Judaism
REL 2211	Rabbinic Thought and Literature
REL 3221	Issues in Jewish Ethics
REL 3291	Modern Jewish Thought
REL 3923	Violence and Peace in Judaism, Christianity, and Islam

MATHEMATICS

The Department of Mathematics, part of the natural and mathematical sciences discipline in the Columbian College of Arts and Sciences, offers the bachelor of arts in mathematics and bachelor of science in mathematics degrees. The undergraduate mathematics major has three concentrations: pure, applied, and interdisciplinary. Each concentration is designed to give students a solid background in the theory and practice of modern mathematics. A minor in mathematics is also available to undergraduate students.

At the graduate level, the department offers the master of arts in mathematics, master of science in applied mathematics, and doctor of philosophy in the field of mathematics. Course offerings are complemented by a generous selection of research seminars and by the department colloquium series. Faculty expertise covers a wide range of research specialties,

allowing students to choose from a rich array of potential dissertation areas.

In addition, graduate certificates in mathematics and in financial mathematics are offered for those who seek to strengthen their mathematical backgrounds in order to better position themselves in their careers or to prepare themselves for graduate work in quantitative disciplines.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in mathematics (p. 329)
- Bachelor of Science with a major in mathematics (p. 331)

Minor

- Minor in mathematics (p. 336)

GRADUATE

Master's programs

- Master of Arts in the field of mathematics (p. 334)
- Master of Science in the field of applied mathematics (p. 335)

Doctoral program

- Doctor of Philosophy in the field of mathematics (p. 332)

CERTIFICATE

Certificate programs

- Graduate certificate in financial mathematics (p. 333)
- Graduate certificate in mathematics (p. 334)

FACULTY

Professors F.E. Baginski (Chair), J. Bonin, M.M. Gupta, V. Harizanov, H.D. Junghenn, J.H. Przytycki, X. Ren, E.A. Robinson, D.H. Ullman

Associate Professors M. Alekseyev, M. Moses, H. Wu

Assistant Professors J. Lewis, L. Kao, Y. Zhao

Teaching Assistant Professor G. Daigle

Visiting Assistant Professor X. Wan

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MATH 1220 Calculus with Precalculus I and MATH 1221 Calculus with Precalculus II each cover one-half the material of MATH 1231 Single-Variable Calculus I. Because MATH 1221 Calculus with Precalculus II, MATH 1231 Single-Variable Calculus I, and MATH 1252 Calculus for the Social and Management Sciences are related in their subject matter, credit for only one of the three may be applied toward a degree. The placement exam (<http://math.columbian.gwu.edu/gw-mathematics-placement-test/>) is the only option for placing into Math 1051, 1220, 1231, or 1252. Students with appropriate backgrounds may be admitted to any other course in the department by permission of the instructor in lieu of the listed prerequisites.

MATH 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

MATH 1007. Mathematics and Politics. 3 Credits.

A mathematical treatment of fair representation, voting systems, power, and conflict; impossibility theorems of Balinski and Young and of Arrow; the electoral college; the prisoner's dilemma.

MATH 1008. History of Mathematics. 3 Credits.

The history of mathematics, with emphasis on its importance in the evolution of human thought. Students learn some useful mathematics from areas such as geometry, number theory, and probability and develop an appreciation of the mathematical endeavor.

MATH 1009. Mathematical Ideas I. 3 Credits.

Elementary mathematical models of growth and decay, scaling, chaos, and fractals.

MATH 1010. Mathematical Ideas II. 3 Credits.

Continuation of MATH 1009. Elementary graph theory, scheduling, probability theory.

MATH 1051. Finite Mathematics for the Social and Management Sciences. 3 Credits.

Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Restricted to students with a minimum score of 61 on the ALEKS placement examination.

MATH 1099. Variable Topics. 1-36 Credits.**MATH 1220. Calculus with Precalculus I. 3 Credits.**

An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisites: students with a minimum score of 61 on the ALEKS placement examination.

MATH 1221. Calculus with Precalculus II. 3 Credits.

Continuation of MATH 1220. An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite: MATH 1220.

MATH 1231. Single-Variable Calculus I. 3 Credits.

Limits and continuity; differentiation and integration of algebraic and trigonometric functions with applications. Restricted to students with a minimum score of 76 on the ALEKS placement examination.

MATH 1232. Single-Variable Calculus II. 3 Credits.

The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: MATH 1221 or MATH 1231.

MATH 1252. Calculus for the Social and Management Sciences. 3 Credits.

Differential and integral calculus of functions of one variable; applications to business and economics. Students who might wish to take MATH 1232 should take one of its prerequisites, MATH 1221 or MATH 1231, instead of this course. Prerequisites: A minimum test score of 61 on the ALEKS placement examination.

MATH 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small, seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. See department for more details.

MATH 2020. Joint Math and Physics Seminar. 1 Credit.**MATH 2184. Linear Algebra I. 3 Credits.**

Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations. Credit cannot be earned for both MATH 2184 and MATH 2185. Prerequisites: MATH 1221 or MATH 1231 or MATH 1252; or permission of the instructor.

MATH 2185. Linear Algebra I for Math Majors. 3 Credits.

For current or prospective math majors. Introduction to theory and computations involving linear equations, matrices, inverses, determinants, vector spaces, rank, eigenvalues, diagonalization, inner products, norms, and orthogonality. Credit may not be earned for both MATH 2185 and MATH 2184. MATH 2971 or MATH 2971W may be taken as a corequisite. Prerequisites: MATH 1221 or MATH 1231; and MATH 2971 or MATH 2971W.

MATH 2233. Multivariable Calculus. 3 Credits.

Partial derivatives and multiple integrals. Vector-valued functions. Line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: MATH 1232.

MATH 2971. Introduction to Mathematical Reasoning. 3 Credits.

Introduction to the fundamental abstract concepts of modern mathematics; various proof techniques demonstrated using examples from discrete and continuous mathematics. MATH 1232 may be taken as a corequisite. Prerequisites: MATH 1232 or permission of the department undergraduate advisor.

MATH 2971W. Introduction to Mathematical Reasoning. 3 Credits.

Introduction to the fundamental abstract concepts of modern mathematics; various proof techniques demonstrated using examples from discrete and continuous mathematics. Math 1232 may be taken concurrently; permission of instructor or the departmental undergraduate advisor may substituted for the prerequisite. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: MATH 1232.

MATH 2991. Introductory Special Topics. 1-3 Credits.

Permission of the instructor required prior to enrollment. May be repeated for credit.

MATH 3099. Variable Topics. 1-12 Credits.**MATH 3120. Elementary Number Theory. 3 Credits.**

Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler's phi function, and applications to cryptography and primality testing. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3125. Linear Algebra II. 3 Credits.

Advanced topics in linear algebra; duality of vector spaces, normal and self-adjoint operators, the singular value decomposition theorem, the spectral theorem, bilinear and quadratic forms, the geometry of orthogonal operators, the Jordan canonical form, and minimal polynomials. Prerequisites: MATH 2971 or MATH 2971W and MATH 2185.

MATH 3257. Introduction to Complex Variables. 3 Credits.

Analytic functions and power series; contour integration and the calculus of residues; conformal mapping; physical applications. Prerequisites: MATH 2184 or MATH 2185; MATH 2233; and MATH 2971 or MATH 2971W.

MATH 3342. Ordinary Differential Equations. 3 Credits.

A first course in ordinary differential equations, with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first-order and second-order linear equations, linear systems, and phase portraits. Prerequisites: MATH 2233; MATH 2184 or MATH 2185.

MATH 3343. Partial Differential Equations. 3 Credits.

A first course in partial differential equations. Fourier series and separation of variables, vibrations of a string, Sturm–Liouville problems, series solutions, Bessel’s equation, linear partial differential equations, wave and heat equations. Prerequisite: MATH 3342.

MATH 3359. Introduction to Mathematical Modeling. 3 Credits.

Introduction to the fundamental modeling ideas of dimensional analysis, scaling, and elementary approximations of curves and functions; applications to development of models from science and engineering. Prerequisites: CSCI 1011 or CSCI 1012 or CSCI 1041 or CSCI 1111 or CSCI 1121 or CSCI 1131; and MATH 3342.

MATH 3410. Mathematics of Finance. 3 Credits.

Mathematical development and analysis of realistic models for financial option pricing; mathematical underpinnings and financial concepts. Prerequisite: MATH 2233.

MATH 3411. Stochastic Calculus Methods in Finance. 3 Credits.

Review of probability theory, Brownian motion, Ito integrals, Ito’s formula, martingales, stochastic differential equations, boundary value problems, the Dirichlet problem, the Black–Scholes equation, optimal stopping, and American options. Prerequisites: MATH 2184 or MATH 2185; and MATH 3410; or permission of the instructor.

MATH 3553. Introduction to Numerical Analysis. 3 Credits.

Accuracy and precision; linear systems and matrices; direct and iterative methods for solution of linear equations; sparse matrices; solution of nonlinear equations. Interpolation and approximate representation of functions, splines. Prerequisites: MATH 2184 or MATH 2185; and MATH 2233; and CSCI 1011 or CSCI 1012 or CSCI 1041 or CSCI 1111 or CSCI 1121 or CSCI 1131.

MATH 3613. Introduction to Combinatorics. 3 Credits.

Introduction to combinatorial enumeration; basic counting techniques, inclusion–exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3632. Introduction to Graph Theory. 3 Credits.

Fundamental concepts, techniques, and results of graph theory; connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3710. Introduction to Mathematical Logic. 3 Credits.

Symbolic logic as a precise formalization of deductive thought; logical correctness of reasoning; formal languages, interpretations, and truth; propositional logic and first-order quantifier logic suited to deductions encountered in mathematics; Goedel’s completeness theorem; compactness. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3720. Axiomatic Set Theory. 3 Credits.

Cantor’s theory of sets. Russell’s paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. The Zermelo–Fraenkel axioms and the axiom of choice. Finite, countable, and uncountable sets; ordinal and cardinal arithmetic. The continuum hypothesis. Prerequisites: MATH 2971 or MATH 2971W or permission of instructor.

MATH 3730. Computability Theory. 3 Credits.

The unlimited register machine as a model of an idealized computer. Computable and partial computable functions; Church–Turing thesis. Kleene’s recursion theorem. Algorithmic enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Discussion of Goedel’s incompleteness theorem. Prerequisites: MATH 2971 or MATH 2971W or permission of instructor.

MATH 3740. Computational Complexity. 3 Credits.

Automata and languages; deterministic and nondeterministic Turing machines; space and time complexity measures and classes; P-versus-NP problem; traveling salesman problem and other NP-complete problems; intractability; circuit complexity; introduction to probabilistic and quantum algorithms. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3806. Introduction to Topology. 3 Credits.

Metric spaces: completeness, compactness, continuity; Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3848. Differential Geometry. 3 Credits.

Curves in space, regular surfaces, tensors, fundamental forms of a surface, Gauss–Bonnet theory, minimal surfaces; the geometry of the Gauss map. Prerequisites: MATH 2184 or MATH 2185; MATH 2233; and MATH 2971 or MATH 2971W.

MATH 4121. Introduction to Abstract Algebra I. 3 Credits.

Study of groups and associated concepts, including Lagrange’s theorem, Cayley’s theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisites: MATH 2184 or MATH 2185; and MATH 2971 or MATH 2971W.

MATH 4122. Introduction to Abstract Algebra II. 3 Credits.

Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisites: MATH 4121 or permission of the instructor.

MATH 4239. Real Analysis I. 3 Credits.

Rigorous study of differentiation, integration, and convergence; sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisites: MATH 1232 and MATH 2971 or MATH 2971W or permission of instructor. Same As: MATH 6201.

MATH 4239W. Real Analysis I. 3 Credits.

A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: MATH 1232; and MATH 2971 or MATH 2971W. Same As: MATH 4239, MATH 6201.

MATH 4240. Real Analysis II. 3 Credits.

Continuation of MATH 4239. Topology of n -dimensional space, derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. Prerequisites: MATH 2184 or MATH 2185; and MATH 2233; and MATH 4239 or MATH 4239W. Credit cannot be earned for this course and MATH 6202.

MATH 4981. Seminar: Topics in Mathematics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Prerequisites: MATH 2184 or MATH 2185; and MATH 2233.

MATH 4991. Special Topics. 1-12 Credits.

Permission of the instructor required prior to enrollment. May be repeated for credit.

MATH 4995. Reading and Research. 1-6 Credits.

Under the personal direction of an instructor. Limited to majors with demonstrated capability. May be repeated for credit. Restricted to permission from instructor.

MATH 5099. Variable Topics. 1-99 Credits.**MATH 6101. Algebra I. 3 Credits.**

Group theory including symmetric groups, free abelian groups, finitely generated abelian groups, group actions, Sylow theorems, solvable groups. Ring theory including factorization in commutative rings, rings of polynomials, chain conditions.

MATH 6102. Algebra II. 3 Credits.

Continuation of MATH 6101. Theory of modules, including modules over a principal ideal domain and tensor product of modules. Theory of fields, including finite fields and Galois theory.

MATH 6120. Topics in Algebra. 3 Credits.

Topics may include, but are not limited to, Lie groups and Lie algebras, non-associative algebras, abelian groups, classical groups, algebraic number theory, representation theory, algebraic geometry, and ring theory. May be repeated for credit with permission. Prerequisites: MATH 6101 and MATH 6102.

MATH 6201. Real Analysis I. 3 Credits.

A rigorous study of the real number system, metric spaces, topological spaces, product topology, convergence, continuity and differentiation. Topics include Dedekind's cuts, Tychonoff's theorem, sequences and series, Abel's theorem, continuity and differentiability of real-valued functions of a real variable. Credit may not be earned for both MATH 6201 and MATH 4239.

MATH 6202. Real Analysis II. 3 Credits.

Continuation of MATH 6201. Topics include Riemann-Stieltjes integrals, equicontinuity, Arzela-Ascoli theorem, Stone-Weierstrass theorem, derivatives of functions of several variables, contraction mapping theorem, inverse and implicit function theorems, differential forms, exterior differentiation, Stoke's theorem, differentiable manifolds. Credit may not be earned for both MATH 6202 and MATH 4240.

MATH 6214. Measure and Integration Theory. 3 Credits.

Lebesgue measure and integration in abstract spaces. Probability measures. Absolute continuity, the Radon-Nikodym theorem, measures on product spaces, and the Fubini theorem. L^p spaces and their properties. Prerequisite: MATH 4239.

MATH 6215. Introduction to Functional Analysis. 3 Credits.

Topological and metric spaces; Tychonoff theorem; Banach spaces; linear functionals and operators; Hahn-Banach, closed graph, and open-mapping theorems; uniform boundedness; Hilbert spaces; eigenvalues, projections. Prerequisite: MATH 6214.

MATH 6225. Ergodic Theory. 3 Credits.

Ergodicity, mixing, the K-property and the Bernoulli property. Poincaré recurrence, the Rohlin lemma, the ergodic theorem, and entropy theory. Additional topics from isomorphism theory, spectral theory, the theory of joinings, and coding theory. Prerequisites: MATH 6214 or permission of the instructor.

MATH 6226. Dynamical Systems and Chaos. 3 Credits.

Linear and nonlinear systems, flows, Poincaré maps, structural stability. Examples of chaotic systems in the physical sciences. Local bifurcations, center manifold theory, normal forms, the averaging theorem. Hyperbolic invariant sets, strange attractors, the Smale horseshoe, symbolic dynamics. Prerequisites: MATH 2184 and MATH 4240; or permission of the instructor.

MATH 6230. Complex Analysis. 3 Credits.

Topology of the complex plane; complex differentiation and integration; Cauchy's theorem and its consequences; Taylor and Laurent series; classification of singularities; residue theory; conformal mapping; the Riemann mapping theorem. Prerequisite: MATH 4239.

MATH 6240. Topics in Real and Functional Analysis. 3 Credits.

Possible topics include Banach algebras, function algebras, spectral theory for bounded and unbounded operators, harmonic analysis on topological groups and semigroups, topological vector spaces and operator algebras. May be repeated for credit with permission. Prerequisites: Permission of the instructor.

MATH 6318. Applied Mathematics I. 3 Credits.

Boundary value problems in one dimension, first order equations, method of characteristics, shock waves, linear elliptic and evolution equations, calculus of variations. In addition to the specified prerequisites, students must have completed an undergraduate course in differential equations prior to enrollment. Prerequisites: MATH 2184 and Math 2233.

MATH 6319. Applied Mathematics II. 3 Credits.

Stability and bifurcation, perturbation methods, Sobolev spaces, wave equation, nonlinear partial differential equations. Students must have taken an undergraduate course in real analysis in addition to the specified prerequisites. Prerequisites: MATH 2184 and Math 2233.

MATH 6330. Ordinary Differential Equations. 3 Credits.

Existence and uniqueness of solutions, continuity and differentiability of solutions with respect to initial conditions. Properties of linear systems, phase portraits, planar systems and Poincaré-Bendixson theory. Prerequisite: MATH 4240.

MATH 6340. Modern Partial Differential Equations. 3 Credits.

Emphasis on modern theory and analytical techniques applied to the solution of partial differential equations. Topics include Sobolev spaces, generalized solutions, strong solutions and regularity; Sobolev imbedding theorem; Rellich-Kondrachov theorem; Leray-Schauder fixed-point theorems; nonlinear eigenvalue problems. Prerequisites: MATH 6319 or permission of the instructor.

MATH 6350. Topics in Applied Mathematics. 3 Credits.

Possible topics include, but are not limited to, the calculus of variations, control theory, nonlinear partial differential equations, and mathematical programming. May be repeated for credit with permission.

MATH 6441. Introduction to Financial Mathematics. 3 Credits.

Elementary finance. Basic probability. Discrete random variables. Forwards, futures, and options. Options and arbitrage. The binomial model. Cox-Ross- Rubenstein formula. Martingales. Continuous random variables. The continuous model as a limit of the binomial model. Prerequisites: MATH 2184 and MATH 2233.

MATH 6442. Stochastic Calculus Methods in Finance. 3 Credits.

Review of finance and probability theory. Brownian motion. Ito's formula. Martingales. Stochastic differential equations. The Black-Scholes equation. Optimal stopping. American options. Prerequisites: MATH 2184 and MATH 2233.

MATH 6522. Introduction to Numerical Analysis. 3 Credits.

Computer arithmetic and round-off errors. Solution of linear and nonlinear systems. Interpolation and approximations. Numerical differentiation and integration. Eigenvalues and eigenvectors. Prerequisite: MATH 1232 and MATH 2184 and knowledge of a programming language.

MATH 6523. Numerical Solution of Ordinary and Partial Differential Equations. 3 Credits.

Initial and boundary value problems for ordinary differential equations. Error propagation, convergence and stability. Finite difference and finite element methods for partial differential equations. Prerequisite: MATH 3342 and knowledge of a programming language.

MATH 6540. Topics in Numerical Analysis. 3 Credits.

Numerical methods and software. Introductions to the methods, tools, and ideas of numerical computation. Problem solving using standard mathematical software. Interpolation; linear and nonlinear equations. Differential equations. Prerequisites: MATH 3342 and knowledge of a programming language.

MATH 6610. Combinatorics. 3 Credits.

An introduction to fundamental methods and current research problems in partially ordered sets and enumeration. Prerequisites: Undergraduate modern algebra and linear algebra or permission of the instructor.

MATH 6620. Graph Theory. 3 Credits.

Graphical enumeration, factors, planarity and graph coloring, algebraic graph theory, extremal graph theory, applications. Prerequisites: Undergraduate modern algebra and linear algebra or permission of the instructor.

MATH 6630. Topics in Combinatorial Mathematics. 3 Credits.

Topics selected from a wide range of research subjects in combinatorics, its relations with other areas of mathematics, and applications. Recent selections have included matroid theory, topological methods in ordered sets, algebraic methods in combinatorics, fractional graph theory, combinatorics of polytopes, the symmetric group. May be repeated for credit with permission.

MATH 6710. Mathematical Logic. 3 Credits.

Model theory: the relation between a formal language (syntax) and its interpretations (semantics). Consistency, completeness, and compactness. Tarski's theorem on the inexpressibility of truth. Godel's incompleteness theorem and its impact on mathematics.

MATH 6720. Topics in Logic. 3 Credits.

Topics selected from a broad spectrum of areas of logic and applications, based on students' suggestions and interests. Recent selections have included computable mathematics, computable model theory, computability theory, set theory, and algorithmic learning theory. May be repeated for credit with permission.

MATH 6810. General Topology. 3 Credits.

Topological spaces, bases and subbases, open sets and closed sets; continuous maps and homeomorphisms; connectedness and compactness; metric topology, product topology, and quotient topology; separation axioms; finite topological spaces, covering spaces, and fundamental groups.

MATH 6820. Algebraic Topology. 3 Credits.

Fundamental groups and the Van Kampen theorem; simplicial complexes, simplicial homology, and Euler characteristic; singular homology, Mayer-Vietoris sequences. Topics may include cohomology, cup products, and Poincaré duality; classification of surfaces; knots and their fundamental groups. Prerequisites: MATH 6810 or permission of the instructor.

MATH 6850. Knot Theory and Low Dimensional Topology. 3 Credits.

Introduction to fundamental methods and current research in knot theory and 3-dimensional topology. Topics include Reidemeister moves, Alexander invariants, Jones-type invariants, skein modules, Khovanov homology, incompressible surfaces, and torus decomposition. Prerequisites: MATH 6810 or permission of the instructor.

MATH 6860. Topics in Knot Theory and Low Dimensional Topology. 3 Credits.

Possible topics include, but are not limited to, topology of 3-manifolds and work of Perelman, quantum invariants and their categorizations, topology of 4-manifolds after Freedman and Donaldson, computational complexity in topology, and applications in biology, chemistry, and physics. May be repeated for credit with permission. Prerequisites: MATH 6850 or permission of the instructor.

MATH 6890. Topics in Topology. 3 Credits.

Topics may include hyperbolic structures on surfaces and 3-manifolds; knot theory; topology of 3-manifolds; topology of 4-manifolds. Prerequisite: MATH 6820 or permission of the instructor. May be repeated for credit with permission.

MATH 6991. Graduate Student Experience. 0 Credits.

Introduction to the experience of studying mathematics as a graduate student at GW. Understanding University rules and regulations, handling the literature in the subject, conducting research and delivering presentations, and pursuing a successful career as a mathematician. Restricted to graduate students in the department.

MATH 6995. Reading and Research. 12 Credits.

May be repeated for credit.

MATH 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN MATHEMATICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I (or equivalent)	
MATH 1232	Single-Variable Calculus II	
MATH 2185 or MATH 2184	Linear Algebra I for Math Majors * Linear Algebra I	
MATH 2233	Multivariable Calculus	
MATH 2971	Introduction to Mathematical Reasoning	
One course (3 credits) from the following:		
CSCI 1011	Introduction to Programming with Java	
CSCI 1012	Introduction to Programming with Python	
CSCI 1041	Introduction to FORTRAN Programming	
CSCI 1111	Introduction to Software Development	
CSCI 1121	Introduction to C Programming	
CSCI 1131	Introduction to Programming with C	
Students in the pure mathematics concentration may substitute an additional elective, approved by the department, for the CSCI course.		

* Of the two options for linear algebra, MATH 2185 is preferred.

Concentration requirement

All students must complete requirements for one of the following three concentrations:

Pure mathematics concentration

Code	Title	Credits
Required		
MATH 4121	Introduction to Abstract Algebra I	
MATH 4239	Real Analysis I	
Two courses (6 credits) from the following:		
MATH 3125	Linear Algebra II	

MATH 3257	Introduction to Complex Variables
MATH 3806	Introduction to Topology
MATH 4122	Introduction to Abstract Algebra II
MATH 4240	Real Analysis II
Three additional mathematics (MATH) courses (9 credits) numbered 3000 or above.	

Applied mathematics concentration

Code	Title	Credits
Required		
MATH 3342	Ordinary Differential Equations	
MATH 3343	Partial Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
MATH 4239	Real Analysis I	
Two additional mathematics (MATH) courses (6 credits) numbered 3000 or above.		

Interdisciplinary mathematics concentration

Code	Title	Credits
Required		
MATH 3342	Ordinary Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
Four additional mathematics (MATH) courses (12 credits) numbered 3000 or above.		
Minor or second major requirement: students in the interdisciplinary concentration must complete an approved minor or second major in a field in which mathematics is applied. The pre-approved fields are astronomy and astrophysics, biology, bioinformatics, biophysics, chemistry, economics, physics, statistics, finance, and all fields in the School of Engineering and Applied Science.		

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the

liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW

courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a grade-point average of at least 3.5 in courses in the major; complete 3 credits of MATH 4995 Reading and Research in addition to the other required courses in the major; and present an oral defense of a senior thesis prepared for MATH 4995 Reading and Research.

BACHELOR OF SCIENCE WITH A MAJOR IN MATHEMATICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I (or the equivalent)	
MATH 1232	Single-Variable Calculus II	
MATH 2185	Linear Algebra I for Math Majors *	
or MATH 2184 & MATH 3125	Linear Algebra I and Linear Algebra II	
MATH 2233	Multivariable Calculus	
MATH 2971	Introduction to Mathematical Reasoning	
One course (3 credits) from the following:		
CSCI 1011	Introduction to Programming with Java	
CSCI 1012	Introduction to Programming with Python	
CSCI 1041	Introduction to FORTRAN Programming	
CSCI 1111	Introduction to Software Development	
CSCI 1121	Introduction to C Programming	
CSCI 1131	Introduction to Programming with C	
For students in the pure mathematics concentration, an alternative course may substituted for the CSCI course with the approval of the department.		

*Of the two options for linear algebra, MATH 2185 is preferred.

Concentration requirement

All students must complete requirements for one of the following three concentrations:

Pure mathematics concentration

Code	Title	Credits
Required		
MATH 4121	Introduction to Abstract Algebra I	
MATH 4239	Real Analysis I	
Two courses (6 credits) from the following:		
MATH 3125	Linear Algebra II	
MATH 3257	Introduction to Complex Variables	
MATH 3806	Introduction to Topology	
MATH 4122	Introduction to Abstract Algebra II	
MATH 4240	Real Analysis II	
Five additional mathematics (MATH) courses (15 credits) numbered 3000 or above. For students who complete the bachelor of science requirements for a major in astronomy and astrophysics, biology, biophysics, chemistry, economics, physics, statistics, finance, or any major in SEAS, this requirement is reduced to three additional MATH courses (9 credits) numbered 3000 or above.		

Applied mathematics concentration

Code	Title	Credits
Required		
MATH 3342	Ordinary Differential Equations	
MATH 3343	Partial Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	
MATH 4239	Real Analysis I	
Four additional mathematics (MATH) courses (12 credits) numbered 3000 or above. For students who complete the bachelor of science requirements for a major in astronomy and astrophysics, biology, biophysics, chemistry, economics, physics, statistics, finance, or any major in SEAS, this requirement is reduced to two additional MATH courses (6 credits) numbered 3000 or above.		

Interdisciplinary mathematics concentration

Code	Title	Credits
Required		
MATH 3342	Ordinary Differential Equations	
MATH 3553	Introduction to Numerical Analysis	
MATH 3359	Introduction to Mathematical Modeling	

Six additional mathematics (MATH) courses (18 credits) numbered 3000 or above. For students who complete the bachelor of science requirements for a major in astronomy and astrophysics, biology, biophysics, chemistry, economics, physics, statistics, finance, or any major in SEAS, this requirement is reduced to four additional mathematics MATH courses (12 credits) numbered 3000 or above.

Minor or second major requirement: students in the interdisciplinary concentration must complete an approved minor or second major in a field in which mathematics is applied. The pre-approved fields are astronomy and astrophysics, biology, bioinformatics, biophysics, chemistry, economics, physics, statistics, finance, and all fields in the School of Engineering and Applied Science.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

To graduate with Special Honors, a student must meet the general requirements stated under University Regulations; maintain a grade-point average of at least 3.5 in courses in the major; complete 3 credits of MATH 4995 Reading and Research in addition to the other required courses in the major; and present an oral defense of a senior thesis prepared for MATH 4995 Reading and Research.

DOCTOR OF PHILOSOPHY IN THE FIELD OF MATHEMATICS

Faculty expertise covers a wide range of research fields, including analysis, ordinary and partial differential equations, dynamical systems, applied math (including numerical analysis), combinatorics, logic, topology and knot theory. With about 30 graduate students and 20 faculty members, there is lively interaction as well as extensive individual attention.

All graduate students have individual advisers throughout their enrollment, starting from the time of admission. New students also receive peer advisers. In addition, research

seminars and the department colloquium series help students explore potential research areas. Teaching assistantships are available for full-time Ph.D. students. Each assistant gains teaching experience with a moderate workload, leading recitations for one introductory undergraduate course per semester. The post-baccalaureate certificate for those who seek to strengthen their mathematical backgrounds—at the advanced undergraduate and beginning graduate levels—is offered to better position students in their careers or to prepare for graduate work in quantitative disciplines.

The PhD in Mathematics is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationstext>).

The requirements for the Doctor of Philosophy Program (<http://bulletin.gwu.edu/arts-sciences/#doctoralstext>).

Pre-candidacy

Pre-candidacy requirements include satisfactory completion of 48 credits of coursework and achievement of a passing grade in the general examination.

Coursework

After completing 36 credits of coursework, students may petition the graduate committee for approval to take MATH 6995, but students may take no more than 12 credits in any combination of MATH 6995 and MATH 8999 in a single academic year.

Students wishing to take courses outside the department must petition and obtain the approval of the graduate committee. The committee may limit the number of such courses that students take.

Subject to the approval of the graduate committee (requested via petition), students may take up to 12 credits of courses offered by other institutions in the Consortium of Universities of the Washington Metropolitan Area. Students wishing to take such courses must petition and obtain the approval of the graduate committee.

Subject to the approval of the graduate committee (requested via petition) and the agreement of the instructor, students may take up to 12 credits from the following upper-level undergraduate courses for graduate credit, provided that additional graduate-level coursework is completed in these classes.

Code	Title	Credits
MATH 3613	Introduction to Combinatorics	
MATH 3632	Introduction to Graph Theory	
MATH 3710	Introduction to Mathematical Logic	
MATH 3720	Axiomatic Set Theory	
MATH 3730	Computability Theory	
MATH 3740	Computational Complexity	
MATH 3848	Differential Geometry	
MATH 4239	Real Analysis I	
MATH 4240	Real Analysis II	
MATH 4981	Seminar: Topics in Mathematics	

General examination

The general examination consists of two preliminary examinations. One examination is in two to four subjects selected from algebra, analysis, topology, and applied math, and the other is a specialty examination in a research area approved by the department.

Post-candidacy requirements

Post-candidacy requirements include the successful completion of an additional 24 credits of graduate coursework, including at least 6 credits of MATH 8999; the completion of the dissertation; and the successful defense of the dissertation in a final oral examination.

No more than 15 credits in any combination of MATH 6995 and MATH 8999 may be among the student's final 18 credits of required coursework.

Once a student successfully completes 24 post-candidacy credits, they must register for 1 credit of CCAS 0940 (<http://bulletin.gwu.edu/search/?P=CCAS%200940>) each subsequent fall and spring semester until they have successfully defended their dissertation, thereby completing the degree program.

GRADUATE CERTIFICATE IN FINANCIAL MATHEMATICS

The graduate certificate in financial mathematics, offered through the Columbian College of Arts and Sciences Department of Mathematics, trains students in sophisticated mathematical techniques so they may analyze problems arising from financial economics. Examples include the use of stochastic processes and partial differential equations to study stock markets and to price financial derivatives.

Graduates will be well-positioned to advance careers in public, private, and governmental financial institutions with a heavy

emphasis on analytic methods and quantitative skills. This two-year, 12-credit certificate is also ideal for those planning to pursue graduate programs in economics or finance and who wish to supplement their mathematical training.

This is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
MATH 6201	Real Analysis I	
MATH 6441	Introduction to Financial Mathematics	
MATH 6442	Stochastic Calculus Methods in Finance	
One of the following:		
MATH 6202	Real Analysis II	
MATH 6214	Measure and Integration Theory	
MATH 6318	Applied Mathematics I	
MATH 6330	Ordinary Differential Equations	
MATH 6522	Introduction to Numerical Analysis	

Alternate courses may be selected in consultation with the certificate program advisor.

GRADUATE CERTIFICATE IN MATHEMATICS

The aim of graduate certificate in mathematics program is to strengthen the mathematical backgrounds of students so that graduates are well positioned to pursue further study in a variety of quantitative fields. This program is ideal, for instance, for those planning to apply to top graduate programs in economics or finance and who wish they had taken more math during their undergraduate years. It is also ideal for those who want to pursue graduate study in mathematics but do not yet have sufficient background.

Four graduate-level courses make up the program. If it is appropriate academically and fits a student's career goals, the department may approve variations. For instance, in place of one of the standard options, a different course in mathematics or in a related field (e.g., statistics) may be accepted.

The courses that make up this program are part of the regular graduate-level curriculum. As much as possible, the

department schedules these courses around the lunch hour or after 5 pm for the convenience of those in the program.

The graduate certificate in mathematics is a STEM-designated programs.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required:		
MATH 6201	Real Analysis I	
MATH 6202	Real Analysis II	
Two of the following:		
MATH 6214	Measure and Integration Theory	
MATH 6215	Introduction to Functional Analysis	
MATH 6318	Applied Mathematics I	
MATH 6319	Applied Mathematics II	
MATH 6810	General Topology	

Alternate courses may be selected in consultation with the certificate advisor.

MASTER OF ARTS IN THE FIELD OF MATHEMATICS

Faculty expertise covers a wide range of research fields, including analysis, ordinary and partial differential equations, dynamical systems, applied math (including numerical analysis), combinatorics, logic, topology and knot theory. With about 30 graduate students and 20 faculty members, there is lively interaction as well as extensive individual attention.

All graduate students have individual advisers throughout their enrollment, starting from the time of admission. New students also receive peer advisers. In addition, research seminars and the department colloquium series help students explore potential research areas.

The MA in Mathematics is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits in approved coursework divided between mathematics and one of the following areas of application: computer science, economics, engineering (civil, electrical, mechanical, or systems), operations research, physics, or statistics. No more than 12 credits toward the degree can be outside mathematics. Students must petition and obtain the approval of the graduate committee in order to register for courses outside the department. MATH 6995 Reading and Research (independent study), can be taken only by petition to, and with the approval of, the graduate committee.

Up to 6 credits in courses taken at other institutions of the Consortium of Universities of the Washington Metropolitan Area (<https://registrar.gwu.edu/consortium/>) may count toward degree requirements. Students wishing to take such courses must petition and obtain the approval of the graduate committee.

Code	Title	Credits
Subject to the approval of the graduate committee (requested via petition) and the agreement of the instructor, mathematics graduate students may take up to 6 credits in the undergraduate courses listed below for graduate credit. Appropriate additional work must be assigned for students to receive graduate credit in an undergraduate course.		
MATH 3613	Introduction to Combinatorics	
MATH 3632	Introduction to Graph Theory	
MATH 3710	Introduction to Mathematical Logic	
MATH 3720	Axiomatic Set Theory	
MATH 3730	Computability Theory	
MATH 3740	Computational Complexity	
MATH 3848	Differential Geometry	
MATH 4239	Real Analysis I	
MATH 4240	Real Analysis II	
MATH 4981	Seminar: Topics in Mathematics	

MASTER OF SCIENCE IN THE FIELD OF APPLIED MATHEMATICS

The Department of Mathematics offers two master's degree programs: the master of arts in mathematics and the master of science in applied mathematics. Faculty expertise covers a wide range of research specialties. With about 25 graduate students and 20 faculty members, there is lively interaction as well as extensive individual attention. All graduate students have individual advisers throughout their enrollment, starting from the time of admission. New students also receive peer advisers. In addition, research seminars and the department

colloquium series help students explore potential research areas.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs.

Successful completion of 30 credits in coursework*.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits in approved courses divided between mathematics and one of the following areas of application: computer science, economics, engineering (civil, electrical, mechanical, or systems), operations research, physics, or statistics. No more than 12 credits may be in non-MATH courses. Students must petition and obtain the approval of the graduate committee in order to register for courses outside the department.

Students who wish to register for MATH 6995 Reading and Research must petition and obtain the approval of the graduate committee.

Up to 6 credits in courses taken at other institutions of the Consortium of Universities of the Washington Metropolitan Area may count toward degree requirements. Students wishing to take such courses must petition and obtain the approval of the graduate committee.

Subject to the approval of the graduate committee (requested via petition) and the agreement of the instructor, mathematics graduate students may take up to 6 credits in the undergraduate courses listed below for graduate credit. Appropriate additional work must be assigned for students to receive graduate credit in an undergraduate course.

Code	Title	Credits
MATH 3613	Introduction to Combinatorics	
MATH 3632	Introduction to Graph Theory	
MATH 3710	Introduction to Mathematical Logic	
MATH 3720	Axiomatic Set Theory	
MATH 3730	Computability Theory	
MATH 3740	Computational Complexity	
MATH 4239	Real Analysis I	
MATH 4240	Real Analysis II	
MATH 4981	Seminar: Topics in Mathematics	

MINOR IN MATHEMATICS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
MATH 2184	Linear Algebra I	
or MATH 2185	Linear Algebra I for Math Majors	
Electives		
15 credits in elective courses with a minimum of 9 credits taken at the 3000 level or above. Courses are selected in consultation with a departmental advisor.		

MEDIA AND PUBLIC AFFAIRS

The School of Media and Public Affairs (SMPA), as part of the Columbian College of Arts and Sciences, is dedicated to the study of media, journalism, and political communication with a focus on the connections between ideas and information and how the media inform and influence policy and politics in a democracy. Students have the opportunity for internships and access to decision makers, community leaders, and power brokers. SMPA offers programs of study leading to the bachelor of arts degree with majors in journalism and mass communication, and in political communication. Entering freshmen may be admitted to majors within SMPA through a highly selective application process. In addition, a limited number of students are admitted through a competitive application process that begins after the student is accepted to the University.

Visit the School of Media and Public Affairs website (<https://smpa.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in journalism and mass communication (p. 342)
- Bachelor of Arts with a major in political communication (p. 344)

Combined programs

- Dual Bachelor of Arts in an SMPA Major and Master of Arts in the field of Media and Strategic Communication or Master of Professional Studies in the field of Political Management (p. 346)

Minor

- Minor in journalism and mass communication (p. 347)

GRADUATE

Master's program

- Master of Arts in the field of media and strategic communication (p. 346)

CERTIFICATE

GW's School of Media and Public Affairs offers a program leading to the graduate certificate in documentary filmmaking.

Applications for the program are not being accepted for spring 2021.

Visit The Documentary Center website (<https://documentarycenter.gwu.edu/>) for more information.

FACULTY

Professors L. Huebner, S.L. Livingston, S.V. Roberts, F. Sesno, J. Steele, S. Waisbord (*Director*)

Associate Professors S. Aday, C.S. Bailard, K.A. Gross, K. Harvey, M. Hindman, I.M. Cheers, D.A. Karpf, P. Loge, J. Osder, P.F. Phalen, C.W. Thompson, R. Tromble, W.L. Youmans

Assistant Professors B. Benitez-Curry, J. Holland, E. Porter

Emeritus Professors R. Entman, J. Manheim, C. Sterling

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPA 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SMPA 1050. Media in a Free Society. 3 Credits.

The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

SMPA 1099. Variable Topics. 1-36 Credits.**SMPA 1225. Forensics Practice (Debate). 1 Credit.****SMPA 2101. Journalism: Theory & Practice. 3 Credits.**

Overview of theories and key issues in journalism in the United States. News and democracy, the historical and social evolution of journalism, news values, journalism as occupation/profession, technologies, and changes in journalistic practices. Restricted to SMPA students.

SMPA 2102. Introduction to Political Communication. 3 Credits.

Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors. Prerequisite: PSC 1002.

SMPA 2110W. Introduction to News Writing and Reporting. 3 Credits.

Fundamentals of news reporting and writing, with emphasis on print media; news judgment, information gathering skills, and crafting news and feature stories. Directly admitted freshmen may enroll in their second semester; all other freshmen require departmental permission. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPA 2111W. Advanced News Reporting. 4 Credits.

Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public interest; outside and in-class reporting and writing assignments. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Restricted to journalism and mass communication majors, or students with permission of the instructor. Prerequisite: SMPA 2110W.

SMPA 2112. Digital Media I: Introduction to Video Production. 3 Credits.

Foundational introduction to digital media production. Videography and non-linear editing, with emphasis on use in journalism and political communication. Laboratory fee. Restricted to students in the political communication and journalism and mass communication programs.

SMPA 2113. Digital Media II: Introduction to Web Production and Social Media. 3 Credits.

Foundational introduction to digital media production. Web content and design; photography and audio applied to the web; and using social media. Emphasis on use in journalism and political communication. Laboratory fee. Restricted to students in the political communication and journalism and mass communication programs.

SMPA 2120. Public Opinion. 3 Credits.

Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

SMPA 2151. Research Methods. 3 Credits.

Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and interpreting results of cultural and social science research within a societal framework. Prerequisites: STAT 1053 or STAT 1051 or STAT 1111 or STAT 1127.

SMPA 2152. Data Analysis for Journalism and Political Communication. 3 Credits.

Understanding, critiquing, and performing analysis of data sets with applications to journalism and political communication; using data to tell stories and answer questions. Analyzing A/B tests and field experiments; basics of visualizing data; regression. Laboratory fee. Prerequisites: STAT 1051 or STAT 1053 or STAT 1111 or STAT 1127.

SMPA 2173. Media Law. 3 Credits.

Freedom of the press. Changing laws of journalism and mass communication, including defamation, privacy, reporting access, obscenity and indecency, media ownership, intellectual property, advertising, and electronic communication.

SMPA 2177. Media History. 3 Credits.

American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

SMPA 3099. Variable Topics. 1-12 Credits.**SMPA 3150. Journalism Ethics. 3 Credits.**

Principles of media ethics; application to contemporary and developing issues and challenges in journalism. Restricted to juniors and seniors only. Prerequisite: SMPA 2111W.

SMPA 3193. Selected Topics in Journalism and Mass Communication Skills. 3-4 Credits.

Topics announced in Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3194. Selected Topics in Political Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

SMPA 3195. Selected Topics in Journalism and Mass Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3195W. Selected Topics in Journalism and Mass Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPA 3196. Independent Study. 1-3 Credits.

Students pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Restricted to seniors.

SMPA 3197. Internship. 1-3 Credits.

Students spend at least five hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor. Guidelines are available in the SMPA office and online. May be taken P/NP only. Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

SMPA 3230. Reporting in the Digital Age. 3 Credits.

Understanding the emerging tools and developing the technological skills needed to analyze data for news. Students learn to find reliable information through social media and other online tools, use spreadsheets as a reporting tool, and download data for analysis, to create graphics, and to report and write stories based on the analysis. Laboratory fee. Prerequisite: SMPA 2110W.

SMPA 3232. Online Journalism Workshop. 4 Credits.

Capstone production experience for SMPA majors. Provides advanced journalism and multimedia production skills needed to produce and report for a news website. Laboratory fee. Prerequisites: SMPA 2110W and SMPA 2112.

SMPA 3233. Photojournalism. 3 Credits.

Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee.

SMPA 3234. Editing and Design for Print and Web. 3 Credits.

Editing, design, layout, and photo selection for newspapers, magazines, and web. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Prerequisites: SMPA 2110W.

SMPA 3235W. Broadcast News Writing. 3 Credits.

Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3236W. Broadcast News Reporting. 3 Credits.

Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SMPA 2110W and SMPA 2112.

SMPA 3239. Television News Practicum. 4 Credits.

Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcast. Laboratory fee. Prerequisites: SMPA 3235W and SMPA 3236W.

SMPA 3240W. Washington Reporting. 3 Credits.

Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3241W. Campaign Reporting. 3 Credits.

Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3242. Investigative Reporting. 3 Credits.

Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrongdoing. Prerequisite: SMPA 2110W.

SMPA 3243W. Feature Writing. 3 Credits.

Learn to frame, research, and write a wide range of feature articles, including profiles, interviews and personal memoirs. Weekly writing assignments and a major final project are discussed and scrutinized in a workshop setting. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3244W. Narrative Journalism. 3 Credits.

The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110.

SMPA 3245W. Editorial and Persuasive Writing. 3 Credits.

Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110.

SMPA 3246. Specialized Reporting. 3 Credits.

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110W.

SMPA 3246W. Specialized Reporting. 3 Credits.

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3247. Documentary Production. 4 Credits.

Advanced techniques in writing, researching, producing, and editing long-form documentaries. Prerequisites: SMPA 2112 and SMPA 3479; or permission of the instructor.

SMPA 3333. Media Organizations and Audiences. 3 Credits.

Organizations and economic relationships in the U.S. entertainment industry, particularly television and film; relationships within and between organizations, how media industries operate, and how media professionals carry out their work.

SMPA 3350. Public Diplomacy. 3 Credits.

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 3352. Principles of Public Relations. 3 Credits.

Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

SMPA 3353. Strategic Political Communication. 3 Credits.

Origins of strategic approaches to political communication; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisites: SMPA 2102 or permission of the instructor.

SMPA 3354. Political Campaign Communication. 3 Credits.

Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

SMPA 3355. Campaign Advertising. 3 Credits.

Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet. Prerequisite: SMPA 2112.

SMPA 3357W. Political Speech Writing. 4 Credits.

Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPA 3358. Strategic Practicum. 3 Credits.

Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 3353.

SMPA 3428. Media, Politics, and Government. 3 Credits.

The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows, and the changing ways that voters receive information. Instructor permission required. Same As: PSC 2228.

SMPA 3450. Social Media. 3 Credits.

Practical and theoretical implications of social media; what it means to be social and how social media has changed how individuals interact and do business; birth and history of social media and why certain forms of social media flourish while others fail.

SMPA 3459. Language and Politics. 3 Credits.

Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

SMPA 3460. Race, Media, and Politics. 3 Credits.

Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

SMPA 3461. Campaigns and Elections. 3 Credits.

The role of the news media in campaigns and elections. Offered in even-numbered years.

SMPA 3463. Media Bias. 3 Credits.

Exploration of empirical and theoretical understanding of media bias, its effects on power, and implications for democracy.

SMPA 3467. Globalization and Media. 3 Credits.

The media have played a central role in shaping the rapidly changing international scene –both its new global connectedness and its intensifying tribal impulses. At the same time, a new category of media has emerged which is truly global in scope, even while national and regional media have retained their own distinctive characteristics. The great challenges confronting media in a time of technological revolution and cultural tension are sometimes broadly shared across national frontiers and sometimes sharply differentiated. These themes are explored in this course which includes a short term abroad component in Paris over spring break. Students meet with journalists, executives, government officials and scholars who bring both an international and European perspective on major media issues.

SMPA 3468. Communication and Global Social Change. 3 Credits.

The study and practice of communication, development, and social change; theories and arguments informing debates and communication programs, merits and impact of various approaches, and design and implementation of communication programs.

SMPA 3469. International Communication. 3 Credits.

A survey of theoretical themes in international communication and their practical applications: information production and circulation, global media industries, and cultures.

SMPA 3470. Comparative Media Systems. 3 Credits.

In-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

SMPA 3471. Media in the Developing World. 3 Credits.

Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western "cultural imperialism." Media and Islam; role of the Internet; and theories of media and globalization.

SMPA 3472. Media and Foreign Policy. 3 Credits.

The emerging role of news media in international affairs and diplomacy. Globalization of news media advances in digital information and communication technologies and consequences for the international system and diplomacy.

SMPA 3475. Media Management. 3 Credits.

Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

SMPA 3476. Media, Technology, and Culture. 3 Credits.

Concepts, principles, and socio-political implications of new and changing media and related technologies. Focus on intersection of new technologies and the anthropology of everyday life, in particular self-governance, policy development, cultural rupture and cohesion, the tension between national security and individual privacy rights, and First Amendment issues.

SMPA 3477. Information Technology and Politics. 3 Credits.

The effect of new information technologies on the media, public discourse, and political life; ways in which politics has shaped the development of technology.

SMPA 3479. Documentary. 3 Credits.

Origins, genres, and analysis of documentary film. Power, reach, and conceptual frameworks of documentary filmmaking.

SMPA 3480. The Future of Journalism. 3 Credits.

Reasons behind the decline of traditional newspaper and broadcast journalism; the impact of the web and other digital tools on traditional journalism values; new business models for news.

SMPA 4180. Online Journalism Workshop. 4 Credits.

Capstone experience for journalism majors. Advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisites: SMPA 2112 and SMPA 2113; and SMPA 2111W. (Same as SMPA 3232).

SMPA 4181. Television News Workshop. 4 Credits.

Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcasts. Laboratory fee. Prerequisites: SMPA 2111 or SMPA 2111W; and SMPA 2112, SMPA 2113 and SMPA 3236W. (Same as SMPA 3239).

SMPA 4182. Specialized Journalism Workshop. 4 Credits.

Capstone experience for journalism majors. In-depth study of advanced journalism skills or specific topic areas. Laboratory fee. Prerequisites: SMPA 2111W; and SMPA 2112 and SMPA 2113.

SMPA 4198. Special Honors Research Seminar. 3 Credits.

. Restricted to senior special honors candidates in political communication. Prerequisites: SMPA 4199 and permission of the department.

SMPA 4199. Senior Seminar. 3 Credits.

Capstone course limited to SMPA majors.

SMPA 5099. Variable Topics. 1-99 Credits.**SMPA 6201. Strategic Communications Skills. 1.5 Credit.**

Specialized skills, such as crisis communication, political uses of social media, digital PR, web development and strategy, and speechwriting. Topics vary by semester. May be repeated for a maximum of 6 credits provided the topic differs. See department for more details.

SMPA 6202. Media Effects, Public Opinion, and Persuasion. 3 Credits.

Theories of media effects and persuasion. Institutional functions and individual effects of mediated communication. Impacts of different textual content and format on individual thinking and emotion; forces that shape content production.

SMPA 6203. Information, Technology, and Political Communication. 3 Credits.

Issues pertaining to the political uses of the Internet, social media, and other new media; the effect that new information technologies have on political life and the ways in which politics shape technology development.

SMPA 6204. Strategic Political Communication. 3 Credits.

Theory, techniques, and implications of strategic communication as employed by individuals, groups, organizations, and governments to advance their interests; applications to non-electoral politics and policymaking; use of political, psychological, sociological, and other processes; methodological considerations; domestic and international applications.

SMPA 6205. Media, Development, and Globalization. 3 Credits.

Theories of media and globalization. The changing role of communication media, including the Internet and other newer technologies as well as traditional books, film, newspapers, telephone, and satellite in establishing closer relationships and interdependencies among people, their cultures, and their organizations in various countries.

SMPA 6206. Advocacy Communication and Political Networks. 3 Credits.

Cross-disciplinary approaches to global changes in the nature of governance and collective action. The role of new technology, social movements, NGOs and transnational advocacy networks. Information campaigns and advocacy communication.

SMPA 6207. Political Persuasion and Public Opinion. 3 Credits.

Major theories and perspectives in public opinion and persuasion research. Information processing, psychological models applied to politics and media research (cognition, attitudes, resistance, heuristics), public opinion dynamics.

SMPA 6208. Politics and Public Relations Fundamentals. 3 Credits.

Basic knowledge of the skills to design, implement, and evaluate public relations activities. Case studies of public relations applied to politics. Techniques and tactics used by public relations professionals.

SMPA 6210. Media and Foreign Policy. 3 Credits.

The effects of U.S. media on U.S. and foreign governments, and of foreign media on the U.S.; effects of other countries' media on each other; the impact of the Internet, inexpensive global phoning, CNN, al Jazeera, and other newer technologies and networks on the stuff of international relations: diplomacy, military operations, trade negotiations.

SMPA 6220. Strategic Practicum. 3 Credits.

Design of strategy for an information and influence campaign. Research on issues and actors, identification of critical decision-making points and key constituencies, development of communication strategies more likely to achieve stated objectives of a campaign. Prerequisite: SMPA 6204. For students doing a strategic communication capstone project, this course replaces SMPA 6297.

SMPA 6230. Principles and Methods of Documentary Filmmaking. 6 Credits.

Analytical and practical exploration of the elements of documentary filmmaking. The genres of nonfiction filmmaking; fundamentals of film conceptualization, documentary screenwriting, story structure, and production theory; and basic practical elements of production. Permission of the instructor required prior to enrollment.

SMPA 6231. Documentary Filmmaking Practicum. 3 Credits.

Intensive practical experience in documentary film production. Students produce a 10 to 15-minute documentary film on a selected topic. Emphasis on major markers in film production: treatment and script writing, location shooting, Final Cut Pro editing, graphics, music, and final sound mix. Prerequisites: SMPA 6230 and permission of the instructor.

SMPA 6241. Research Design. 3 Credits.

Design, applications, and limitations of quantitative research as applied to the field of media and strategic communication. Framing of research questions, identification of variables and formulation of hypotheses, measurement, sampling, data gathering techniques, and preparation of research reports. Brief exposure to qualitative research.

SMPA 6242. Analytics and Data Analysis for Strategic Communication. 3 Credits.

Familiarity with major data analytic and analysis techniques used by strategic communication practitioners. Topics covered include basic statistical analysis, multivariate regression, experiments, focus groups, and survey research. Prerequisite: An undergraduate statistics course.

SMPA 6250. Topics in Media Processes and Institutions. 3 Credits.

Topics address such issues as the history of media content, institutions, and process; impact of changing communication technology on culture; history and development of mass-produced culture; and professional ideology and practice of journalism. May be repeated for credit provided the topic differs.

SMPA 6270. Special Topics in Media and Public Affairs. 3 Credits.

Topics vary by semester. Consult the Schedule of Classes for more details.

SMPA 6272. Media Bias, Power, and Democracy. 3 Credits.

Consideration of the available scholarly evidence in order to develop a more sophisticated empirical and theoretical understanding of what constitutes media bias. How do we recognize and measure bias? Are there patterns in decisions about news coverage that indicate bias? Which political parties and economic interests benefit from patterns of news coverage?.

SMPA 6274. Media and War. 3 Credits.

Historic and contemporary examination of the media's role in wartime. Topics include covering war, the role of the media in generating support for foreign intervention, propaganda, effects of war coverage on public opinion, media and genocide, and public diplomacy. Ethical, philosophical and political implications of the media's role.

SMPA 6275. Public Diplomacy. 3 Credits.

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 6295. Internship. 3 Credits.

Students identify a suitable employer for an internship relevant to program themes and goals. Permission of the director of graduate studies required prior to enrollment.

SMPA 6296. Directed Readings and Research. 3 Credits.

Independent research with SMPA faculty member. Must be approved in advance by supervising professor and director of graduate studies.

SMPA 6297. Capstone Project. 3 Credits.**SMPA 6298. Capstone Project. 3 Credits.****SMPA 6998. Thesis Research. 3 Credits.****SMPA 6999. Thesis Research. 3 Credits.**

BACHELOR OF ARTS WITH A MAJOR IN JOURNALISM AND MASS COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required courses (34 credits):		
PSC 1002	Introduction to American Politics and Government	
or PSC 1002W	Introduction to American Politics and Government	
STAT 1053	Introduction to Statistics in Social Science	
SMPA 2101	Journalism: Theory & Practice	
SMPA 2110W	Introduction to News Writing and Reporting (minimum grade of B required)	
SMPA 2111W	Advanced News Reporting	
SMPA 2112	Digital Media I: Introduction to Video Production	
SMPA 2113	Digital Media II: Introduction to Web Production and Social Media	
SMPA 2151	Research Methods	
SMPA 2152	Data Analysis for Journalism and Political Communication	
SMPA 2173	Media Law	
SMPA 3150	Journalism Ethics	
One required advanced writing/reporting course (3 credits) from the following:		
SMPA 3230	Reporting in the Digital Age	
SMPA 3235W	Broadcast News Writing	
SMPA 3242	Investigative Reporting	
Five additional courses (15 to 18 credits) from the advanced writing/reporting courses listed above or from the following:		
SMPA 2120	Public Opinion	
SMPA 2177	Media History	
SMPA 3193	Selected Topics in Journalism and Mass Communication Skills	
SMPA 3195	Selected Topics in Journalism and Mass Communication	
SMPA 3196	Independent Study	
SMPA 3197	Internship (Only one, three-credit internship can count toward the major)	

SMPA 3233	Photojournalism
SMPA 3234	Editing and Design for Print and Web
SMPA 3236W	Broadcast News Reporting
SMPA 3240W	Washington Reporting
SMPA 3241W	Campaign Reporting
SMPA 3243W	Feature Writing
SMPA 3244W	Narrative Journalism
SMPA 3245W	Editorial and Persuasive Writing
SMPA 3246	Specialized Reporting
SMPA 3247	Documentary Production
SMPA 3333	Media Organizations and Audiences
SMPA 3428	Media, Politics, and Government
SMPA 3450	Social Media
SMPA 3460	Race, Media, and Politics
SMPA 3463	Media Bias
SMPA 3469	International Communication
SMPA 3470	Comparative Media Systems
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SMPA 3475	Media Management
SMPA 3476	Media, Technology, and Culture
SMPA 3477	Information Technology and Politics
SMPA 3479	Documentary
SMPA 3480	The Future of Journalism
SMPA 4198	Special Honors Research Seminar

One capstone course (4 credits) from the following:

SMPA 4180	Online Journalism Workshop
SMPA 4181	Television News Workshop
SMPA 4182	Specialized Journalism Workshop

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education

curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may

count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must have attained a 3.7 GPA in all courses completed at GW and in all courses required for the major. Students intending to apply for Special Honors must consult their advisor at the start of the senior year. Application must be made by the mid-point of the student's final semester (October 15 or March 15), and must include a letter of application and a portfolio of published or broadcast work. The journalism and mass communication faculty evaluates the work on the basis of professional standards as outlined by the department. Students interested in pursuing Special Honors through writing a research thesis should consult their advisor.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required courses (30 credits):		
PSC 1001 or PSC 1003	Introduction to Comparative Politics Introduction to International Politics	
PSC 1002	Introduction to American Politics and Government	
STAT 1053	Introduction to Statistics in Social Science	
SMPA 2102	Introduction to Political Communication (which requires a minimum grade of C to remain in the major)	
SMPA 2110W	Introduction to News Writing and Reporting	
SMPA 2112	Digital Media I: Introduction to Video Production	
SMPA 2113	Digital Media II: Introduction to Web Production and Social Media	

SMPA 2151	Research Methods
SMPA 2152	Data Analysis for Journalism and Political Communication
SMPA 4199	Senior Seminar
Electives	
Seven courses (21 credits) from the following:	
SMPA 2173	Media Law
SMPA 3194	Selected Topics in Political Communication (May be repeated once for credit)
SMPA 3196	Independent Study
SMPA 3197	Internship (only one, 3-credit internship may be taken for credit toward the major)
SMPA 3245W	Editorial and Persuasive Writing
SMPA 3240W	Washington Reporting
SMPA 3241W	Campaign Reporting
SMPA 3333	Media Organizations and Audiences
SMPA 3350	Public Diplomacy
SMPA 3352	Principles of Public Relations
SMPA 3353	Strategic Political Communication
SMPA 3354	Political Campaign Communication
SMPA 3355	Campaign Advertising
SMPA 3358	Strategic Practicum
SMPA 3428	Media, Politics, and Government
SMPA 3450	Social Media
SMPA 3459	Language and Politics
SMPA 3460	Race, Media, and Politics
SMPA 3461	Campaigns and Elections
SMPA 3463	Media Bias
SMPA 3469	International Communication
SMPA 3470	Comparative Media Systems
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy

SMPA 3476	Media, Technology, and Culture
SMPA 3477	Information Technology and Politics
SMPA 4198	Special Honors Research Seminar

Two political science (PSC) courses (6 credits) numbered 2000 or above

Students must achieve specified grades in some courses. Consult the School of Media and Public Affairs (<http://smpa.gwu.edu/>) for particular grade and course sequencing requirements.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.

- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students with a 3.7 GPA in all courses completed at GW and in all courses required for the major may declare for Special Honors in political communication at the beginning of the senior year. Students take SMPA 4199 Senior Seminar in the first semester of the senior year and SMPA 4198 Special Honors Research Seminar in the second semester. To achieve Special Honors, the student must maintain the required GPA and present a successful oral defense of a research paper prepared for the Honors Research Seminar before a committee that includes the seminar instructor and two other faculty members nominated by the student and approved by the seminar instructor.

DUAL BACHELOR OF ARTS AND MASTER OF ARTS AND BACHELOR OF ARTS AND MASTER OF PROFESSIONAL STUDIES

REQUIREMENTS

The dual bachelor of arts and master of arts (BA/MA) and bachelor of arts and master of professional studies (BA/MPS) degree programs allow students to double-count a specified number of credits of graduate course work toward both the BA and the MA degrees. Interested students should consult their advisor.

- **Dual Bachelor of Arts in an SMPA major and Master of Arts in the field of media and strategic communication**

Visit the program website (<http://smpa.gwu.edu/combined-degree-programs/>) for additional information.

- **Dual Bachelor of Arts in an SMPA major and Master of Professional Studies in the field of political management**

Visit the program website (<http://smpa.gwu.edu/combined-degree-programs/>) for additional information.

DUAL BACHELOR OF ARTS IN AN SMPA MAJOR AND MASTER OF ARTS OR MASTER OF PROFESSIONAL STUDIES DEGREE PROGRAMS

The School of Media and Public Affairs, in cooperation with the Graduate School of Political Management, offer two options for a dual bachelor's/master's degree:

- B (p. 336)achelor of Arts with an SMPA major (<https://smpa.gwu.edu/journalism-and-mass-communication/>) and Master of Arts in the field of media and strategic communication (p. 346)
- Bachelor of Arts with an SMPA major (p. 336) and Master of Professional Studies in the field of political management (p. 1167)

The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://smpa.gwu.edu/combined-degree-program-admissions/>) for additional information.

MASTER OF ARTS IN THE FIELD OF MEDIA AND STRATEGIC COMMUNICATION

Master of Arts candidates in School of Media and Public Affairs study with leading political communication scholars and award-winning journalists. They explore how the changing media landscape affects politics, journalism and the fundamental ways in which governments and other organizations interact with the public. Master's Degree The Master of Arts in Media and Strategic Communication is designed for students interested in media and strategic political communication.

Students gain a full understanding of how political actors use communication, as well as the history and theory behind

how various forms of communication affect the operation of both governmental and non-governmental organizations. The focus on strategic political communication provides the necessary theoretical and practical knowledge as well as high-level networking opportunities to excel in a wide range of professional fields, including public opinion and policy analysis, advocacy communication, media, academia, and political public relations. The program consists of 12 courses (36 credit hours) that combine core theoretical and media skills courses with opportunities to develop an area of specialization chosen by the student. It can be completed either full-time or part-time.

Students take core courses (12 credit hours) in strategic communication, media theory, research methods and media skills. Students work with faculty advisors to tailor 18 elective credit hours toward their future goals. The remaining six credit hours are completed through a thesis or capstone project showcasing their expertise. The School of Media and Public Affairs also offers a MA in Global Communication in conjunction with the Elliott School of International Affairs.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits, including, 18 credits in required courses, 12 credits in elective courses, and 6 credits in capstone courses.

Code	Title	Credits
Required ¹		
SMPA 6202	Media Effects, Public Opinion, and Persuasion	
SMPA 6204	Strategic Political Communication	
SMPA 6208	Politics and Public Relations Fundamentals	
SMPA 6241	Research Design	
SMPA 6242	Analytics and Data Analysis for Strategic Communication	
SMPA 6201	Strategic Communications Skills (taken twice for a total of three credits) ²	
Electives ³		
12 credits of elective courses selected with the approval of the advisor.		
Capstone ⁴		
6 credits in one of three options selected with the approval of the advisor.		

Research thesis	
SMPA 6998 & SMPA 6999	Thesis Research and Thesis Research
Media project	
SMPA 6297 & SMPA 6298	Capstone Project and Capstone Project
Strategic communication project	
SMPA 6220 & SMPA 6298	Strategic Practicum and Capstone Project

¹On the basis of academic or professional preparation, students may petition to waive any required course with substitution of another approved course.

²Taken on different topics.

³Students may take an additional 3 credits of SMPA 6201 Strategic Communications Skills as electives. Students who select the strategic communication capstone option may not count SMPA 6220 Strategic Practicum as an elective.

With permission of the advisor, a limited number of upper-division undergraduate courses may be taken for graduate credit; additional coursework is required.

⁴Students should consult with their advisor regarding the capstone in the second semester of the program.

Visit the program website (<https://smpa.gwu.edu/media-strategic-communication/>) for additional information.

MINOR IN JOURNALISM AND MASS COMMUNICATION REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
SMPA 1050	Media in a Free Society	
SMPA 2110W	Introduction to News Writing and Reporting	
9 credits from the following:		
SMPA 2111W	Advanced News Reporting	
SMPA 3230	Reporting in the Digital Age	
SMPA 3232	Online Journalism Workshop	

SMPA 3233	Photojournalism
SMPA 3234	Editing and Design for Print and Web
SMPA 3235	
SMPA 3235W	Broadcast News Writing
SMPA 3236W	Broadcast News Reporting
SMPA 3237W	
SMPA 3238	
SMPA 3239	Television News Practicum
SMPA 3240W	Washington Reporting
SMPA 3241W	Campaign Reporting
SMPA 3242	Investigative Reporting
SMPA 3243W	Feature Writing
SMPA 3244W	Narrative Journalism
SMPA 3245W	Editorial and Persuasive Writing
SMPA 3246	Specialized Reporting
SMPA 3246W	Specialized Reporting
SMPA 3247	Documentary Production
SMPA 3193	Selected Topics in Journalism and Mass Communication Skills
SMPA 3197	Internship (Students are limited to 3 credits of SMPA 3197 toward the minor)
3 credits from the following:	
SMPA 2173	Media Law
SMPA 2177	Media History
SMPA 3428	Media, Politics, and Government
SMPA 3450	Social Media
SMPA 3469	International Communication
SMPA 3470	Comparative Media Systems
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SMPA 3474	
SMPA 3475	Media Management
SMPA 3476	Media, Technology, and Culture

SMPA 3479	Documentary
SMPA 3480	The Future of Journalism
SMPA 3195	Selected Topics in Journalism and Mass Communication

MUSEUM STUDIES

The Corcoran School of the Arts and Design in the Columbian College of Arts and Sciences offers an interdepartmental program leading to the degree of master of arts in the field of museum studies. Courses in museum studies are supplemented by additional courses offered by departments such as American Studies, Anthropology, History, Educational Leadership, Fine Arts and Art History, Interior Architecture and Design, and Theatre and Dance.

The program is designed for those who seek a deepening of their primary academic interest along with training in the broad range of talents required in the successful operation of museums. The goal of the program is to produce graduates who are prepared to assume museum positions that require both scholarship and functional skills.

In addition to the master's degree, the program offers graduate certificates (<http://bulletin.gwu.edu/arts-sciences/museum-studies/#certificatetext>) in museum studies and museum collections management.

Students whose career interests are primarily in museum education should refer to the master of arts in teaching in the field of museum education (p. 656) program in the Graduate School of Education and Human Development.

Visit the Museum Studies program website (<https://corcoran.gwu.edu/museum-studies/>) for additional information.

GRADUATE

Master's program

- Master of Arts in the field of museum studies (p. 351)

Combined program

- Dual Master of Arts in the field of museum studies and Graduate Certificate in Jewish cultural arts (p. 204)

CERTIFICATE

Certificate programs

- Graduate certificate in museum studies
- Graduate certificate in museum collections management and care (p. 350)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CMST 6101. Museum Management. 3 Credits.

Overall operation of the museum; legal status of the museum and its obligations to the public, governance, staffing, and policymaking as a nonprofit organization. Theory applied to practical situations. Restricted to graduate students. Same As: MSTD 6101.

CMST 6102. Museum Financial Management. 3 Credits.

Financial management of museums, including how the roles and responsibilities of a variety of museum professionals involve financial management, revenue generation, and budgeting in order to assure a museum's daily operation, growth and sustainability. Restricted to graduate students.

CMST 6103. Leading Change. 3 Credits.

Leadership challenges and styles as they relate to organizational change efforts; museums undergoing change; best practices in leadership at all levels of the museum. Restricted to graduate students.

CMST 6104. Managing People and Projects. 3 Credits.

Organizational development and modern management concepts as applied to museums. Managing people in the organization; the importance of project management systems to museum administration. Restricted to graduate students.

CMST 6105. Museum Fundraising. 3 Credits.

Introductory topics in museum fundraising, including sources of funds, best practices and approaches, annual funds and capital campaigns, and the internal management of the fundraising effort. Restricted to graduate students.

CMST 6106. Museum Marketing. 3 Credits.

Opportunities and responsibilities within museum marketing. Development of a marketing plan; situational analysis and market research; segmentation and targeting; positioning and intent; identification of business, strategies and key performance metrics. Restricted to graduate students.

CMST 6107. Museum Ethics and Values. 3 Credits.

Ethical questions museums face in practical, political, and institutional contexts, including governance and funding, collecting and preservation, exhibiting culture, and education and public programs. Restricted to graduate students.

CMST 6201. Introduction to Museum Collections. 3 Credits.

Issues and practices in creating, controlling, protecting, and providing access to collections. Fundamentals of planning, policies, records, accession and the physical protection of objects; legal and ethical issues related to registrarial work and cultural heritage. Restricted to graduate students.

CMST 6202. Collections Management: Practical Applications. 3 Credits.

Development and implementation of policies and procedures relevant to management of museum collections. Practical experience with acquisition, documentation, loans, preservation, exhibition, storage, packing, transportation and disposal. Restricted to graduate students. Prerequisite: CMST 6201.

CMST 6203. Preventive Conservation Concepts. 3 Credits.

Histories of preventive conservation, ethics, team approaches to conservation. Basics of materials testing, interactions of materials, condition reports, museum storage and exhibition materials, and risk assessment. Restricted to graduate students. (Same as ANTH 6203).

CMST 6204. Preventive Conservation Techniques. 3 Credits.

Continuation of CMST 6203. Practical exercises and ethical issues; evaluation and monitoring of collections; development and implementation of policies and procedures to facilitate collections care. Prerequisites: One of the following: ANTH 6203, CAH 6286, or CMST 6203. Credit cannot be earned for this course and AH 6287, ANTH 6204.

CMST 6205. Archival Practice. 3 Credits.

Introduction for museum professionals to the core ideas and practices of archivists and archival institutions. Restricted to graduate students.

CMST 6206. Digitization and Digital Asset Management. 3 Credits.

Management of digital assets, projects, or programs involving digitization and access for museum professionals. Current methods in creation and dissemination of digital surrogates, associated metadata, and digital descriptive records of museum collections. Restricted to graduate students.

CMST 6301. Museum Exhibition Curatorial Research and Planning. 3 Credits.

The role of the curator in contemporary museums with an emphasis on curatorial work on exhibitions. Includes ethics, collecting, documentation, communication, scholarly research, and public presentation. Restricted to graduate students. Credit cannot be earned for this course and MSTD 6301.

CMST 6302. Museum Exhibition Design. 3 Credits.

Language, materials, and processes for developing and designing museum exhibitions.

CMST 6304. Exhibition Development and Scriptwriting. 3 Credits.

Exhibition development from a content perspective. How exhibitions incorporate storytelling, the role of the audience including community stakeholders, and the collaborative work of exhibitions teams. Restricted to graduate students. Prerequisites: CMST 6301 or permission of the Director for Graduate Studies.

CMST 6305. Visitor Perspectives: Museum Evaluation. 3 Credits.

Theory and practice of museum evaluation with emphasis on how evaluation informs stages of exhibition development, including concept generation, design, interpretation, and installation. Students conduct an evaluation study and present evaluation results to museum staff. Restricted to graduate students. Same As: MSTD 6305. Credit cannot be earned for this course and EDUC 6706.

CMST 6306. Race, Gender, Sexuality, and the Museum. 3 Credits.

Exploration of the role that museums play in the construction, reification, and representation of ideas about race and gender. Restricted to graduate students.

CMST 6307. Interpreting Historic Sites and House Museums. 3 Credits.

Interpretation of historic sites and house museums, the most common type of museum in the United States, including historical significance, visitor needs and interests, and online and on-site interpretive methods. Restricted to graduate students.

CMST 6403. Museums and Technology. 3 Credits.

Critical analysis of the historical and contemporary relationships between museums and digital technologies. How human and institutional cultures shape and are shaped by their technologies and how such ideas inform museum practices. (Same as EDUC 6710).

CMST 6404. Museums and Social Media. 3 Credits.

How museums engage users through the internet. Online platforms used to evaluate the complexities of social media including strategies, tactics, and benchmarks for measuring online engagement and associated challenges and risks. Restricted to graduate students.

CMST 6501. Museum Studies Internship. 1-3 Credits.

Individual work experience in museums of the Washington area or elsewhere. Students are supervised by staff members of the cooperating museum in the areas of museum management, object care and conservation, or exhibitions. Restricted to students in the master's and certificate programs in museum studies.

CMST 6502. Directed Research. 3 Credits.

Individual research on special topics in the museum field under supervision by a professor or museum professional. Topics must be approved by the director of the Museum Studies Program. May be repeated for credit. Restricted to graduate students.

CMST 6601. Special Topics in Museum Studies. 3 Credits.
Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CMST 6701. Museum History and Theory. 3 Credits.
Origins of the modern museum and the history of museums. Theorists whose ideas have been accessed to inform our understanding of museums as places of meaning making, power and empowerment, and cultural authority. Restricted to graduate students.

CMST 6703. Museums and Community Engagement. 3 Credits.
How museums engage with local communities as primary audiences for programming and support. Students perform community-engaged work with a local museum or historic site. Restricted to graduate students.

CMST 6704. Museums and Cultural Property. 3 Credits.
Legal and ethical principles of ownership and restitution of stolen art and other cultural property wrongfully removed from its owners or countries of origin. Current museum policies and procedures for acquisition, exhibition, retention, and restitution of their collections analyzed using claims brought against museums. Restricted to graduate students. Prerequisite: CMST 6201.

GRADUATE CERTIFICATE IN MUSEUM COLLECTIONS MANAGEMENT AND CARE

The graduate certificate in museum collections management and care features four graduate-level courses designed for those working or volunteering in museums with collections management responsibilities and either lacking prior formal museum studies training or desiring a refresher. Students complete the four 3-credit courses totally online (1 course per semester). Students in the program work at a variety of types and sizes of museums in locations across the country and around the world.

Visit the Museum Studies Program (<http://museumstudies.columbian.gwu.edu/>) website for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
MSTD 6201		
MSTD 6202		

MSTD 6203	Preventive Conservation Concepts
MSTD 6204	Preventive Conservation Techniques

GRADUATE CERTIFICATE IN MUSEUM STUDIES

The graduate certificate in museum studies is intended primarily for international museum professionals who wish to study museum administration, collections management, or exhibition development in the United States. The certificate program also is available to U.S. students who hold at least a master's degree in an appropriate subject.

Visit the program website (<https://corcoran.gwu.edu/graduate-certificate-museum-studies/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in elective courses and two 3-credit internships.

Code	Title	Credits
Required		
12 credits from the following		
MSTD 6101	Museum Management	
MSTD 6102		
MSTD 6103		
MSTD 6104		
MSTD 6201		
MSTD 6202		
MSTD 6203	Preventive Conservation Concepts	
MSTD 6204	Preventive Conservation Techniques	
MSTD 6301	Museum Exhibitions: Curatorial Research	
MSTD 6302		
MSTD 6304		
MSTD 6305	Visitor Perspectives: Museum Evaluation in Exhibitions	
MSTD 6701		
MSTD 6710		

Internship requirement:

MSTD 6501 (taken for 6 credits)

MASTER OF ARTS IN THE FIELD OF MUSEUM STUDIES

Part of the arts and humanities program in the Corcoran School of the Arts and Design of the Columbian College of Arts and Sciences, Museum Studies combines traditional academic training and the practical experience necessary to begin a successful museum career. The program ranks among the top museum training programs in the United States. Students come from a variety of disciplines, from anthropology to history, art history, and the natural sciences. Students complete advanced study and practical work experience through internship affiliations with more than 60 museums and cultural organizations, including the Smithsonian Institution.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The following requirements must be fulfilled: 36 credits, including 6 credits in required courses and a 3-credit internship, and 27 credits in elective courses; fulfillment of a graduate writing requirement; delivery of an oral presentation based on the internship; and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
CMST 6107	Museum Ethics and Values	
CMST 6501	Museum Studies Internship (Taken for 3 credits. Requires 200 hours per semester.)	
Field		
15 credits in courses focused on collections management, museum management, exhibitions and visitor experience, or public engagement.		
Electives		
15 credits in courses which may be drawn from within Museum Studies (CMST), including a second internship, or from outside the program. Up to 12 credits in non-CMST courses are permitted.		
Additional requirements		
Fulfillment of the graduate writing requirement.		

Delivery of an oral presentation based on the internship.

Successful completion of a master's comprehensive examination.

MUSIC

The music program of the Corcoran School of Arts & Design within the Columbian College of Arts and Sciences offers a broad base for understanding music as an art form and as a social, economic, and political practice. All students, regardless of their major, may perform in vocal, instrumental jazz, and chamber music groups; in choruses, orchestras, and bands; and in opera and musical theater productions.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in music (p. 355)

Minor

- Minor in music (p. 356)

FACULTY

Associate Professors K. Ahlquist, D. Boyce,

Assistant Professors R. Baker (*Chair*), E. Montague

Adjunct Professors C. Lornell, M. Scarlett (*Voice*)

Adjunct Instructor A.B. Clark (*Choral*), A.S. Wood (*Orchestra*)

Professorial Lecturers J. Albertson (*Guitar*), L. Barnett (*Cello*), R. Birch (*Trumpet*), M. Duhagon (*Classical Guitar*), M. Findley (*Violin*), P. Fraize (*Jazz Performance/Saxophone*), J.D. Levy (*Jazz*), P. O'Donnell (*Piano*), M. Orlando (*Piano*), J. Ozment (*Jazz Piano*), M. Peris (*Piano*)

Lecturers J. Connell (*Percussion*), G. Corella (*Tuba*), A. Crockett (*Voice*), E. Dirksen (*Bassoon*), S.M. Fearing (*French Horn*), L. Ferguson (*Clarinet*), E. Field (*Violin*), E. Guenther (*Pipe Organ*), D. Jones (*Clarinet*), C. Libelo (*Oboe*), A. Lucini (*Latin Percussion*), A. Reiff (*Voice*), B.R. Seidman (*Harp*), S. Stang (*Flute*), U. Wassertzug (*Viola*), S. Wellman (*Voice*), T. Wilson (*Jazz Trumpet*)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Performance Study

Performance study courses are offered both fall and spring, and may be repeated for credit. Music majors and minors, Presidential Arts Scholarship (<http://departments.columbian.gwu.edu/music/scholarships/>) students, and other students with skills or potential appropriate to the department's select ensembles are eligible for private lessons. Eligibility and placement for students new to private performance study are determined at a placement fair held at the beginning of each semester. For courses numbered in the 1500s, students may not register in the same semester for both the 1- and 2-credit course in the same instrument or in voice. Some performance study courses include individual lessons and require a supplementary fee. Supplementary fees for private performance courses are nonrefundable after the first two weeks of the fall and spring semesters; consult the Music Department (<http://departments.columbian.gwu.edu/music/>) for details. The supplementary fee is waived during the fall and spring semesters for full-time music majors and minors and for music Presidential Scholars in the Arts (<http://departments.columbian.gwu.edu/music/scholarships/>).

Required practice: a minimum of three hours a week for 1-credit courses and six hours a week for 2-credit courses.

MUS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

MUS 1061. Instrumental Ensemble. 1 Credit.

Chamber ensemble groups are approved by audition. Section numbers are .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19 Latin band, .20 blues band.

MUS 1071. Jazz Band. 1 Credit.

Preparation and performance of classic and contemporary "big band" literature. Prerequisite: audition before director.

MUS 1081. Orchestra. 1 Credit.

Preparation and performance of orchestral literature. Prerequisite: audition before director.

MUS 1083. University Band. 1 Credit.

Consisting of two ensembles: The University Symphonic Band and GW Colonial Brass. See schedule of classes for section information. Audition before director required.

MUS 1091. University Singers. 1 Credit.

Preparation and performance of choral literature. Prerequisite: audition before director. Section .10 is University Singers; Section .11 is Chamber Choir.

MUS 1093. University Singers/Chamber Choir. 1 Credit.

Preparation and performance of choral literature. Section .10 is University Singers; Section .11 is Chamber Choir. Prerequisites: audition before director.

MUS 1095. Vocal Theater Workshop. 1 Credit.

Development of body awareness for the stage, acting improvisations, and character development. Scenes chosen from the opera, operetta, and musical theater repertoire. Musical coaching, use of makeup, and audition preparation.

MUS 1099. Variable Topics. 1-36 Credits.

MUS 1101. Elements of Music Theory. 3 Credits.

Elements necessary for the study of music, including practical musicianship and musical notations; develops skills in music reading, writing, and aural acuity. Concurrent registration in a music reading lab is required.

MUS 1102. Comprehensive Musicianship I. 3 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 1101.

MUS 1103. Music in the Western World. 3 Credits.

Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors.

MUS 1104. Topics in Music. 3 Credits.

A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, DC.

MUS 1105. Introduction to Musical Thought and Practice. 3 Credits.

Introduction to concepts, methods, and practices that guide the study and performance of music. Old and new paradigms of musical thought are subject to discussion and critical investigation.

MUS 1106. Introduction to Musical Performance and Experience. 3 Credits.

Through discussion, writing, and performance, students engage with issues such as the putative transcendent character of music, the false divisions between interpretation, improvisation, and composition, and the impact of modernity on expressive culture. Placing their own processes of musical decision making within these conceptual frames allows students to interrogate and develop their performative and social selves. Restricted to Register for this course in the Music department.

MUS 1107. Music of the World. 3 Credits.

Introduction to music in culture through comparative study of music from a variety of cultures worldwide.

MUS 1108. History of Jazz. 3 Credits.

Introduction to the styles, composers, and performers of jazz music from its origins to the present.

MUS 1151. Conducting. 3 Credits.

Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: MUS 2101.

MUS 1511. Piano. 1 Credit.
MUS 1512. Piano. 2 Credits.
MUS 1513. Voice. 1 Credit.
MUS 1514. Voice. 2 Credits.
MUS 1515. Organ. 1 Credit.
MUS 1516. Organ. 2 Credits.
MUS 1517. Classical Guitar. 1 Credit.
MUS 1518. Classical Guitar. 2 Credits.
MUS 1519. Violin. 1 Credit.
MUS 1520. Violin. 2 Credits.
MUS 1521. Viola. 1 Credit.
MUS 1522. Viola. 2 Credits.
MUS 1523. Cello. 1 Credit.
MUS 1524. Cello. 2 Credits.
MUS 1525. Bass. 1 Credit.
MUS 1526. Bass. 2 Credits.
MUS 1527. Flute. 1 Credit.
MUS 1528. Flute. 2 Credits.
MUS 1529. Recorder. 1 Credit.
MUS 1530. Recorder. 2 Credits.
MUS 1531. Oboe. 1 Credit.
MUS 1532. Oboe. 2 Credits.
MUS 1533. Clarinet. 1 Credit.
MUS 1534. Clarinet. 2 Credits.
MUS 1535. Saxophone. 1 Credit.
MUS 1536. Saxophone. 2 Credits.
MUS 1537. Bassoon. 1 Credit.
MUS 1538. Bassoon. 2 Credits.
MUS 1539. French Horn. 1 Credit.
MUS 1540. French Horn. 2 Credits.
MUS 1541. Trumpet. 1 Credit.
MUS 1542. Trumpet. 2 Credits.
MUS 1543. Trombone. 1 Credit.
MUS 1544. Trombone. 2 Credits.
MUS 1545. Tuba. 1 Credit.
MUS 1546. Tuba. 2 Credits.
MUS 1547. Harp. 1 Credit.
MUS 1548. Harp. 2 Credits.
MUS 1549. Percussion. 1 Credit.
MUS 1550. Percussion. 2 Credits.
MUS 1555. Lute. 1 Credit.
MUS 1556. Lute. 2 Credits.
MUS 1557. Harpsichord. 1 Credit.

MUS 1572. Jazz Performance Techniques. 2 Credits.

MUS 2012. Piano. 2 Credits.

Prerequisite: Open by examination.

MUS 2014. Voice. 2 Credits.

Prerequisite: Open by examination.

MUS 2016. Organ. 2 Credits.

Prerequisite: Open by examination.

MUS 2018. Classical Guitar. 2 Credits.

Prerequisite: Open by examination.

MUS 2020. Violin. 2 Credits.

Prerequisite: Open by examination.

MUS 2022. Viola. 2 Credits.

Prerequisite: Open by examination.

MUS 2024. Cello. 2 Credits.

Prerequisite: Open by examination.

MUS 2026. Bass. 2 Credits.

Prerequisite: Open by examination.

MUS 2028. Flute. 2 Credits.

Prerequisite: Open by examination.

MUS 2030. Recorder. 2 Credits.

Prerequisite: Open by examination.

MUS 2032. Oboe. 2 Credits.

Prerequisite: Open by examination.

MUS 2034. Clarinet. 2 Credits.

Prerequisite: Open by examination.

MUS 2036. Saxophone. 2 Credits.

Prerequisite: Open by examination.

MUS 2038. Bassoon. 2 Credits.

Prerequisite: Open by examination.

MUS 2040. French Horn. 2 Credits.

Prerequisite: Open by examination.

MUS 2042. Trumpet. 2 Credits.

Prerequisite: Open by examination.

MUS 2044. Trombone. 2 Credits.

Prerequisite: Open by examination.

MUS 2046. Tuba. 2 Credits.

Prerequisite: Open by examination.

MUS 2048. Harp. 2 Credits.

Prerequisite: Open by examination.

MUS 2050. Percussion. 2 Credits.

Prerequisite: Open by examination.

MUS 2058. Harpsichord. 2 Credits.

Prerequisite: Open by examination.

MUS 2071. Jazz Performance Techniques. 1-3 Credits.

MUS 2072. Jazz Performance Techniques. 2 Credits.

Prerequisite: Open by examination.

MUS 2101. Harmony. 3 Credits.

Study of tonal harmonic practice from Baroque, Classical, Romantic, and twentieth-century repertoires. Concurrent registration in the weekly keyboard lab is required. Prerequisite: MUS 1102.

MUS 2102. Comprehensive Musicianship II. 3 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 2101.

MUS 2105. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Prerequisites: MUS 1101 or ANTH 1002 or ANTH 1004; or permission of the instructor. Same As: ANTH 2505.

MUS 2105W. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: MUS 1101 or ANTH 1002 or ANTH 1004; or permission of the instructor. Same As: ANTH 2505.

MUS 2106. Music History III: Twentieth-Century Art Traditions. 3 Credits.

Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society. Prerequisite: MUS 1101.

MUS 2122. Music in the U.S.. 3 Credits.

History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisites: MUS 1101 or permission of the instructor.

MUS 2122W. Music in the U.S.. 3 Credits.

History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: MUS 1101 or permission of the instructor. Same As: MUS 2122.

MUS 2123. Musical Cultures of Black Americans. 3 Credits.

Musical genres and styles developed by African Americans since Reconstruction in their historical and cultural contexts. Emphasis on black musical contributions to the cultural life of Washington, DC.

MUS 2134. Composition. 3 Credits.

Introduction to twenty-first-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit. Prerequisite: MUS 2101.

MUS 2140. Pedagogy. 3 Credits.

Principles, materials, and methods of teaching in selected areas. Permission of the instructor required prior to enrollment.

MUS 2173. Comprehensive Musicianship for Jazz. 2 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance. Prerequisite: MUS 1102.

MUS 2174. Introduction to Jazz Harmony. 3 Credits.

Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context. Prerequisite: MUS 1102.

MUS 2318. Orchestral Instrument. 2 Credits.

Prerequisite: Open by examination.

MUS 2661. Electronic and Computer Music I. 3 Credits.

Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee.

MUS 2662. Electronic and Computer Music II. 3 Credits.

Continuation of MUS 2661. Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee. Prerequisite: MUS 2661.

MUS 3099. Variable Topics. 1-12 Credits.**MUS 3126. Music History I: Antiquity through Early Baroque. 3 Credits.**

The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: MUS 1102 and sophomore standing.

MUS 3127. Music History II: The Tonal Era. 3 Credits.

Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3127W. Music History II: Tonal Era. 3 Credits.

Styles, structures, social foundations and aesthetic change in European music of the late seventeenth through the late nineteenth centuries. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: MUS 1102.

MUS 3139. Form and Analysis. 3 Credits.

Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101.

MUS 3139W. Form and Analysis. 3 Credits.

Analysis of musical forms in representative musical literature. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: MUS 2101.

MUS 3174. Topics in Music Theory and Composition. 3 Credits.

A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of fourteenth-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

MUS 3175. Topics in Music History and Literature. 3 Credits.

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, DC. Prerequisites depend on the topic; consult the department. Credit cannot be earned for this course and TRDA 2185.

MUS 3175W. Topics in Music History and Literature. 3 Credits.

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, DC. Prerequisites depend on the topic; consult the department. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and TRDA 2185.

MUS 4085. Senior Capstone Project. 2-4 Credits.

Research, composition, or performance project. Students must consult with a faculty mentor and present a written proposal prior to enrollment and meet regularly with their mentor throughout the semester. Restricted to senior music majors. Recommended background: prior completion of MUS 4198.

MUS 4184. Advanced Composition. 3 Credits.

Private instruction in composition in tutorial format. Prerequisite: MUS 2134.

MUS 4198. Senior Seminar. 3 Credits.

Methodologies of musical research, including studies in performance, composition, history, bibliography, and cultural theory. Recommended for students completing senior capstone projects. Restricted to music majors.

MUS 4199. Independent Research. 1-4 Credits.

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

MUS 4199W. Independent Research. 1-4 Credits.

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MUS 5099. Variable Topics. 1-99 Credits.

BACHELOR OF ARTS WITH A MAJOR IN MUSIC

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required courses in the major		
MUS 1102	Comprehensive Musicianship I	
MUS 2101	Harmony	
MUS 2106	Music History III: Twentieth-Century Art Traditions	
One of the following		
MUS 3126	Music History I: Antiquity through Early Baroque	
MUS 3127	Music History II: The Tonal Era	
Electives		
15 credits in courses in the following groupings: MUS 1100-1199, MUS 2100-2199, MUS 3100-3199, and MUS 4100-4199. These are to include (1) a maximum of 6 credits in courses in the MUS 1100-1199 grouping, and (2) a minimum of 3 credits in the 3100-3199 or 4100-4199 groupings.		
4 credits in courses selected from the following groupings: MUS 1000-1099 (ensembles), MUS 1500-1599, MUS 2000-2099, and MUS 2500-2599 (private study).		
6 credits in unrestricted electives selected from courses offered by the Music Department.		
Senior Experience		
MUS 4198	Senior Seminar	
MUS 4085	Senior Capstone Project	

All majors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the

liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW

courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in music, a student must maintain a 3.5 grade-point average in music courses and at least a 3.0 average overall. The student must complete the required senior independent project for at least 3 credits with a minimum grade of A-.

MINOR IN MUSIC REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
MUS 1102	Comprehensive Musicianship I	
Electives		
Two courses (5-6 credits) from among the MUS 1100, MUS 2100, and MUS 3100 groupings; only one course in the 1100 grouping may be counted toward this requirement.		
Additional electives selected from among all Music (MUS) courses, including academic, performance study, and ensemble courses.		

All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

ORGANIZATIONAL SCIENCES AND COMMUNICATION

The Department of Organizational Sciences and Communication provides a multidisciplinary home for faculty and undergraduate, master's, and doctoral students interested in the study, interpretation, and improvement of organizational and communication phenomena. The department seeks to increase understanding of communication and organizations at the individual, interpersonal, group, organizational, societal, and global levels, by incorporating a variety of epistemological and methodological approaches. The department comprises three programs:

Communication

The Communication program explores how people constitute and share meaning in an abstract world. Current curricular offerings probe communication events as media-bound occurrences, studying the verbal and nonverbal, oral or written,

live or mass media nature of communication phenomena. A major in communication, two minors (communication and organizational communication), and a master's degree in communication management are offered.

Organizational Sciences

Centered within a social systems framework, Organizational Sciences offers undergraduate and graduate programs that focus on the for-profit, nonprofit, government, military, service, and other sectors. The premise of the program's offerings is that success comes with a deep understanding of the theory and practice underlying individual and organizational effectiveness. Major, minor, and master's degree in organizational sciences are offered.

I/O Psychology (industrial and organizational psychology)

I/O Psychology offers a doctoral program in areas such as personnel selection, training and development, work motivation, leadership, and work teams. The program of study is designed in accordance with guidelines established by the Society for Industrial and Organizational Psychology.

In addition, the Department of Organizational Sciences and Communication, through the Columbian College of Arts and Sciences, offers an interdisciplinary program leading to the degree of master of arts in leadership education and development (LEAD) to a cohort of designated officers from the U.S. Naval Academy (USNA). The Department awards the degree in partnership with the Division of Leadership at USNA.

Visit the Department of Organizational Sciences and Communication website (<https://orgsciandcomm.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in communication (p. 357)
- Bachelor of Arts with a major in organizational sciences (p. 359)

Minors

- Minor in communication (p. 365)
- Minor in organizational communication (p. 366)
- Minor in organizational sciences (p. 366)

GRADUATE

Master's programs

- Master of Arts in the field of communication management (p. 363)
- Master of Arts in the field of leadership education and development (p. 364)

- Master of Arts in the field of organizational sciences (p. 364)

Doctoral program

- Doctor of Philosophy in the field of industrial/organizational psychology (p. 361)

FACULTY

Professors M. Liu (Chair), L. Offermann, C. Warren

Associate Professors D.P. Costanza, G. Debebe, K. Pariera

Assistant Professors J.C. Miller, N. Olsen, Y. Peng, J. Proulx

Visiting Professor M. Koplovsky

Adjunct Professors K. Ball, M. Lee, L. Lu, L. Peters, C. Wood

Professorial Lecturers Q. Ahmed, D. Barry, M. Brindle, M.A. DiMola, P. Frecknall, T. Hayes, E. Hoffman, J. MacDoniels

Lecturers T. Alexander, N. Chaaban, D. Jackson, C. Kennedy, B. McConnell, J. McDonald, B. Piatt, S. Tomasovic, J. Walker, A. Weiner, N. Wolfson

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Within the Department of Organizational Sciences and Communication, any course counted toward the major may not also be counted toward the minor. Students taking more than one minor in the department may not double-count electives.

- Communication (COMM) (p. 1468)
- Organizational Sciences (ORSC) (p. 1714)

BACHELOR OF ARTS WITH A MAJOR IN COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required (21 credits)		
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
COMM 1041	Interpersonal Communication	
COMM 2100	Communication Theory	
COMM 3110	Research Methods in Communication	
COMM 4150	Persuasion	
COMM 4199W	Senior Seminar	
Electives (18 credits)		
Six additional Communication (COMM) courses at the 2000 level or above.		
Courses in related areas (15 credits)		
15 credits in upper-division courses in one other department, program, or field of study, as approved by the major advisor. This requirement may be fulfilled by completion of a second major, a minor, or a field of study other than organizational communication.		

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.

- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

Students may graduate with Special Honors if they meet the following criteria:

1. Special Honors requirements stated under University Regulations;
2. Selection to Lambda Pi Eta, the National Communication Association Honor Society, which maintains a chapter in the GW Communication Program (i.e., open to majors who have completed a minimum of 24 hours in communication coursework, who hold a grade-point average of 3.3 in communication courses and a grade-point average of 3.0 overall, and who are recommended by a majority of the full-time communication faculty); and,
3. A minimum grade of A- on the thesis required in COMM 4199W Senior Seminar.

BACHELOR OF ARTS WITH A MAJOR IN ORGANIZATIONAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required courses (24 credits):		
COMM 3170	Organizational Communication	
ECON 1011	Principles of Economics I	
or ECON 1012	Principles of Economics II	
ORSC 1109	Introduction to Organizational Sciences *	
ORSC 2046	Global Organizations	
ORSC 2544	Industrial/Organizational Psychology	
ORSC 4161	Research Methods in Organizational Sciences	
ORSC 4197W	Senior Research Seminar	
STAT 1053	Introduction to Statistics in Social Science	
Five courses (15 credits) from the following:		
ORSC 2116	Leading Change	
ORSC 2123	Negotiation and Conflict Resolution	
ORSC 2143	Leadership and Performance	
ORSC 2560	Group Dynamics	
ORSC 3141	Strategy in Organizations	
ORSC 3159	Extreme Decisions	
ORSC 3165	Organizational Network Analysis	
ORSC 3190	Special Topics	
ORSC 4195	Independent Study	
Two courses (6 credits) both within the same department, from the following:		
AMST 2010	Early American Cultural History	

or HIST 2010	Early American Cultural History
AMST 2011	Modern American Cultural History
or HIST 2011	Modern American Cultural History
AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
or HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
AMST 2320	U.S. Media and Cultural History
or HIST 2320	U.S. Media and Cultural History
AMST 2490	Themes in U.S. Cultural History
or AMST 2490W	Themes in U.S. Cultural History
or HIST 2490	Themes in U.S. Cultural History
or HIST 2490W	Themes in U.S. Cultural History
AMST 2520	American Architecture I
or AH 2154	American Architecture I
AMST 2521	American Architecture II
or AH 2155	American Architecture II
AMST 2533	Material Culture in America
or ANTH 2533	Material Culture in America
AMST 3900	Critiquing Culture
AMST 3901	Examining America
ANTH 2008	Foundations of Anthropological Thought
or ANTH 2008W	Foundations of Anthropology
ANTH 3501	Anthropology of Development
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
ANTH 3531	Methods in Sociocultural Anthropology
ANTH 3601	Language, Culture, and Cognition

or LING 3601	Language, Culture, and Cognition
ANTH 3802	Human Cultural Beginnings
or ANTH 3802W	Human Cultural Beginnings
COMM 2120	Small Group Communication
COMM 2140	Nonverbal Behavior
COMM 3171	Professional Communication
COMM 3173	Communication in a Mediated World
COMM 3174	Intercultural Communication
COMM 3176	Issues and Image Management
ECON 2136	Environmental and Natural Resource Economics
ECON 2157	Urban and Regional Economics
ECON 2158	Industrial Organization
ECON 2159	Government Regulation of the Economy
ECON 2169	Introduction to the Economy of China
ECON 2170	Introduction to the Economy of Japan
ECON 2180	Survey of International Economics
ECON 3142	Labor Economics
ECON 3165	Economics of Human Resources
ECON 3191	Game Theory
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
or GEOG 2134W	Energy Resources
GEOG 2140	Cities and Societies
or GEOG 2140W	Urban Geography
GEOG 2141	Cities in the Developing World
GEOG 2148	Economic Geography
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
HIST 2321	U.S. History, 1890-1945
HIST 2340	U.S. Diplomatic History
or HIST 2340W	U.S. Diplomatic History

HIST 2440	The American City
or AMST 2440	The American City
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War
or AMST 3324	U.S. Urban History
HIST 3324	U.S. Urban History
or AMST 3324	U.S. Urban History
HIST 3351	U.S. Social History
or AMST 3351	U.S. Social History
HIST 3366	Immigration, Ethnicity, and the American Experience
or HIST 3366W	Immigration, Ethnicity, and the American Experience
HIST 3611	History of Modern China
HIST 3621	History of Modern Japan
PSC 2216	The American Presidency
PSC 2217	Executive Branch Politics
or PPPA 2117	Executive Branch Politics
PSC 2218	Legislative Politics
or PSC 2218W	Legislative Politics
PSC 2219	Political Parties and Interest Groups
PSC 2224	Issues in Domestic Public Policy
PSC 2228	Media, Politics, and Government
PSC 2229	Media and Politics
PSC 2334	Global Perspectives on Democracy
PSC 2337	Development Politics
PSC 2439	International Political Economy
PSC 2442	International Organizations
PSC 2449	International Security Politics
PSYC 2012	Social Psychology
PSYC 2014	Cognitive Psychology
PSYC 3125	Cross-Cultural Psychology
SOC 2104	Contemporary Sociological Theory

or SOC 2104W	Contemporary Sociological Theory
SOC 2105	Social Problems in American Society
SOC 2161	Sociology of Complex Organizations
SOC 2163	Sociology of Education
SOC 2168	Economic Sociology
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender

*If a grade below C- is earned in ORSC 1109, the course must be repeated. Credit for the repetition will not count toward the degree.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.

- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations (p. 27), in order to be considered for graduation with Special Honors, students must have a minimum grade-point average of 3.5 in courses required for the major, earn a minimum grade of A- in ORSC 4197W Senior Research Seminar, and take a graduate-level seminar with permission of the department or complete an independent study project in ORSC 4195 Independent Study with a minimum grade of A-.

DOCTOR OF PHILOSOPHY IN THE FIELD OF INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

The Industrial/Organizational (I/O) Psychology Doctoral Program, a degree in psychology offered through the Department of Organizational Sciences & Communication, provides graduate education in areas such as personnel selection, training and development, work motivation, leadership, work teams, and organizational development. The program of study is designed in accordance with guidelines established by the Society for Industrial and Organizational Psychology (SIOP; Division 14, APA).

REQUIREMENTS

The following requirements must be fulfilled: 72 credits, including 42 credits in required courses, 12 credits in elective courses, and 18 credits in dissertation.

Code	Title	Credits
Required		
Methods/statistics		
DNSC 6274	Statistical Modeling and Analysis	3
DNSC 6275	Advanced Statistical Modeling and Analysis	3
DNSC 6276	Exploratory and Multivariate Data Analysis	3
ORSC 8261	Research Methods in Organizational Sciences	3
PSYC 8231	Development of Psychometric Instruments	3
Industrial/organizational psychology core		
ORSC 6212	Current Issues in Personnel Testing and Selection	3
ORSC 6214	Personnel Training and Performance Appraisal Systems	3
ORSC 6297	Special Topics	3
PSYC 8243	Seminar: Psychology of Leadership in Organizations	3
PSYC 8245	Seminar: Organizational Behavior	3
PSYC 8260	Psychology of Work Group Development	3
PSYC 8291	Theories of Organizational Behavior	3
Psychology breadth		
One course from the following:		
PSYC 8253	Social Cognition *	3
PSYC 8254	Social Influence *	3
PSYC 8255	Attitudes and Attitude Change *	3
One course from the following:		
PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition *	3

PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior *	3
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Electives**

12 credits in elective courses selected from the following:

ECON 6219	Managerial Economics	3
ORSC 6209	Management Systems	3
ORSC 6216	Theories and Management of Planned Change	3
ORSC 6217	Productivity and Human Performance	3
ORSC 6241	Strategic Management and Policy Formation	3
ORSC 6242	Organizational Communication and Conflict Management	3
ORSC 6246	Comparative Management	3
ORSC 6248	Strategic Human Resource Planning	3
PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition *	3
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior *	3
PSYC 8211	Community Psychology I *	3
PSYC 8253	Social Cognition *	3
PSYC 8254	Social Influence *	3
PSYC 8255	Attitudes and Attitude Change *	3
PSYC 8256	Introduction to Survey Research	3
PSYC 8257	Current Topics in Social Psychology	3
STAT 2118	Regression Analysis	3
STAT 3119	Analysis of Variance	0,3
Dissertation		
PSYC 8998	Advanced Reading and Research (taken for 3 credits)	1-12
PSYC 8999	Dissertation Research (taken for 15 credits)	3-12

*Can be used as an elective only if it is not chosen to fulfill the breadth requirement.

** The list of electives is not exhaustive. At least 3 credits must be taken in a course outside of the PSYC designation.

MASTER OF ARTS IN THE FIELD OF COMMUNICATION MANAGEMENT

The Department of Organizational Sciences and Communication offers an interdisciplinary program leading to the degree of Master of Arts in the field of Communication Management. Communication management explores systematic planning, implementing, monitoring, and revising of communication messages and processes (including technology and networks) within and across organizations. The program is designed to meet the needs of a diverse pool of students with varying career aspirations in this growing field.

Understanding how people inform, influence, and persuade each other is central to the program's curriculum. By applying theory to practical issues and research problems, students learn to envision and facilitate communication management strategies such as intergroup dialogues, communication campaigns and organizational interventions. Rigorous coursework enables students to build a solid foundation for assessing and enhancing communication management in intercultural, organizational, public, and health contexts. In addition, the program offers both a thesis and non-thesis option.

Students develop their problem-solving, strategic decision-making, and written and oral advocacy skills throughout the course of the program. In the end, graduates are well-equipped for communication management objectives including more effective leadership, better flow of essential communications, higher employee satisfaction, stronger brand recognition, and increased profits. The MA program also prepares students planning to continue to doctoral programs in communication and related disciplines, such as international affairs, organizational sciences and public health. GW's location in the heart of Washington DC also provides students with unique access to a wealth of government and media agencies, consulting firms and other notable organizations that enhance the graduate studies experience.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits: Thesis option—15 credits in required courses, including 6 credits in thesis and 9 credits in elective courses, with a minimum of 3 credits in an elective COMM course; non-thesis option—15 credits in required courses and 15 credits in

elective courses, with a minimum of 6 credits in elective COMM courses.

Code	Title	Credits
Required		
COMM 6150	Persuasion	
or ORSC 6224	Persuasion and Negotiation	
COMM 6100	Communication Theory	
COMM 6110	Research Methods in Communication	
COMM 6171	Professional Communication	
COMM 6190	Leadership Communication	
Required for thesis students		
COMM 6199	Master's Thesis (taken for 6 credits)	
Electives		
15 credits in elective courses for non-thesis students and 9 credits for thesis students.		
ANTH 6506	Topics in Medical Anthropology	
COMM 6165	Organizational and Communication Networks	
COMM 6172	Health Communication	
COMM 6174	Intercultural Communication	
COMM 6179	Sexual Communication	
COMM 6189	Intercultural Negotiation	
COMM 6196	Independent Study	
COMM 6242	Organizational Communication and Conflict Management	
or ORSC 6242	Organizational Communication and Conflict Management	
DNSC 6247	Organization, Management, and Leadership	
DNSC 6290	Special Topics (Communication Strategy in Project Management)	
EDUC 6530	Intercultural Campus Leadership	
HOL 6704	Leadership in Organizations	
IAFF 6171	Introduction to Conflict Resolution	
IBUS 6201	International Marketing	

IBUS 6401	International Business Strategy
MGT 6210	Leading Teams
MGT 6215	Conflict Management and Negotiations
ORSC 6212	Current Issues in Personnel Testing and Selection
ORSC 6214	Personnel Training and Performance Appraisal Systems
ORSC 6243	Seminar: Leadership in Complex Organizations
PMGT 6402	Applied Political Communications
PMGT 6404	Principled Political Leadership
PSYC 8243	Seminar: Psychology of Leadership in Organizations
PSYC 8248	Research Applications to Organizational Intervention and Change
PUBH 6247	Design of Health Studies
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6570	Advanced Public Health Communication: Theory and Practice
SMPA 6202	Media Effects, Public Opinion, and Persuasion
SMPA 6204	Strategic Political Communication

MASTER OF ARTS IN THE FIELD OF LEADERSHIP EDUCATION AND DEVELOPMENT

The Leadership Education and Development (LEAD) Program is the product of a partnership with the Division of Leadership at the U.S. Naval Academy (USNA). Together, USNA and the Department of Organizational Sciences and Communication offer an interdisciplinary Master of Arts in Leadership Education and Development. Each year, the competitive program accepts a cohort of talented officers from the USNA.

LEAD Program participants hone their critical and analytical thinking and develop the skills necessary to understand, design and foster leadership and team development. Coursework is

shared between GW and the USNA and includes a required research capstone project. Participants also network with LEAD Distinguished Speakers at an annual lecture and reception designed for LEAD fellows who may go on to careers in the U.S. Navy or Marine Corps.

Students complete the MA program in three academic terms (a summer session plus the following academic year). Following completion of the degree, participants serve a two-year tour as company officers, for a total LEAD program commitment of three years.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

33 credits, including 18 credits taken at GW and 15 credits taken at the U.S. Naval Academy (USNA)

Code	Title	Credits
Required		
COMM 6171	Professional Communication	
COMM 6190	Leadership Communication	
COMM 6242	Organizational Communication and Conflict Management	
LEAD 6001	The Academy and the Brigade *	
LEAD 6003	Foundations of Moral Reasoning *	
LEAD 6004	LEAD Fellows Teaching Practicum *	
LEAD 6005	LEAD Fellows Counseling Practicum *	
LEAD 6006	LEAD Research Capstone *	
ORSC 6209	Management Systems	
ORSC 6245	Seminar: Organizational Behavior	
ORSC 8261	Research Methods in Organizational Sciences	

*Course taken at the USNA

MASTER OF ARTS IN THE FIELD OF ORGANIZATIONAL SCIENCES

The program emphasizes that individuals and organizations must be ready to think and act quickly and effectively. Students are prepared to analyze and solve problems by synthesizing information, rethinking processes, enhancing collaboration, sculpting organizational culture and integrating interests of diverse stakeholders. An understanding of the systems

and relationships among individuals, organizations and the environment is pivotal to success. The program also focuses on a systems perspective, including aspects such as leadership, strategy, change, talent management, negotiation and relevant methodological and statistical techniques. Graduate students in organizational sciences work in managerial and leadership positions in every type of organization. Related areas include industrial and organizational psychology and organizational communication.

Visit the program website (<https://orgsciandcomm.columbian.gwu.edu/organizational-sciences-ma/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits, including 27 credits in required courses, 9 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
ORSC 6104	Statistics in Management, Administration, and Policy Studies	
ORSC 6209	Management Systems	
ORSC 6216	Theories and Management of Planned Change	
ORSC 6219	Managerial Economics	
ORSC 6241	Strategic Management and Policy Formation	
ORSC 6242	Organizational Communication and Conflict Management	
or COMM 6242	Organizational Communication and Conflict Management	
ORSC 6243	Seminar: Leadership in Complex Organizations	
ORSC 6245	Seminar: Organizational Behavior	
ORSC 6259	Psychology of Individual and Group Decision Making	
Electives		
9 credits from the following:		
ORSC 6212	Current Issues in Personnel Testing and Selection	

ORSC 6214	Personnel Training and Performance Appraisal Systems
ORSC 6217	Productivity and Human Performance
ORSC 6222	Theory and Practice of Compensation Management
ORSC 6223	Collective Bargaining
ORSC 6224	Persuasion and Negotiation
or COMM 6150	Persuasion
ORSC 6246	Comparative Management
ORSC 6248	Strategic Human Resource Planning
ORSC 6250	Leadership Coaching: Principles and Practices
ORSC 6251	Team Coaching and Facilitation
ORSC 6295	Directed Research
ORSC 6297	Special Topics
ORSC 6298	Directed Readings
Successful completion of a master's comprehensive examination.	

MINOR IN COMMUNICATION REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
COMM 1025	Introduction to Communication Studies	
COMM 1040	Public Communication	
or COMM 1041	Interpersonal Communication	
One course from the following:		
COMM 2120	Small Group Communication	
COMM 3171	Professional Communication	
COMM 3174	Intercultural Communication	
Three courses from the following:		
COMM 2000	Sophomore Colloquium	

COMM 2140	Nonverbal Behavior
COMM 2162	Sociology of the Family
or SOC 2162	Sociology of the Family
COMM 3170	Organizational Communication
COMM 3172	Health Communication
COMM 3173	Communication in a Mediated World
COMM 3175	Strategic Communication
COMM 3176	Issues and Image Management
COMM 3177	Corporate Ethical Communication
COMM 3179	Sexual Communication
COMM 3180	Communication Criticism
COMM 3190	Selected Topics
COMM 4196	Independent Study

MINOR IN ORGANIZATIONAL COMMUNICATION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required (12 credits):		
COMM 3170	Organizational Communication	
COMM 3171	Professional Communication	
ORSC 1109	Introduction to Organizational Sciences	
ORSC 2544	Industrial/Organizational Psychology	
Electives		
Two courses (6 credits) from the following:		
COMM 2120	Small Group Communication	
COMM 2140	Nonverbal Behavior	
COMM 3173	Communication in a Mediated World	
COMM 3174	Intercultural Communication	
COMM 3175	Strategic Communication	
COMM 3176	Issues and Image Management	

COMM 3177	Corporate Ethical Communication
ORSC 2046	Global Organizations
ORSC 2560	Group Dynamics

This minor is not available to communication majors.

MINOR IN ORGANIZATIONAL SCIENCES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in elective courses.

Code	Title	Credits
Required		
ORSC 1109	Introduction to Organizational Sciences	
Electives		
Five courses (15 credits) from the following:		
ORSC 2046	Global Organizations	
ORSC 2116	Leading Change	
ORSC 2123	Negotiation and Conflict Resolution	
ORSC 2143	Leadership and Performance	
ORSC 2544	Industrial/Organizational Psychology	
ORSC 2560	Group Dynamics	
ORSC 3141	Strategy in Organizations	
ORSC 3159	Extreme Decisions	
ORSC 3165	Organizational Network Analysis	
ORSC 3190	Special Topics	
COMM 3170	Organizational Communication	
COMM 3171	Professional Communication	
COMM 3173	Communication in a Mediated World	

PEACE STUDIES

The Peace Studies program is designed to strengthen a student's ability to explore the multiple meanings of peace, the relationship between peace and conflict, and the role of peace on local and global levels. The program fosters the study of peace in its philosophical and religious dimensions, as an important aspect of international affairs, and as a

vital part of social, economic, and environmental justice. Peace Studies focuses on the examination of peace and conflict through the lens of the humanities and the liberal arts. Housed within the Department of Religion (<http://religion.columbian.gwu.edu/>) in the Columbian College of Arts and Sciences, the Peace Studies program emphasizes the role of world religions in peace building and conflict resolution.

Visit the Peace Studies Program website (<https://religion.columbian.gwu.edu/peace-studies-program/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in peace studies (p. 367)

Minor

- Minor in peace studies (p. 370)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSTD 1010. Introduction to Peace Studies and Conflict Resolution. 3 Credits.

Major thinkers and themes in the field of peace studies and conflict resolution. Focus on philosophical and religious foundations of peace and justice movements in the twentieth century. Examination of peace and conflict through an interdisciplinary lens and on personal, local, and international levels.

PSTD 1099. Variable Topics. 1-36 Credits.

PSTD 3099. Variable Topics. 1-12 Credits.

PSTD 3190. Capstone Seminar. 3 Credits.

Capstone seminar for peace studies majors and minors in their junior or senior year. Taken concurrently with a relevant internship or as part of a long-term research project to probe the relationship between peace studies and conflict resolution in practice and in theory. Offered in the fall semester only. Restricted to peace studies majors and minors.

PSTD 3191. Special Topics Peace Studies. 1-6 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

PSTD 3999. Independent Study. 1-3 Credits.

Tutorial designed by an undergraduate student under the guidance of a faculty member to pursue an academic topic in the area of Peace Studies and Conflict Resolution outside available course offerings.

PSTD 5099. Variable Topics. 1-99 Credits.

BACHELOR OF ARTS WITH A MAJOR IN PEACE STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum (below)

Two years of a single foreign language, or placement into the third year of a foreign language by examination, or one year each of two modern foreign languages.*

Code	Title	Credits
Required (6 credits)		
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
PSTD 3190	Capstone Seminar (Offered only in the fall semester)	
Electives (24 credits)		
Eight courses (24 credits) from the following categories as indicated:		
Philosophical and religious approaches to peace: two courses (6 credits)		
PHIL 2132	Social and Political Philosophy	
or PHIL 2132W	Social and Political Philosophy	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2134	Philosophy of Human Rights	
REL 2921	The Religions Wage Peace	
REL 2922	Ethics and World Religions	
REL 3923	Violence and Peace in Judaism, Christianity, and Islam	
REL 3931	Interfaith Dialogue in World Religions	
REL 3990	Selected Topics in Religion	
PSTD 3099	Variable Topics	

PSTD 3191	Special Topics Peace Studies
PSTD 3999	Independent Study
International peace and conflict: three courses (9 credits)	
ANTH 3506	Politics, Ethnicity, and Nationalism
COMM 3174	Intercultural Communication
GEOG 2120	World Regional Geography
GEOG 2146	
GEOG 2147	Military Geography
GER 3185	Literary Voices and the Fascist Experience—in English
HIST 2340	U.S. Diplomatic History
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War
HIST 3035	The United States and the Wars in Indochina, 1945–1975
HIST 3045	International History of the Cold War
HIST 3046	The Cold War in the Third World
HIST 3061	The Holocaust
HIST 3062	War Crimes Trials
HIST 3332	History of American Foreign Policy Since World War II (Part 1)
HIST 3333	History of American Foreign Policy Since World War II (Part 2)
HIST 3334	The Nuclear Arms Race
PSC 2334	Global Perspectives on Democracy
PSC 2336	State–Society Relations in the Developing World
PSC 2338	Nationalism
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
or PSC 2442W	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2449	International Security Politics

or PSC 2449W	International Security Politics
PSC 2451	Theory of War
or PSC 2451W	Theory of War
PSC 2476	The Arab-Israeli Conflict
Social, economic, and environmental justice: three courses (9 credits)	
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
ECON 2136	Environmental and Natural Resource Economics
ECON 2151	Economic Development
or ECON 2151W	Economic Development
ECON 2167	Economics of Crime
ECON 3161	Public Finance: Expenditure Programs
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
GEOL 3131	Global Climate Change
GEOL 3193	
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2135	Ethics in Business and the Professions
PHIL 2281	Philosophy of the Environment
PSC 2108	Freedom and Equality
PSC 2221	African American Politics
PSC 2225	Women and Politics
PSC 2240	Poverty, Welfare, and Work

PSC 2337	Development Politics
PSC 2367	Human Rights
or PSC 2367W	Human Rights
PSYC 3125	Cross-Cultural Psychology
PSYC 3126	Multicultural Psychology
or PSYC 3126W	Multicultural Psychology
PSYC 3151	
PSYC 3173	Community Psychology
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 3150	Sustainable Energy and Environmental Health
SMPA 3460	Race, Media, and Politics
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SOC 2170	Class and Inequality in American Society
or SOC 2170W	Class and Inequality in American Society
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender
or SOC 2175W	
SOC 2177	Sociology of the Sex Industry
SOC 2179	Race and Minority Relations
SOC 2184	Violence and the Family

Special Topics courses may count toward the major with the approval of the Peace Studies Program Director.

*Students are encouraged to study abroad.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement,

G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW

courses that have been approved by the University and the College.

SPECIAL HONORS

Special Honors are awarded to students who meet the requirements stated under University Regulations, maintain a grade-point average of 3.5, and receive a minimum grade of A- in PSTD 3190 Peace Studies Seminar.

MINOR IN PEACE STUDIES

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
PSTD 3190	Capstone Seminar	
At least one course from each of the following three categories: *		
Philosophical and religious approaches to peace		
PHIL 2132	Social and Political Philosophy	
or PHIL 2132W	Social and Political Philosophy	
PHIL 2133	Philosophy and Nonviolence	
PHIL 2134	Philosophy of Human Rights	
REL 2921	The Religions Wage Peace	
REL 2922	Ethics and World Religions	
REL 3923	Violence and Peace in Judaism, Christianity, and Islam	
REL 3931	Interfaith Dialogue in World Religions	
REL 3990	Selected Topics in Religion	
PSTD 3099	Variable Topics	
PSTD 3191	Special Topics Peace Studies	
PSTD 3999	Independent Study	
International peace and conflict		
ANTH 3506	Politics, Ethnicity, and Nationalism	
ANTH 3812	The Aztec Empire	
COMM 3174	Intercultural Communication	

GEOG 2120 World Regional Geography

GEOG 2146

GEOG 2147 Military Geography

GER 3185 Literary Voices and the Fascist Experience—in English

HIST 2340 U.S. Diplomatic History

HIST 3033 War and the Military in American Society from the Revolution to the Gulf War

HIST 3035 The United States and the Wars in Indochina, 1945–1975

HIST 3045 International History of the Cold War

HIST 3046 The Cold War in the Third World

HIST 3061 The Holocaust

HIST 3062 War Crimes Trials

HIST 3332 History of American Foreign Policy Since World War II (Part 1)

HIST 3333 History of American Foreign Policy Since World War II (Part 2)

HIST 3334 The Nuclear Arms Race

PSC 2334 Global Perspectives on Democracy

PSC 2336 State-Society Relations in the Developing World

PSC 2338 Nationalism

PSC 2440 Theories of International Politics

PSC 2442 International Organizations

or PSC 2442W International Organizations

PSC 2444 Public International Law

PSC 2446 U.S. Foreign Policy

PSC 2449 International Security Politics

PSC 2451 Theory of War

or PSC 2451W Theory of War

PSC 2476 The Arab-Israeli Conflict

Social, economic, and environmental justice

ANTH 3513 Anthropology of Human Rights

or ANTH 3513W	Anthropology of Human Rights
ECON 2136	Environmental and Natural Resource Economics
ECON 2151	Economic Development
or ECON 2151W	Economic Development
ECON 2167	Economics of Crime
ECON 3161	Public Finance: Expenditure Programs
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
or GEOG 3143W	Urban Sustainability
GEOL 3131	Global Climate Change
GEOL 3193	
PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2135	Ethics in Business and the Professions
PHIL 2281	Philosophy of the Environment
PSC 2108	Freedom and Equality
PSC 2221	African American Politics
PSC 2225	Women and Politics
PSC 2240	Poverty, Welfare, and Work
PSC 2337	Development Politics
PSC 2367	Human Rights
or PSC 2367W	Human Rights
PSYC 3125	Cross-Cultural Psychology
PSYC 3126	Multicultural Psychology
or PSYC 3126W	Multicultural Psychology

PSYC 3151

PSYC 3173	Community Psychology
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons
PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 3150	Sustainable Energy and Environmental Health
SMPA 3460	Race, Media, and Politics
SMPA 3471	Media in the Developing World
SMPA 3472	Media and Foreign Policy
SOC 2170	Class and Inequality in American Society
or SOC 2170W	Class and Inequality in American Society
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender
or SOC 2175W	
SOC 2177	Sociology of the Sex Industry
SOC 2179	Race and Minority Relations
SOC 2184	Violence and the Family

One additional elective

An internship in a relevant agency may also count for 3 credits, with advisor's prior approval, through the following:

CCAS 2154 Elective Internship

* Lists of courses that can fulfill each category (<http://religion.columbian.gwu.edu/undergraduate-academic-programs/>) are available in the Department of Religion.

PHILOSOPHY

From reading the works of Plato and Aristotle to studying logic and phenomenology, the Department of Philosophy provides a broad-based learning experience. One of the arts and humanities disciplines in the Columbian College of Arts and Sciences, the program also examines the intersection of philosophy with other subjects, including law, biomedicine, science, and politics.

Two options are offered for the major, both of which are designed to give a broad background in philosophy, but

with somewhat different emphases. The first option reflects the traditional structure of the discipline and its subfields; it is especially (but not exclusively) recommended for those considering graduate study in philosophy. The second option is designed for those primarily interested in the relationship of philosophy to public affairs.

Visit the program website (<https://philosophy.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in philosophy (p. 378)
- Bachelor of Arts with a major in philosophy (public affairs focus) (p. 379)

Minors

- Minor in applied ethics (p. 383)
- Minor in linguistics (p. 68) (interdisciplinary)
- Minor in logic (p. 383)
- Minor in mind-brain studies (p. 383)
- Minor in philosophy (p. 384)

Combined programs

- Dual Bachelor of Arts with a major in philosophy and Master of Arts in the field of philosophy (p. 381)
- Dual Bachelor of Arts with a major in philosophy and Master of Arts in the field of public policy with a concentration in philosophy and social policy (p. 381)
- Dual Bachelor of Arts with a major in philosophy (public affairs focus) and Master of Arts in the field of philosophy (p. 380)
- Dual Bachelor of Arts with a major in philosophy (public affairs focus) and Master of Arts in the field of public policy with a concentration in philosophy and social policy (p. 380)

GRADUATE

Master's programs

- Master of Arts in the field of philosophy (p. 381)
- Master of Arts in the field of public policy with a concentration in philosophy and social policy (p. 382)

FACULTY

Professors D. DeGrazia, G. Weiss

Associate Professors J.C. Brand, M. Friend, L. Papish, M. Ralkowski, T. Zawidzki (Chair)

Assistant Professors A. Archer, E.J. Saidel, J. Trullinger, V.C. Wills

Adjunct Professors M. Davis, C. Venner

Affiliated Faculty E. Aviv, D. Malone-France, L. Rafanelli

Professorial Lecturers R. Carr, L. Eby, A. Jurkiewicz, D. Kirilov, S. Renault-Steele

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHIL 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PHIL 1051. Introduction to Philosophy. 3 Credits.

Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will?

PHIL 1062. Philosophy and Film. 3 Credits.

Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV, video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films.

PHIL 1099. Variable Topics. 1-36 Credits.

PHIL 1153. The Meaning of Mind. 3 Credits.

Introductory course for students with no background in philosophy or the sciences of the mind. The central questions, assumptions, and hypotheses about the human mind. The nature of thought, consciousness, and self; knowledge of other minds; implications of the sciences of the mind for freedom of the will and responsibility; and the relationship between the mind and the brain.

PHIL 1193. Introduction to Existentialism. 3 Credits.

The philosophical themes of selfhood, mortality, authenticity, and ethical responsibility from an existentialist perspective, including the writings of Kierkegaard, Heidegger, Nietzsche, Camus, and Sartre. The place of existentialism in the history of philosophy.

PHIL 2045. Introduction to Logic. 3 Credits.

Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic.

PHIL 2111. History of Ancient Philosophy. 3 Credits.

History of Western philosophy from the Pre-Socratics to the Stoics (sixth century BCE to first century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2111W. History of Ancient Philosophy. 3 Credits.

History of Western philosophy from the Pre-Socratics to the Stoics (sixth century BCE to first century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 2112. History of Modern Philosophy. 3 Credits.

History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: PHIL 1051 .

PHIL 2124. Philosophies of Disability. 3 Credits.

Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability—historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights. Same As: PHIL 2124W.

PHIL 2124W. Philosophies of Disability. 3 Credits.

Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability—historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: PHIL 2124.

PHIL 2125. Philosophy of Race and Gender. 3 Credits.

Differing theoretical perspectives on how race, sexuality, gender, class, and ethnicity inform (and re-form) individual as well as group identities; consequences of being marginalized because one is associated with an allegedly inferior race, sex, and/or gender.

PHIL 2125W. Philosophy of Race and Gender. 3 Credits.

A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 2131. Ethics: Theory and Applications. 3 Credits.

Examination of leading ethical theories (e.g., utilitarianism, deontology, virtue ethics), and methodology in ethics. Engagement with contemporary problems.

PHIL 2132. Social and Political Philosophy. 3 Credits.

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2132W. Social and Political Philosophy. 3 Credits.

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 2133. Philosophy and Nonviolence. 3 Credits.

Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide, and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory.

PHIL 2134. Philosophy of Human Rights. 3 Credits.

Conceptual, ethical, and theoretical analyses of human rights with emphasis on the justification of human rights, the debate over cultural relativism, and the application of human rights norms in domestic and global contexts.

PHIL 2135. Ethics in Business and the Professions. 3 Credits.

Ethical theories and basic concepts for analysis of moral issues arising in business and in professional practice.

PHIL 2136. Contemporary Issues in Ethics. 3 Credits.

Introduction to a range of debates in applied ethics, including both classic debates concerning topics such as the permissibility of abortion, animal treatment, and suicide as well as more current debates concerning our interactions with the environment and our obligations to the poor in a global context.

PHIL 2140. Philosophy of Love, Sex, and Friendship. 3 Credits.

Introduction to the philosophy of love, sex, and friendship through historical and contemporary texts; the differences between love and friendship, whether love and friendship require an ethical justification, and feminist approaches to sex and sexuality.

PHIL 2281. Philosophy of the Environment. 3 Credits.

Three models of environmental sustainability: the current paradigm in economic and cultural thinking (neoclassical economics); redistribution of resources toward greater global equity (a macroeconomic perspective); and de-growth in the developed economies (ecological economics). The models offer different perspectives on what environmental sustainability means and how it can impact the cultural, religious, moral, metaphysical, and existential situation.

PHIL 3099. Variable Topics. 1-12 Credits.**PHIL 3100. Selected Topics. 3 Credits.**

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 3100W. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 3113. Nineteenth-Century Philosophy. 3 Credits.

European philosophy of the nineteenth century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Prerequisite: PHIL 1051.

PHIL 3113W. Nineteenth-Century Philosophy. 3 Credits.

European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PHIL 1051. Same As: PHIL 3113.

PHIL 3121. Symbolic Logic. 3 Credits.

Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisites: Permission of the instructor.

PHIL 3142. Philosophy of Law. 3 Credits.

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3142W. Philosophy of Law. 3 Credits.

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 3151. Philosophy of Science. 3 Credits.

Philosophical issues raised by the sciences. The distinction between scientific and non-scientific explanations, the nature of causality and natural laws, the role of empirical evidence in science, the status of unobservable, theoretical posits in science, and the historical sources of scientific hypotheses. A 2000-level philosophy course may be substituted for the prerequisite. Prerequisite: PHIL 1051.

PHIL 3151W. Philosophy and Science. 3 Credits.

Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PHIL 1051 or two semesters of college-level science.

PHIL 3152. Theory of Knowledge. 3 Credits.

Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense experience, and language. Prerequisite: PHIL 1051. Recommended background: PHIL 2112.

PHIL 3153. Mind, Brain, and Artificial Intelligence. 3 Credits.

Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. Prerequisites: PHIL 1051 or PHIL 1153 or PHIL 2112 or permission of the instructor.

PHIL 3161. Philosophy and Literature. 3 Credits.

Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, and others.

PHIL 3162. Philosophy of Art. 3 Credits.

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113. Same As: PHIL 3162W.

PHIL 3162W. Philosophy of Art. 3 Credits.

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113. Same As: PHIL 3162.

PHIL 3172. American Philosophy. 3 Credits.

A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3172W. American Philosophy. 3 Credits.

A survey of American philosophical thought, focusing on the late nineteenth through mid-twentieth centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: PHIL 3172.

PHIL 3201. Perspectives on Math and Science. 3 Credits.

Topics and episodes in the history of science and math. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Same As: GTCH 3201.

PHIL 3251. Philosophy of Biology. 3 Credits.

An introduction to conceptual and methodological issues raised by contemporary biology, including teleology, reductionism, units of selection, the structure of evolutionary theory, genetics, taxonomy, and the nature of scientific explanation. Other issues may include the nature-nurture debate, creationism/intelligent design, the evolution of altruism, and the relevance of evolutionary theory to ethical questions.

PHIL 4000. Special Topics in the History of Philosophy. 3 Credits.

In-depth reading of two Kantian masterpieces, Critique of Pure Reason (1781; second edition 1787) and Groundwork for the Metaphysics of Morals. Restricted to juniors. Prerequisites: PHIL 2111, or PHIL 2112, or PHIL 3113 or PHIL 4193.

PHIL 4192. Analytic Philosophy. 3 Credits.

The dominant movements of twentieth-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke, et al. Students must have completed one other upper-division philosophy course prior to enrollment. Recommended background: PHIL 2112 and PHIL 3121.

PHIL 4193. Twentieth-Century Continental Philosophy. 3 Credits.

An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisites: PHIL 2112 or PHIL 3113.

PHIL 4193W. Twentieth-Century Continental Philosophy. 3 Credits.

An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PHIL 2112 or PHIL 3113. Same As: PHIL 4193.

PHIL 4195. Topics in Value Theory. 3 Credits.

Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4195W. Topics in Value Theory. 3 Credits.

Various topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy, such as contemporary philosophy of religion. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: PHIL 4195.

PHIL 4196. Topics in Theory of Knowledge. 3 Credits.

Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4198. Proseminar. 3 Credits.

Variable topics; preparation and presentation of a major research paper. May be repeated for credit. Restricted to juniors and seniors in the philosophy program with permission of the major advisor.

PHIL 4198W. Proseminar in Philosophy. 3 Credits.

Preparation and presentation of a major research paper. May be repeated for credit provided the topic differs. Topics vary by semester. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors in the philosophy program with permission of the major advisor.

PHIL 4199. Readings and Research. 1-3 Credits.

Independent study to be arranged with a faculty sponsor. Permission of the department required prior to enrollment.

PHIL 4199W. Readings and Research. 3 Credits.

Independent study to be arranged with a faculty sponsor. Departmental approval is required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 5099. Variable Topics. 1-99 Credits.

PHIL 6000. Topics in Advanced Analytic Philosophy. 3 Credits.

The application of the methods and insights of twentieth and twenty-first century analytic philosophy to contemporary questions and/or social issues; philosophy of language, philosophy of mind, epistemology, and value theory. Topics vary by semester. See department for details. Restricted to graduate students; undergraduate students may enroll only with the permission of the instructor.

PHIL 6201. Readings and Research. 3 Credits.

Advanced readings and reports. Investigation of special problems.

PHIL 6202. Readings and Research. 3 Credits.

Advanced readings and reports. Investigation of special problems.

PHIL 6211. Topics in the History of Ancient Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6212. Topics in the History of Modern Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6221. Advanced Logic. 3 Credits.

Intensive reading of a difficult text in an advanced logical system or a series of logical systems. Focus on analyzing reasoning under partial information, using the formal system to analyze fallacies of reasoning and analyzing quantum phenomena using the formal system. Restricted to graduate students. Recommended background: Good formal training in logic - propositional logic: natural deduction, tables and trees; first-order logic: language (translation from English), trees and natural deduction; some limitative results, eg, decidability, compactness, completeness, Lovenheim-Skolem properties, soundness, etc.

PHIL 6222. Philosophy of Mathematics. 3 Credits.

Examination of several philosophies of mathematics, with in-depth concentration on Field's "fictionalism." A fictionalist believes that all of the ontology of mathematics is favorably compared to a fictional object, so it does not literally exist. Students develop reactions to Field's philosophical position using the resources of alternative philosophical positions. Restricted to graduate students. Recommended background: Basic understanding of first-order logic.

PHIL 6223. Philosophy of Logic. 3 Credits.

Central concepts in the philosophy of logic, including truth, reasoning, inference, deduction, induction, judgment, assertion, warrant, proof, demonstration, meaning, semantics, syntax, paradox, mathematical models, and the relationship between a formal representation of logical reasoning and the philosophical ideal of the practice of reasoning. Recommended background: Some grounding in first-order logic is presupposed.

PHIL 6225. Queer(ing) Philosophy. 3 Credits.

Examination of how queer theory, which emerged as a field in its own right in the early 1990s, has posed significant challenges to traditional, taken-for-granted understandings of time, space, the body, race, sexuality, normality, culture, violence, and disability. Restricted to graduate students.

PHIL 6230. Ethical Issues in Policy Arguments. 3 Credits.

Critical analysis of ethical foundations of public policy arguments, e.g., about protection of the environment or health and safety, equality of opportunity. Case studies of appeals to "welfare improvements," to norms of duty, to "the social contract," and to rights-claims. Attention to historical contexts and biases. May be taken for undergraduate credit with permission of the instructor.

PHIL 6231. Seminar: Economic Justice. 3 Credits.

Ethical and economic analysis of equity and efficiency of current U.S. income distribution patterns. Theories of justice; economic theories of distribution; assessment of redistribution policies. May be taken for undergraduate credit with permission of the instructor.

PHIL 6232. Topics in Contemporary Political Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6233. Contemporary Moral Philosophy. 3 Credits.

Investigation of contemporary debates in normative ethics and/or metaethics. Topics may include the virtue ethics revival in the twentieth century, the distinction between the right and the good, or important metaethical positions such as fictionalism, expressivism, and constitutivist accounts of moral principles. Restricted to graduate students.

PHIL 6234. Consequentialism and Its Critics. 3 Credits.

An overview of the debate over consequentialism, culminating in discussion of recent literature. Forms of consequentialism (act, rule, motive, cooperative); direct versus indirect; classic objections and replies; partiality; friendship; agent-relative considerations; doctrine of doing and allowing; doctrine of double effect. Restricted to graduate students.

PHIL 6236. Moral Status. 3 Credits.

Examination of the question of what sorts of beings matter morally in their own right and how much they matter. While the paradigm bearers of moral status are persons, the course considers competing ways of thinking about the possible moral status of human nonpersons, nonhuman persons, great apes, dolphins, other sentient animals, nonsentient lifeforms, the environment, future people, and advanced forms of artificial intelligence. Restricted to graduate students.

PHIL 6237. Animal Ethics. 3 Credits.

The moral status of animals and the ethics of human use of animals. Major topics include models of moral status, animals' mental life, and specific ethical issues associated with the eating of animal products, the use of animals in research, and the keeping of animals in homes and zoos. Restricted to graduate students.

PHIL 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems, such as respecting cultural differences, dependency, disability. Prerequisites: PHIL 2125 or PHIL 2131. (Same as WGSS 6238).

PHIL 6239. Virtue Ethics. 3 Credits.

Historical and/or contemporary approaches to virtue ethics and key readings in the virtue ethical tradition. Topics include empirical work on virtue in philosophy and psychology, the divide between "radical" virtue ethics and contemporary virtue ethics, "hybrid" approaches to virtue ethics (e.g., consequentialist virtue ethics), and meta-ethical issues relevant to the study of virtue. Restricted to graduate students.

PHIL 6242. Philosophy, Law, and Social Policy. 3 Credits.

Consideration of the relationship between legal interpretation and policy goals. Theories concerning the role of the judiciary in a constitutional democracy and methods of constitutional and statutory interpretation. Representative policy topics include capital punishment, pornography, affirmative action, welfare, property rights, racial gerrymandering, gun control.

PHIL 6245. Biomedical Ethics. 3 Credits.

An in-depth introduction to the field of biomedical ethics. Following a brief review of ethical theory, the course proceeds to several central topics in biomedical ethics before ending with students' presentations of their original research. The emphasis is on normative ethical reasoning, with considerable attention to the empirical assumptions underlying particular ethical judgments and to policy dimensions of several of the central topics.

PHIL 6250. Topics in Health Policy. 3 Credits.

Topics in health policy from the perspective of philosophical ethics, including human and animal research, the enhancement of human traits, justice and health care allocation.

PHIL 6251. Advanced Introduction to Philosophy of Mind. 3 Credits.

Critical examination of classical philosophical arguments pertaining to the mind/body problem, the problem of consciousness, the problem of intentionality, the problem of freedom of the will, and the problem of personal identity. Focus on careful analysis of classical philosophical writings on these topics. Restricted to graduate students.

PHIL 6252. Advanced Introduction to Philosophy of Cognitive Science. 3 Credits.

The emergence of cognitive phenomena in phylogeny and ontogeny, social cognition, nativist vs. empiricist approaches to cognition, models of reasoning and decision-making, representationalist vs. embodied/embedded/enactive approaches to cognition, and theories of perception, memory, and concepts. Restricted to graduate students.

PHIL 6253. Cognitive Science and Public Policy. 3 Credits.

The cognitive sciences are providing new insights into the nature of human decision making at an accelerating pace. Cognitive psychology, cognitive neuroscience, neuroeconomics, evolutionary psychology, and developmental and comparative psychology are rewriting theories about human nature with significant implications for public policy. The course examines recent work in the cognitive sciences with the intent of drawing out its public policy implications.

PHIL 6254. Mental Representation. 3 Credits.

Thoughts are like pictures of the world in that they represent the world. But thoughts sometimes represent the world in ways that don't correspond to the way it actually is. How do thoughts come to have representational content? Why do we have thoughts? Such questions are considered through the careful reading of recent work on the subject. Restricted to graduate students.

PHIL 6257. The Nature of Animal Minds. 3 Credits.

Do nonhuman animals have minds? If so, what are they like? How are they similar and how are they different from our minds? What might count as evidence that an animal has a mind? Consideration of some of the questions philosophers and scientists have been asking and issues these questions raise when we think about the possibility that nonhuman animals are thinking creatures. Restricted to graduate students.

PHIL 6262. Normative Issues in Foreign Policy. 3 Credits.

Selected issues on foreign policy from a normative perspective; emphasis on human rights, economic globalization, global poverty, sustainable development, and the ethics of military intervention.

PHIL 6281. Environmental Philosophy and Policy. 3 Credits.

Examination of philosophical frameworks for assessing policy approaches to environmental problems. Representative topics include duties to future generations, environmental justice, legal rights for natural objects, critiques of cost-benefit analysis, sustainability, risk measurement, the intrinsic value of nature.

PHIL 6290. Special Topics in Public Policy. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 6293. Contemporary Continental Philosophy. 3 Credits.

Focus on several powerful philosophical concepts introduced by late twentieth/early twenty-first-century continental scholars, and the influence these scholars have had upon one another. Critical examination of the theoretical resources the works provide in articulating some of the most urgent ethical, social, and political demands of contemporary human existence. Restricted to graduate students.

PHIL 6294. Special Topics in Continental Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6998. Thesis Research. 3 Credits.

PHIL 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Recommended		
PHIL 1051 or PHIL 1051W	Introduction to Philosophy	
Required		
The following three courses (9 credits):		
PHIL 2045	Introduction to Logic	
PHIL 2111 or PHIL 2111W	History of Ancient Philosophy	
PHIL 2112	History of Modern Philosophy	
One of the following courses (3 credits) :		
PHIL 3113 or PHIL 3113W	Nineteenth-Century Philosophy	
PHIL 3172 or PHIL 3172W	American Philosophy	
PHIL 4192 or PHIL 4192W	Analytic Philosophy	
PHIL 4193 or PHIL 4193W	Twentieth-Century Continental Philosophy	
Four additional philosophy (PHIL) courses (12 credits) numbered 2000 or above.		
One of the following options:		
A: Two Proseminar courses		
PHIL 4198	Proseminar (6 credits)	

B: Honors thesis option (requires departmental approval and a senior thesis)

PHIL 4198	Proseminar (3 credits)
PHIL 4199	Readings and Research (3 credits)

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.

- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement.
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must

1. have at least a 3.7 grade-point average in the major and a 3.3 average overall;
2. submit an honors paper prepared under the supervision of a faculty advisor in the department.

Only if a committee of three faculty members in the department approves the honors paper are Special Honors recommended.

BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY (PUBLIC AFFAIRS FOCUS)

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Recommended		
PHIL 1051 or PHIL 1051W	Introduction to Philosophy	
Required		
PHIL 2045	Introduction to Logic (3 credits)	
One course from the following (3 credits):		
PHIL 2111	History of Ancient Philosophy	

or PHIL 2111W	History of Ancient Philosophy
PHIL 2112	History of Modern Philosophy
Two courses from the following (6 credits):	
PHIL 2131	Ethics: Theory and Applications
PHIL 2132	Social and Political Philosophy
or PHIL 2132W	Social and Political Philosophy
PHIL 2136	Contemporary Issues in Ethics
Four additional philosophy (PHIL) courses numbered 2000 or above (12 credits)	
One of the following options:	
A: Two Proseminar Courses	
PHIL 4198	Proseminar (6 credits)
B: Honors Thesis option (requires departmental approval and a senior thesis)	
PHIL 4198	Proseminar (3 credits)
or PHIL 4198W	Proseminar in Philosophy
PHIL 4199	Readings and Research (3 credits)

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.

- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must: have at least a 3.7 grade-point average in the major and a 3.3 average overall; and submit an honors paper prepared under the supervision of a faculty advisor in the department.

Only if a committee of three faculty members in the department approves the honors paper are Special Honors recommended.

DUAL BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY (PUBLIC AFFAIRS FOCUS) AND MASTER OF ARTS IN THE FIELD OF PHILOSOPHY

The Department of Philosophy offers a dual bachelor of arts with a major in philosophy (public affairs focus) (p. 379) and master of arts in the field of philosophy (p. 381) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://philosophy.columbian.gwu.edu/combined-bama-program-philosophy/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY (PUBLIC AFFAIRS FOCUS) AND MASTER OF ARTS IN THE FIELD OF PUBLIC POLICY WITH A CONCENTRATION IN PHILOSOPHY AND SOCIAL POLICY

The Department of Philosophy and the Trachtenberg School of Public Policy and Public Administration work in cooperation to offer a dual bachelor of arts with a major in philosophy (public affairs focus) (p. 379) and master of arts in the field of public policy with a concentration in philosophy and social justice (p. 382) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://philosophy.columbian.gwu.edu/combined-bama-program-philosophy/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY AND MASTER OF ARTS IN THE FIELD OF PHILOSOPHY

The Department of Philosophy offers a dual bachelor of arts with a major in philosophy (p. 378) and master of arts in the field of philosophy (p. 381) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://philosophy.columbian.gwu.edu/combined-bama-program-philosophy/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN PHILOSOPHY AND MASTER OF ARTS IN THE FIELD OF PUBLIC POLICY WITH A CONCENTRATION IN PHILOSOPHY AND SOCIAL POLICY

The Department of Philosophy and the Trachtenberg School of Public Policy and Public Administration work in cooperation to offer a dual bachelor of arts with a major in philosophy (p. 378) and master of arts in the field of public policy with a concentration in philosophy and social justice (p. 382) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://philosophy.columbian.gwu.edu/combined-bama-program-philosophy/>) for additional information.

MASTER OF ARTS IN THE FIELD OF PHILOSOPHY

The Master of Arts degree in Philosophy develops the critical thinking, close reading, persuasive writing and oral communication skills needed for success in a doctoral program or teaching career. Students that graduate from this degree track often go on to obtain their PhD in Philosophy or a related field, such as political theory, biomedical ethics and gender

studies. Others draw upon the broad base of philosophical knowledge to instruct at a secondary or two-year college level. Unlike other Philosophy MA degrees, this program includes a high degree of analytical philosophy curriculum in addition to the more traditional study of historical texts and scholarship.

Students pursuing this two-year terminal Master's in Philosophy can expect to gain a distinct and in-depth education across a variety of courses. Classes such as "Economic Justice," "Moral Status," and "Feminist Ethics and Policy" teach the practical applications of philosophy and schools of thought on contemporary issues, while "Advanced Logic" and "Philosophy of Artificial Intelligence" develop knowledge in the areas of logic and science. Additionally, students study contemporary continental theories and the classics, such as Plato and Socrates.

Located in the heart of Washington D.C., GW has access to a wealth of museums, cultural institutes and other notable resources to enhance the graduate studies experience.

Visit the program website (<https://philosophy.columbian.gwu.edu/ma-philosophy-0/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits in philosophy coursework at the 6000 level. A thesis option is available at the discretion of the faculty; if this option is approved, the student's program of study must include 3 credits in PHIL 6998, Thesis Research.

Code	Title	Credits
Required		
One of the following:		
PHIL 6211	Topics in the History of Ancient Philosophy	
PHIL 6212	Topics in the History of Modern Philosophy	
For thesis option:		
PHIL 6998	Thesis Research	

Remaining coursework is selected in consultation with the advisor.

MASTER OF ARTS IN THE FIELD OF PUBLIC POLICY WITH A CONCENTRATION IN PHILOSOPHY AND SOCIAL POLICY

The formulation and evaluation of public policy has become a major concern for both public officials and citizens in U.S. society. Even technical policy issues raise questions about social values and assume knowledge of concepts that call for philosophical exploration. As part of the Columbian College of Arts and Sciences, the master's program in philosophy and social policy addresses questions of public policy from a humanistic perspective. Our MA offers an interdisciplinary course of study in the field of public policy, with a concentration in philosophy and social policy.

The "policy core" includes courses in political science, economics, quantitative methods and a variety of approaches to policy analysis. These courses ensure that all candidates for the degree acquire methodological skills indispensable for the analysis of policy issues. In the "philosophy core," students examine the broad normative and institutional backgrounds within which specific policy decisions are framed.

The program prepares students to bring the normative, historical and logical tools of philosophical inquiry to bear upon policy issues. Through case studies, students analyze the underlying concepts and value implications of specific policies in areas including welfare programs, access to health care, protection of the environment, health and safety, equality of opportunity and protection of human rights. Concentrations within this program include bioethics and health policy, urban and welfare policy, and environmental philosophy and policy. Students may choose to pursue specific concentrations reflecting their interests.

Visit the program website (<https://philosophy.columbian.gwu.edu/ma-philosophy-and-social-policy/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeeregulationtext>).

Two options are available at the discretion of the faculty. Thesis option—30 credits, including 24 credits in required courses and 6 credits in thesis; non-thesis option—36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
Four of the following:		
PHIL 6230	Ethical Issues in Policy Arguments	
PHIL 6231	Seminar: Economic Justice	
PHIL 6238	Feminist Ethics and Policy Implications	
PHIL 6242	Philosophy, Law, and Social Policy	
PHIL 6250	Topics in Health Policy	
PHIL 6262	Normative Issues in Foreign Policy	
PHIL 6281	Environmental Philosophy and Policy	
One course from each of the following groups:		
Group A		
PPPA 6010	Politics and The Policy Process	
PSC 8212	Urban Policy Problems	
Group B		
ECON 6217	Survey of Economics I	
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6248	Health Economics	
Group C		
PSC 6103	Approaches to Public Policy Analysis	
PPPA 6006	Policy Analysis	
SOC 6248	Race and Urban Redevelopment	
WGSS 6240	Gender and Public Policy	
WGSS 6265	Women, Welfare, and Poverty	
HIST 6011	Reading and Research in History and Public Policy	
Group D		
PPPA 6002	Research Methods and Applied Statistics (or substitute as approved by the advisor)	
For thesis option:		
PHIL 6998	Thesis Research	
PHIL 6999	Thesis Research	

Electives

Electives may focus on a particular policy area (e.g., biomedical/health care, urban/welfare, or environmental policy), or may explore varied approaches and policy issues.

Other requirements

Successful completion of a master's comprehensive examination.

MINOR IN APPLIED ETHICS

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
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Required courses (9 credits):

PHIL 2131	Ethics: Theory and Applications
PHIL 2135	Ethics in Business and the Professions
PHIL 2136	Contemporary Issues in Ethics

Three additional courses (9 credits) from the following:

PHIL 2124	Philosophies of Disability
or PHIL 2124W	Philosophies of Disability
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PHIL 2132	Social and Political Philosophy
or PHIL 2132W	Social and Political Philosophy
PHIL 2133	Philosophy and Nonviolence
PHIL 2134	Philosophy of Human Rights
PHIL 2281	Philosophy of the Environment
PHIL 3142	Philosophy of Law
or PHIL 3142W	Philosophy of Law
PHIL 4195	Topics in Value Theory
or PHIL 4195W	Topics in Value Theory

MINOR IN LOGIC

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
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Required

One course (3 credits) from the following:

PHIL 2045	Introduction to Logic
PHIL 3121	Symbolic Logic

One course (3 credits) from the following:

MATH 3710	Introduction to Mathematical Logic
MATH 3720	Axiomatic Set Theory
MATH 3730	Computability Theory
or MATH 3730W	
MATH 3740	Computational Complexity
or MATH 3740W	

Four additional courses (12 credits) from the lists above or from the following:

CSCI 1112	Algorithms and Data Structures
CSCI 3313	Foundations of Computing
CSCI 4222	Theory of Computer Translators
LING 2601	
or ANTH 2601	

No more than two courses may count toward both the student's major and the minor in logic.

MINOR IN MIND-BRAIN STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
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Required

PHIL 3153	Mind, Brain, and Artificial Intelligence
PSYC 3122	Cognitive Neuroscience

Electives

Four courses from the following, with a maximum of two courses from any one department:

ANTH 1005	The Biological Bases of Human Behavior
ANTH 3413	Evolution of the Human Brain
ANTH 3601 or LING 3601	Language, Culture, and Cognition
ANTH 3603 or LING 3603	Psycholinguistics
BISC 2220	Developmental Neurobiology
BISC 2452	Animal Behavior
BISC 3320	Human Neurobiology
PHIL 1153	The Meaning of Mind
PHIL 3151 or PHIL 3151W	Philosophy of Science
PHIL 3152	Theory of Knowledge
PHIL 3251	Philosophy of Biology
PSYC 2014	Cognitive Psychology
PSYC 3118	Neuropsychology
PSYC 3121	Memory and Cognition
PSYC 3124	Visual Perception
SPHR 1071 or SPHR 1071W	Foundations of Human Communication
SPHR 2104 or SPHR 2104W	Speech and Language Disorders
SPHR 2106	Neural Substrates of Speech, Language, and Hearing
SPHR 2131	Language Acquisition and Development
SPHR 3116	Brain and Language

MINOR IN PHILOSOPHY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
Electives		
Two of the following:		
PHIL 2111 or PHIL 2111W	History of Ancient Philosophy	
PHIL 2112	History of Modern Philosophy	
PHIL 3113 or PHIL 3113W	Nineteenth-Century Philosophy	
PHIL 3172 or PHIL 3172W	American Philosophy	
PHIL 4192 or PHIL 4192W	Analytic Philosophy	
PHIL 4193 or PHIL 4193W	Twentieth-Century Continental Philosophy	

Four additional PHIL courses, only one of which may be numbered below 2000.

PHYSICS

The physics program offers instruction in the fundamental laws of the discipline as it strengthens a student's ability to see how these laws apply to all the sciences and everyday occurrences. Physics is part of the natural, mathematical, and biomedical sciences discipline in the Columbian College of Arts and Sciences. Through courses ranging from classical mechanics to electromagnetic theory, the physics program prompts students to use mathematical logic, deductive reasoning, developed intuition, and careful observation.

Visit the Department of Physics website (<https://physics.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in physics (p. 385)
- Bachelor of Science with a major in astronomy and astrophysics

- Bachelor of Science with a major in biophysics (p. 388)
- Bachelor of Science with a major in physics (p. 389)

Minors

- Minor in astronomy and astrophysics (p. 392)
- Minor in biophysics (p. 392)
- Minor in physics (p. 393)

GRADUATE

Master's program

- Master of Science in the field of physics (p. 391)

Doctoral program

- Doctor of Philosophy in the field of physics (p. 390)

FACULTY

Professors W.J. Briscoe, G. Feldman, M.E. Reeves, F.X. Lee, I. Strakovsky (Research), C. Zeng, C. Kouveliotou (*Chair*), W. Peng, N. Johnson

Associate Professors K.S. Dhuga, H. Habertzettl, R.L. Workman (Research), H. Griesshammer, A. Alexandru, E.J. Downie, A. Afanasev, O. Kargaltsev, X. Qiu, B. Cobb Kung, M. D#ring, A.J. van der Horst

Assistant Professors S. Guiriec, A. Schmidt

Adjunct Professors G. White, I. Moskowitz, D. Cioffi

Professorial Lecturers L. Medsker, C. O'Donnell, N. Jha,

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: Consent of a departmental graduate advisor is required for admission to all graduate courses in physics.

- Astronomy (ASTR) (p. 1428)
- Physics (PHYS) (p. 1731)

BACHELOR OF ARTS WITH A MAJOR IN PHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
Introductory courses (29 credits):		
CSCI 1012	Introduction to Programming with Python	
or MAE 1117	Introduction to Engineering Computations	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1026	University Physics II with Biological Applications	
PHYS 2023	Modern Physics	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
MATH 2184	Linear Algebra I	
MATH 3342	Ordinary Differential Equations	
Advanced courses (21 credits):		
PHYS 2151W	Intermediate Laboratory I: Techniques and Methods	
PHYS 3161	Mechanics	
PHYS 3164	Thermal and Statistical Physics	
PHYS 3165	Electromagnetic Theory I	
PHYS 4195W	Physics Capstone	
Electives		
Two courses (6 credits) in Physics (PHYS) numbered 3000 or above and/or Astronomy (ASTR) numbered 2000 or above.		

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.

BACHELOR OF SCIENCE WITH A MAJOR IN ASTRONOMY AND ASTROPHYSICS REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Introductory courses (26 credits):		
PHYS 1021	University Physics I	
PHYS 1022	University Physics II	
PHYS 2023	Modern Physics	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
MATH 2184	Linear Algebra I	
MAE 1117	Introduction to Engineering Computations	
or CSCI 1012	Introduction to Programming with Python	
Advanced courses (49 credits):		
MATH 3342	Ordinary Differential Equations	

PHYS 3100	Math Methods for Physics
PHYS 2151W	Intermediate Laboratory I: Techniques and Methods
PHYS 2152	Intermediate Laboratory II: Instrumentation
ASTR 2121	Introduction to Modern Astrophysics
PHYS 3161	Mechanics
PHYS 3164	Thermal and Statistical Physics
PHYS 3165	Electromagnetic Theory I
PHYS 3166	Electromagnetic Theory II
PHYS 3167	Principles of Quantum Physics
PHYS 3181	Computational Physics
PHYS 4195W	Physics Capstone
ASTR 4195	Undergraduate Research in Astrophysics
PHYS 4200	Physics Symposium

Electives

Two of the following:

ASTR 2131 Astrophysics Seminar

ASTR 3141 Data Analysis in Astrophysics

ASTR 3161 Space Astrophysics

One of the following:

PHYS 3127 Biophysics: Macroscopic Physics in the Life Sciences

PHYS 3128 Biophysics: Microscopic Physics in the Life Sciences

PHYS 3163 Physical and Quantum Optics

PHYS 4170 Solid-State Physics

PHYS 4175 Nuclear Physics

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that

enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOPHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required introductory courses (48 credits):		
APSC 3115	Engineering Analysis III	
or STAT 1127	Statistics for the Biological Sciences	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CSCI 1111	Introduction to Software Development	
or CSCI 1041	Introduction to FORTRAN Programming	
or CSCI 1121	Introduction to C Programming	
or CSCI 1131	Introduction to Programming with C	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	
MATH 3342	Ordinary Differential Equations	
PHYS 1025	University Physics I with Biological Applications	
or PHYS 1021	University Physics I	
PHYS 1026	University Physics II with Biological Applications	
or PHYS 1022	University Physics II	
PHYS 2023	Modern Physics	

Code	Title	Credits
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Other required (9 credits):

BISC 3209	Molecular Biology
or BISC 3261	Introductory Medical Biochemistry
or CHEM 3165	Biochemistry I

CHEM 2151	Organic Chemistry I
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CHEM 2152	Organic Chemistry II
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Advanced required (25 credits):

PHYS 2151	Intermediate Laboratory I: Techniques and Methods
or PHYS 2151W	Intermediate Laboratory I: Techniques and Methods

PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
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PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences
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PHYS 3161	Mechanics
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PHYS 3164	Thermal and Statistical Physics
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PHYS 3165	Electromagnetic Theory I
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PHYS 4195	Physics Capstone
or PHYS 4195W	Physics Capstone

One course (3 credits) from the following:

PHYS 4196	Undergraduate Research in Biophysics (One 3000 or higher biology or medical sciences (3 hrs))
or PHYS 4197	Undergraduate Research in Nuclear Physics
or ASTR 4195	Undergraduate Research in Astrophysics

PHYS 4200	Physics Symposium
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GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible

citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.

BACHELOR OF SCIENCE WITH A MAJOR IN PHYSICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
Introductory courses (26 credits)		
CSCI 1012	Introduction to Programming with Python	
or MAE 1117	Introduction to Engineering Computations	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1026	University Physics II with Biological Applications	
PHYS 2023	Modern Physics	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
MATH 2184	Linear Algebra I	
Advanced courses (46 credits)		
MATH 3342	Ordinary Differential Equations	
PHYS 2151W	Intermediate Laboratory I: Techniques and Methods	
PHYS 2152	Intermediate Laboratory II: Instrumentation	
PHYS 3100	Math Methods for Physics	

PHYS 3161	Mechanics
PHYS 3164	Thermal and Statistical Physics
PHYS 3165	Electromagnetic Theory I
PHYS 3166	Electromagnetic Theory II
PHYS 3167	Principles of Quantum Physics
PHYS 3181	Computational Physics
PHYS 4195W	Physics Capstone
PHYS 4196	Undergraduate Research in Biophysics
or PHYS 4197	Undergraduate Research in Nuclear Physics
or ASTR 4195	Undergraduate Research in Astrophysics
PHYS 4200	Physics Symposium

Electives

Three courses (9 credits) in Physics (PHYS) numbered 3000 or above and/or Astronomy (ASTR) numbered 2000 or above.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.5 overall.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PHYSICS

OVERVIEW

The Department of Physics is part of the natural, mathematical and biomedical sciences discipline in the Columbian College of Arts and Sciences.

Graduate students in physics gain knowledge of advanced physics concepts, including advanced mechanics, electromagnetic theory, advanced quantum mechanics and statistical mechanics, along with mathematical methods in physics and computational physics. Additional courses in quantum field theory, solid-state physics, nuclear physics,

astrophysics and biophysics are offered. An integral part of the program involves students in active and frontier research.

For students interested in experimental, observational, and applied physics, the department's association with national and international laboratories allows hands-on training and original research. The department maintains research affiliations and collaborations with researchers at the Jefferson Lab National Accelerator Facility, the Naval Research Laboratories, the National Institute of Standards and Technology and the National Aeronautics and Space Administration. The department also has ties with international research institutions.

Concentrations include nuclear physics, astrophysics, and condensed-matter physics as well as interdisciplinary studies in materials science and biophysics.

The PhD in physics is a STEM-designated degree program.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Students must pass a general examination and an oral defense of the doctoral research program.

Code	Title	Credits
Required		
PHYS 6110	Mathematical Methods of Theoretical Physics	
PHYS 6120	Advanced Mechanics	
PHYS 6210	Electrodynamics and Classical Field Theory	
PHYS 6220	Quantum Mechanics I	
PHYS 6310	Statistical Mechanics	
PHYS 6320	Quantum Mechanics II	
PHYS 6130	Computational Physics I	
PHYS 6230	Computational Physics II	
PHYS 6330	Computational Physics III	
PHYS 6510	Communications in Physics	
One of the following options:		
Option A		

PHYS 6610	Nuclear and Particle Physics I
PHYS 6710	Nuclear and Particle Physics II
Option B	
PHYS 6620	Biophysics I
PHYS 6720	Biophysics II
Option C	
PHYS 6630	Astrophysics I
PHYS 6730	Astrophysics II

Specific course requirements can be waived on a case-by-case basis upon approval of the department's graduate advisor.

Research fields

- Nuclear physics—experimental and theoretical studies on the structure, electromagnetic, weak and strong interactions, and scattering of few-body systems at low and intermediate energies;
- Biophysics and condensed-matter physics—experimental, theoretical, and computational studies of structures and functions of cells, biological networks and biomolecules, deciphering information encoded in genome;
- Theoretical and observational astrophysics—high-energy astrophysics, multi-wavelength studies of extreme energy-density environments and huge energy releases in astrophysical objects;
- Interdisciplinary physics, including energy research and physics education research.

MASTER OF SCIENCE IN THE FIELD OF PHYSICS

The Department of Physics is part of the natural, mathematical and biomedical sciences discipline in the Columbian College of Arts and Sciences. Graduate students in physics gain knowledge of advanced physics concepts, including advanced mechanics, electromagnetic theory, advanced quantum mechanics and statistical mechanics, along with mathematical methods in physics and computational physics.

Additional courses in quantum field theory, solid-state physics, nuclear physics, astrophysics and biophysics are offered. An integral part of the program involves students in active and frontier research. For students interested in experimental, observational and applied physics, our association with national and international laboratories allows hands-on training and original research.

We maintain research affiliations and collaborations with researchers at the Jefferson Lab National Accelerator Facility, the Naval Research Laboratories, the National Institute of Standards and Technology and the National Aeronautics and

Space Administration. We also have ties with international research institutions. Concentrations include nuclear physics, astrophysics and condensed-matter physics as well as interdisciplinary studies in materials science and biophysics.

The MS is a STEM-designated degree program.

REQUIREMENTS

Prerequisite: a bachelor’s degree with a major in physics at this University, or an equivalent degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits, including 30 credits in required courses and 6 credits in either elective courses or thesis.

Code	Title	Credits
Required		
PHYS 6110	Mathematical Methods of Theoretical Physics	
PHYS 6120	Advanced Mechanics	
PHYS 6210	Electrodynamics and Classical Field Theory	
PHYS 6220	Quantum Mechanics I	
PHYS 6310	Statistical Mechanics	
PHYS 6510	Communications in Physics	
PHYS 6130	Computational Physics I	
PHYS 6230	Computational Physics II	
PHYS 6330	Computational Physics III	
PHYS 6590	Seminar	
DATS 6202	Machine Learning I: Algorithm Analysis	

Non-thesis option—two of the following:

PHYS 6610	Nuclear and Particle Physics I
PHYS 6710	Nuclear and Particle Physics II
PHYS 6720	Biophysics II
PHYS 6630	Astrophysics I
PHYS 6730	Astrophysics II

or

Thesis option

PHYS 6998	Thesis Research
PHYS 6999	Thesis Research

MINOR IN ASTRONOMY AND ASTROPHYSICS

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 12 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
PHYS 1011	General Physics I	
or PHYS 1021	University Physics I	
PHYS 1012	General Physics II	
or PHYS 1022	University Physics II	
ASTR 1001	Stars, Planets, and Life in the Universe	
or ASTR 1002	Origins of the Cosmos	
ASTR 2121	Introduction to Modern Astrophysics	
One of the following:		
ASTR 2131	Astrophysics Seminar	
ASTR 3141	Data Analysis in Astrophysics	
ASTR 3161	Space Astrophysics	

MINOR IN BIOPHYSICS

REQUIREMENTS

The following requirements must be met: 17 credits in required courses.

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	

PHYS 1022	University Physics II
or PHYS 1026	University Physics II with Biological Applications
or PHYS 1022W	
PHYS 2023	Modern Physics
PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences

Visit the program website (<https://physics.columbian.gwu.edu/minor-requirements/>) for additional information.

MINOR IN PHYSICS

REQUIREMENTS

The following requirements must be fulfilled: 17 credits, including 11 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
PHYS 1021	University Physics I	
or PHYS 1025	University Physics I with Biological Applications	
PHYS 1022	University Physics II	
or PHYS 1022W		
or PHYS 1026	University Physics II with Biological Applications	
PHYS 2023	Modern Physics	
or PHYS 1023W		
Electives		

Two PHYS courses (6 credits) at the 3000 level or above approved by the department.

POLITICAL SCIENCE

The Department of Political Science, part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, offers a program that examines politics in depth

on both a national and international scale. Classroom study is supplemented by opportunities to intern on Capitol Hill or at government agencies.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in political science (p. 403)
- Bachelor of Arts with a major in political science (public policy focus) (p. 405)
- Bachelor of Science with a major in political science (p. 409)

Combined programs

- Dual Bachelor of Arts with a major in political science and Master of Arts in the field of political science (p. 412)
- Dual Bachelor of Arts with a major in political science and Master of Public Administration (p. 412)
- Dual Bachelor of Arts with a major in political science (public policy focus) and Master of Public Policy (p. 412)
- Dual Bachelor of Arts with a major in political science and Master of Professional Studies in the field of legislative affairs (p. 1146)
- Dual Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 1146)
- Dual Bachelor of Science with a major in political science and Master of Public Policy (p. 411)

Minors

- Minor in political science (p. 412)
- Minor in public policy (p. 413)

GRADUATE

Master's program

- Master of Arts in the field of political science (p. 413)

Doctoral program

- Doctor of Philosophy in the field of political science (p. 416)

FACULTY

University Professors M. Barnett, M. Finnemore

Professors S. Binder, M.E. Brown, N.J. Brown, C.J. Deering, B. Dickson (*Chair*), H. Farrell, H.B. Feigenbaum, C. Glaser, H.E. Hale, J.H. Lebovic, M. Lynch, F. Maltzman, C. McClintock, K.J. Morgan, H.R. Nau, D. Shambaugh, J.M. Sides, M.J. Sodaro, R.P. Stoker, P. Wahlbeck, S.L. Wolchik

Associate Professors S.J. Balla, B. Bartels, A. Bowie, I. Creppell, A. Downes, E. Grynawski, D. Hayes, S. Kaplan,

E.D. Lawrence, Y. Lupu, C. McConaughy, M. Miller, M.M. Mochizuki, C. Mylonas, E.J. Teitelbaum, S. Wiley

Assistant Professors M. Allendoerfer, C. Arrington, A. Dean, S. Goldman, E. Kramon, R. Stein, D. Szakonyi, Y. Velez, C. Warshaw, W.J. Winstead

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: PSC 1001 Introduction to Comparative Politics is prerequisite to Group A courses (comparative politics), PSC 1002 Introduction to American Politics and Government is prerequisite to Group B courses (American government and politics), and PSC 1003 Introduction to International Politics is prerequisite to Group C courses (international politics, law, and organizations). Honors course equivalents are acceptable substitutes. Students who have taken PSC 1011 Introduction to Politics I–PSC 1012W Introduction to Politics II have fulfilled prerequisites to all three groups. Elliott School students substitute IAFF 1005 Introduction to International Affairs for PSC 1003 Introduction to International Politics as a prerequisite to Group C courses.

PSC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PSC 1001. Introduction to Comparative Politics. 3 Credits.

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1001W. Introduction to Comparative Politics. 3 Credits.

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 1002. Introduction to American Politics and Government. 3 Credits.

Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1002W. Introduction to American Politics and Government. 3 Credits.

Structure, powers, and processes of the American political system and the impact on public policy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 1003. Introduction to International Politics. 3 Credits.

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues. Credit cannot be earned for this course and IAFF 1005.

PSC 1003W. Introduction to International Politics. 3 Credits.

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues. Credit cannot be earned for this course and IAFF 1005.

PSC 1011. Introduction to Politics I. 6 Credits.

Role of personal and social values in politics. Problems in the Western (especially American) tradition of political science. Admission by special selection process.

PSC 1012W. Introduction to Politics II. 6 Credits.

Continuation of PSC 1011. Role of personal and social values in politics. Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 1099. Variable Topics. 1-36 Credits.

PSC 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester; see department for more details. Permission of the instructor required prior to enrollment.

PSC 2099. Variable Topics. 1-12 Credits.

Use denotes upper-level transfer credit in political science.

PSC 2101. Scope and Methods of Political Science. 3 Credits.

Nature of political inquiry, approaches to the study of politics and government, empirical methods of research.

PSC 2102. Visualizing and Modeling Politics. 3 Credits.

The class builds on PSC 2101, Scope and Methods of Political Science, with emphasis on working with data to examine political questions. Prerequisites: PSC 2101 or STAT 1051 or STAT 1053 or STAT 1111.

PSC 2105. Major Issues of Western Political Thought I. 3 Credits.

Foundations of Western political thought—Plato to Aquinas.

PSC 2106. Major Issues of Western Political Thought II. 3 Credits.

History of political thought from the sixteenth through the late nineteenth century, as set forth in the works of representative thinkers.

PSC 2106W. Major Issues of Western Political Thought II. 3 Credits.

History of political thought from the sixteenth through the late nineteenth century, as set forth in the works of representative thinkers. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 2107. Twentieth-Century Political Thought. 3 Credits.

Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

PSC 2108. Freedom and Equality. 3 Credits.

Case analysis of major ideas related to freedom and equality in the Western political tradition.

PSC 2110. American Political Thought. 3 Credits.

Political thought in the U.S. from colonial times to the present as seen through major representative writings.

PSC 2120W. Freedom in American Thought and Popular Culture. 3 Credits.

An inquiry into definitions of freedom through examination of American political thought and popular culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement (Same as AMST 2120W).

PSC 2211. State and Urban Politics. 3 Credits.

Comparative analysis of context, institutions, processes, and policies of state and urban political systems. Prerequisite: PSC 1002.

PSC 2212. State and Urban Policy Problems. 3 Credits.

Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings. Prerequisite: PSC 1002.

PSC 2213. Judicial Politics. 3 Credits.

An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions. Prerequisite: PSC 1002.

PSC 2214. U.S. Constitutional Law and Politics I. 3 Credits.

Separation of powers, federal-state relationships, economic regulation. Prerequisites: PSC 1002.

PSC 2215. U.S. Constitutional Law and Politics II. 3 Credits.

Political and civil rights. Prerequisites: PSC 1002.

PSC 2216. The American Presidency. 3 Credits.

Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office. Prerequisite: PSC 1002.

PSC 2217. Executive Branch Politics. 3 Credits.

Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Prerequisite: PSC 1002. Same as PPPA 2117.

PSC 2218. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive-legislative relations and interest-group activities. Prerequisite: PSC 1002.

PSC 2218W. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive-legislative relations and interest-group activities. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1002.

PSC 2219. Political Parties and Interest Groups. 3 Credits.

The emergence and evolution of political parties in the United States; role of parties as a linkage between mass preferences and government policies; organization, nominations, voting, and activities in legislative and executive branches. Prerequisite: PSC 1002.

PSC 2220. Public Opinion. 3 Credits.

How public opinion is measured, how it is shaped, and its consequences for policymaking. Prerequisite: PSC 1002.

PSC 2221. African American Politics. 3 Credits.

The evolution, nature, and role of African Americans within the U.S. political system. How the African American experience has shaped American politics (specifically public opinion, political behavior, political institutions, and salient public policy debates) and how black Americans have come to understand their position within the American political system. Prerequisites: PSC 1002.

PSC 2222. Science, Technology, and Politics. 3 Credits.

Multiple impacts of scientific and technological developments on the political systems. Discussion of public policies for support, use, and control of science and technology. Prerequisite: PSC 1002.

PSC 2223. Campaigns and Elections. 3 Credits.

Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process. Prerequisite: PSC 1002.

PSC 2224. Issues in Domestic Public Policy. 3 Credits.

Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health. Prerequisite: PSC 1002.

PSC 2225. Women and Politics. 3 Credits.

An examination of the role and impact of women in politics, including women's interests and access to the political system; specific public policy issues with a particular focus on the role of women. Prerequisite: PSC 1002.

PSC 2228. Media, Politics, and Government. 3 Credits.

The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows, and the changing ways that voters receive information. Instructor permission required. Same As: SMPA 3428.

PSC 2229. Media and Politics. 3 Credits.

The impact of the media on American politics, including the nature of coverage of political issues and campaigns, dynamics of selecting and presenting news stories, and consequences of media messages for public opinion and action. Prerequisite: PSC 1002.

PSC 2230. Law and Justice: The View from Hollywood. 3 Credits.

Analysis of films that focus on justice, the law, and the legal system. Consideration of what they tell us about political and legal culture and what messages they may have for contemporary legal issues. Focus on the relationship between law and justice, the practice of law, and the role of courts and trials in a political system. Prerequisites: PSC 1002.

PSC 2240. Poverty, Welfare, and Work. 3 Credits.

The elements and politics of America's welfare state. Social welfare policies and how they relate to work and poverty. Prerequisites: PSC 1002.

PSC 2330. Comparative Politics of Western Europe. 3 Credits.

Comparative political analysis with primary focus on the principal states of Western Europe. Prerequisite: PSC 1001.

PSC 2331. Comparative Politics of Central and Eastern Europe. 3 Credits.

Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states of the former Soviet Union. Prerequisite: PSC 1001.

PSC 2332. European Integration. 3 Credits.

The history of the European Union, its accomplishments as an international actor, and the vibrant debates over its future. Prerequisite: PSC 1001.

PSC 2334. Global Perspectives on Democracy. 3 Credits.

International experiences with the historical evolution and current nature of democratic political systems. Prerequisite: PSC 1001.

PSC 2336. State-Society Relations in the Developing World. 3 Credits.

Historically informed exploration of enduring issues of concern in state-society relations, with an empirical focus on selected countries and regions of the developing world. Prerequisite: PSC 1001.

PSC 2337. Development Politics. 3 Credits.

An examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions? Prerequisite: PSC 1001.

PSC 2338. Nationalism. 3 Credits.

Causes and the effects of nationalism, covering cases from around the world. Prerequisite: PSC 1001.

PSC 2339. Comparative Political Economy. 3 Credits.

The interaction of politics and economy from a comparative perspective. Prerequisite: PSC 1001.

PSC 2366. Russian Politics. 3 Credits.

An examination of political institutions, processes, and issues of Russian politics. Prerequisite: PSC 1001.

PSC 2367. Human Rights. 3 Credits.

Human rights theory, the various movements for human, religious, civil, political, and other rights. Prerequisite: PSC 1001.

PSC 2367W. Human Rights. 3 Credits.

Human rights theory, the various movements for human, religious, civil, political, and other rights. Writing intensive. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1001. Credit cannot be earned for this course and CLAS 2105W, CLAS 3901W, HIST 3820W.

PSC 2368. Politics in the Two Koreas. 3 Credits.

An examination of political institutions, processes, and issues in South Korea and North Korea as well as in inter-Korean relations and major-power involvement in peninsular affairs. Prerequisites: PSC-1001 or PSC-001 or PSC-1001W or PSC-001W or ((PSC-1011 or PSC-011) and (PSC-1012 or PSC-012 or PSC-012W or PSC-1012W)).

PSC 2369. Comparative Politics of South Asia. 3 Credits.

A comparative examination of colonialism, economic development, and identity politics in South Asia. Prerequisite: PSC 1001.

PSC 2370. Comparative Politics of China and Northeast Asia. 3 Credits.

Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts. Prerequisite: PSC 1001.

PSC 2371. Politics and Foreign Policy of China. 3 Credits.

An examination of political institutions, processes, history, and issues of Chinese politics and foreign policy. Prerequisites: IAFF 1005 or PSC 1001 or PSC 1001W or PSC 1003.

PSC 2373. Comparative Politics of Southeast Asia. 3 Credits.

Political forces, processes, and outcomes, using empirical examples from Southeast Asia. Prerequisite: PSC 1001.

PSC 2374. Politics and Foreign Policy of Japan. 3 Credits.

An examination of political institutions, processes, and issues of Japanese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2377. Comparative Politics of the Middle East. 3 Credits.

Politics of the eastern Arab states, Turkey, Iran, and Israel. Prerequisite: PSC 1001.

PSC 2377W. Comparative Politics of the Middle East. 3 Credits.

Politics of the eastern Arab states, Turkey, Iran, and Israel. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1001.

PSC 2379. Politics and Foreign Policy of Israel. 3 Credits.

Examination of the institutions, processes, and issues of Israeli politics and foreign policy. Prerequisites: IAFF 1005 or PSC 1001 or PSC 1001W or PSC 1003.

PSC 2381. Comparative Politics of Sub-Saharan Africa. 3 Credits.

Comparative analysis of political systems in selected countries of Sub-Saharan Africa. Prerequisite: PSC 1001.

PSC 2383. Comparative Politics of Latin America. 3 Credits.

Exploration of the democratic advances in Latin America in recent decades as well as the continuing severe social, economic, and political challenges to democracy. Prerequisite: PSC 1001.

PSC 2439. International Political Economy. 3 Credits.

Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations. Prerequisite: PSC 1003.

PSC 2440. Theories of International Politics. 3 Credits.

Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions. Prerequisite: PSC 1003.

PSC 2442. International Organizations. 3 Credits.

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Prerequisite: PSC 1003.

PSC 2442W. International Organizations. 3 Credits.

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003.

PSC 2444. Public International Law. 3 Credits.

Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2446. U.S. Foreign Policy. 3 Credits.

Constitutional, political, and international factors that determine the formulation, execution, and substance of U.S. foreign policy. Prerequisite: PSC 1003.

PSC 2446W. U.S. Foreign Policy. 3 Credits.

Constitutional, political, and international factors that determine the formulation, execution, and substance of U.S. foreign policy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSC 1003 or IAFF 1005. Same As: PSC 2446.

PSC 2447. American Presidents at War. 3 Credits.

How American presidents have thought about and conducted wars using an analytical and historical approach. Prerequisites: PSC 1003 or IAFF 1005.

PSC 2449. International Security Politics. 3 Credits.

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Prerequisite: PSC 1003.

PSC 2449W. International Security Politics. 3 Credits.

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003.

PSC 2451. Theory of War. 3 Credits.

The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency/counterinsurgency, and nuclear war. Prerequisites: PSC 1003. Same As: PSC 2451W.

PSC 2451W. Theory of War. 3 Credits.

The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency and counterinsurgency, and nuclear war. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003. Same As: PSC 2451.

PSC 2453. U.S. Foreign Policy Perspectives. 3 Credits.

Examination of alternative historical and contemporary perspectives on U.S. foreign policy. Prerequisite: PSC 1003.

PSC 2454. Humanitarianism. 3 Credits.

Norms, principles, and institutions designed to alleviate suffering and improve the welfare of vulnerable populations. Prerequisite: PSC 1003.

PSC 2455. Global Governance. 3 Credits.

The creation, revision, and enforcement of the rules that are intended to govern the world. Prerequisite: PSC 1003.

PSC 2461. European-Atlantic Relations. 3 Credits.

International politics of the North Atlantic area, the European Union, and U.S.-European relations. Prerequisite: PSC 1003.

PSC 2468. Post-Soviet Foreign Policy. 3 Credits.

External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union). Prerequisite: PSC 1003.

PSC 2475. International Relations of East Asia. 3 Credits.

Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region. Prerequisite: PSC 1003.

PSC 2476. The Arab-Israeli Conflict. 3 Credits.

History and current state of the Arab-Israeli Conflict; the Jewish and Arab nationalism movements; Palestine under the British Mandate and after the establishment of the State of Israel; the peace process and its collapse; and recent political developments. Prerequisite: PSC 1003.

PSC 2476W. The Arab-Israeli Conflict. 3 Credits.

The history and current state of the Arab-Israeli conflict; the Jewish and Arab nationalism movements; Palestine under the British Mandate and after the establishment of the State of Israel; the peace process and its collapse; and recent political developments. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSC 1003.

PSC 2478. International Relations of the Middle East. 3 Credits.

Analysis of the regional and international relations of the Middle East. Prerequisite: PSC 1003.

PSC 2482. African International Politics. 3 Credits.

Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Prerequisite: PSC 1003. Recommended background: Prior completion of PSC 2381.

PSC 2484. International Relations of Latin America. 3 Credits.

Analyzes the trajectory of Latin America's role in the world, with particular focus on conflict and cooperation between Latin America and the United States. Prerequisite: PSC 1003.

PSC 2987. Internship: Political Science. 1-3 Credits.

Study of political behavior and institutions through internship experience. Open to departmental majors only. Admission requires departmental approval and junior standing.

PSC 2990. Selected Topics. 3 Credits.

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PSC 2990W. Selected Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 2991. Special Topics in Political Thought. 3 Credits.**PSC 2992. Special Topics in American Politics and Government. 3 Credits.**

Prerequisite: PSC 1002.

PSC 2993. Special Topics in Comparative Politics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisite: PSC 1001.

PSC 2994. Special Topics in International Relations. 3 Credits.

Prerequisite: PSC 1003.

PSC 2994W. Special Topics in International Relations. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003.

PSC 3099. Variable Topics. 1-12 Credits.**PSC 3192W. Proseminar: Political Science. 3 Credits.**

Examination of selected problems in political science. May be repeated once for credit. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors in the political science program.

PSC 3500. Advanced Topics in Political Science. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for details. Students must have completed four PSC courses at the 2000 level in addition to the prerequisite courses prior to enrollment. Prerequisites: PSC 1001, PSC 1002 and PSC 1003; and PSC 2101 or PSC 2102.

PSC 4991. Independent Study. 1-3 Credits.

Permission of the undergraduate program advisor and the faculty member who will direct the study required prior to enrollment. Restricted to seniors in the political science program. Prerequisite: 15 credits of upper-division political science courses.

PSC 5099. Variable Topics. 1-99 Credits.**PSC 6103. Approaches to Public Policy Analysis. 3 Credits.**

Primarily for master's students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 6113. The Constitution: History and Ideas. 3 Credits.

With a focus on the history and ideas that influenced James Madison, consideration of ideas that formed the common heritage of all the framers of the Constitution. The separate traditions of liberty that were fused together in the Constitution. Early changes in American society that placed one of those traditions at the center of America's self-understanding.

PSC 6114. Theories of Judicial Review. 3 Credits.

How and why the U.S. Supreme Court interprets the Constitution. The theory behind the practice of judicial review. Consideration of such questions as whether the Constitution intended judicial review and how the two wings of today's Court justify their own position on judicial review.

PSC 6187. Selected Topics in Political Theory. 3 Credits.

In-depth study of significant issues in political theory. Topics vary by semester. Consult the Schedule of Classes for more details. For advanced students.

PSC 6330. Comparative Government and Politics. 3 Credits.

Examination of basic approaches to comparative politics. Restricted to students in the Elliott School.

PSC 6333. Comparative Politics of Russia and Eurasia. 3 Credits.

Comparative analysis of politics in the post-Soviet region. Theoretical and methodological approaches to understanding important issues, frequently including democracy/autocracy, ethnic conflict, political economy, center-periphery relations, and state building.

PSC 6336. The Political Economy of China, India, and Beyond. 3 Credits.

Comparative analysis of how development problems have been defined from both political and economic perspectives and the solutions proposed by outsiders and insiders. Emphasis on the rise, demise, and recovery of development orthodoxies.

PSC 6338. U.S. Foreign Economic Policy. 3 Credits.

Exploration of ideas and issues involved in U.S. foreign economic policy, including relationship of economic and security issues, interdependence, protectionism, role of the dollar, industrial policy, and the debt crisis.

PSC 6345. Comparative Foreign Policy. 3 Credits.

The relationship of international actors with one another and with their external environment analyzed in a comparative framework. Focus on nation-states as well as non-state actors, such as international organizations. Differences and similarities in policies on economics, diplomacy, security, and global issues.

PSC 6346. The Politics of U.S. Foreign Policy. 3 Credits.

Patterns and problems in contemporary U.S. foreign policy. Special attention given to the domestic political factors shaping foreign policy.

PSC 6347. U.S. Foreign Policy Traditions. 3 Credits.

Contemporary debate about the substance of American foreign policy through the lens of alternative theoretical approaches to the study of international relations. Classical realist (national interest), neorealist (balance of power), neoliberal (international interdependence and institutions), and constructivist (national identity) interpretations are compared.

PSC 6348. Politics of U.S. National Security Policy. 3 Credits.

Examines competing theoretical approaches to the study of national security policy and tests these on a variety of substantive issue areas in the United States. (May include such topics as nuclear non-proliferation, responses to regional conflicts, definition of new security goals, etc.).

PSC 6349. International Security Politics. 3 Credits.

Overview of the major theoretical debates in international security. How different theoretical approaches inform policy decisions and options.

PSC 6350. Foreign Policy Analysis—Selected Topics. 3 Credits.

Analysis of U.S. foreign policy toward selected world regions.

PSC 6351. Civil-Military Relations. 3 Credits.

Substantive and theoretical issues and debates in the study of civil-military relations.

PSC 6360. Western European Politics. 3 Credits.

Examination of the principal characteristics of the British, French, German, and Italian political systems, comparing their institutional and behavioral adaptations to the problems of advanced industrial democracies.

PSC 6361. Politics of European Integration. 3 Credits.

The origins, institutions, and politics of West European integration, with emphasis on theories of regional integration and the development of the European Union.

PSC 6362. Nation-Building in the Balkans. 3 Credits.

The various nation-building policies Balkan nation-states have pursued toward different non-core groups over the nineteenth and twentieth centuries.

PSC 6364. Comparative Governments and Politics of Central And Eastern Europe. 3 Credits.

Comparative analysis of domestic political processes and policies in Central and Eastern Europe.

PSC 6366. Government and Politics of Russia. 3 Credits.

The politics and development of the Russian state.

PSC 6367. Post-Soviet Politics. 3 Credits.

How the study of former Soviet countries contributes to major debates in comparative politics. Focus includes regimes, political economy, revolutions, ethnic politics, nationalism.

PSC 6368. Japanese Politics and Foreign Policy. 3 Credits.

Japan's path to modernity and the impact its pattern of development has had on the nation's democratization, political economy, and political institutions in the post-1945 period.

PSC 6370. Politics of China I. 3 Credits.

Readings and discussion of the political dynamics and policy process in contemporary China.

PSC 6371. Politics of China II. 3 Credits.

Research seminar on selected topics in Chinese politics, using official and other primary sources. Prerequisites: PSC 6370 or permission of the instructor.

PSC 6372. Foreign Policy of China. 3 Credits.

Readings and research on the main approaches to analyzing China's foreign policy and foreign relations.

PSC 6373. Political Economy of Industrializing Asia. 3 Credits.

Comparative analysis of the relationship between economic interests and politics in East and Southeast Asia. Emphasis on industrializing economies and their integration into global trade and investment networks.

PSC 6374. Korean Politics. 3 Credits.

An examination of Korean politics from the perspectives of four major research areas: authoritarian regime and economic growth; democratic transition and consolidation; the Asian financial crisis and its consequences; and the two Koreas and international relations.

PSC 6377. Comparative Politics of the Middle East. 3 Credits.

Readings and research on selected problems of the governments and politics of the Middle East.

PSC 6379. Government and Politics of Africa. 3 Credits.

Major theories and themes of African politics considering the context shaping political and economic reforms, formal and informal institutions, and prospects for political reform.

PSC 6383. Comparative Politics of Latin America. 3 Credits.

Exploration of the democratic advances in Latin America in recent decades as well as the continuing severe social, economic, and political challenges to democracy.

PSC 6388. Topics in Comparative Politics. 3 Credits.

PSC 6390. Politics and Culture. 3 Credits.

Study of the intersection of culture and politics.

PSC 6439. International Political Economy. 3 Credits.

Research seminar exploring alternative theoretical approaches to the study of international political economy and their application to the explanation and interpretation of historical and contemporary events in world political and economic affairs. Primarily for Elliott School degree candidates.

PSC 6440. Theory in International Relations. 3 Credits.

Theories of international relations. Restricted to students in the Elliott School.

PSC 6442. Politics and Practice of International Institutions. 3 Credits.

The politics of international institutions in the areas of collective security, peace keeping, trade, money, development, environment, human rights.

PSC 6444. Politics of International Law. 3 Credits.

The political sources and consequences of international law and norms.

PSC 6456. Origins of Major Wars and Terrorism. 3 Credits.

An examination of the origins of major wars, including terrorism, from the eighteenth to the twentieth centuries from the theoretical perspectives of realism, liberalism, and constructivism/identity.

PSC 6457. Arms Control and Disarmament. 3 Credits.

Major issues and trends in the postwar development of U.S. arms control and disarmament policy.

PSC 6465. The International Politics of Central and Eastern Europe. 3 Credits.

Major historical, political, social, and regional factors that have shaped the interwar, World War II, and postwar evolution of Eastern Europe; emphasis on foreign relations with outside powers and on regional East-West contacts.

PSC 6467. Asian Security. 3 Credits.

An examination of the major issues in Asian Security using various theoretical perspectives involving a mix of political science and policy analysis.

PSC 6475. International Politics of East Asia. 3 Credits.

Foreign policies and international behavior of the regional states (especially China, Japan, and Vietnam) and the extraregional powers (especially the U.S. and Russia).

PSC 6476. The Arab-Israeli Conflict. 3 Credits.

Readings and research on the origins, evolution, and issues of the Arab-Israeli conflict.

PSC 6478. International Relations of the Middle East. 3 Credits.

Readings and research on the regional and international relations of the Middle East.

PSC 6484. International Relations of Latin America. 3 Credits.

The trajectory of Latin America's role in the world, with a particular focus on conflict and cooperation between Latin America and the United States.

PSC 6489. Topics in International Relations. 3 Credits.

PSC 6987. Legal Internship. 3 Credits.

Study of the interior workings of legal institutions and related organizations through an approved internship with a court, law firm, legal advocacy group, public defender's office, or legal think tank. A research paper is required.

PSC 6996. Reading. 3 Credits.

Written permission of the instructor required prior to enrollment. Restricted to graduate degree candidates.

PSC 6997. Research. 3 Credits.

Written permission of the instructor required prior to enrollment. Restricted to graduate students in the political science program.

PSC 6998. Thesis Research. 3 Credits.

PSC 6999. Thesis Research. 3 Credits.

PSC 8101. Introduction to Empirical Political Analysis. 3 Credits.

Statistical foundations of empirical political analysis and computer applications. Basic probability theory, exploratory and descriptive data analysis, statistical inference, and introduction to linear regression.

PSC 8102. Empirical Political Analysis. 3 Credits.

Techniques of social science data analysis. Model building, estimation, and interpretation. Linear models and extensions. Introduction to discrete choice models. Prerequisite: PSC 8101 or permission of the instructor.

PSC 8103. Approaches to Policy Analysis. 3 Credits.

Primarily for doctoral students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 8104. Qualitative Research Methods. 3 Credits.

Theoretical, practical, and ethical aspects of conducting qualitative research.

PSC 8105. Readings in Political Theory. 3 Credits.

Selected major works, both ancient and modern, that illuminate basic problems and questions of political theory.

PSC 8106. Topics in Political Theory. 3 Credits.

Advanced readings and group discussions. Analysis and interpretation of selected concepts and schools of thought.

PSC 8107. Modern Political Thought and Ideologies. 3 Credits.

Analysis of some main currents in modern political thought and ideologies.

PSC 8108. Craft of Political Inquiry. 3 Credits.

Logic of inquiry in political science: theories of knowledge, inference, and research methods.

PSC 8109. Dissertation Development Workshop. 3 Credits.

Design and development of dissertation research proposal for political science PhD Students.

PSC 8120. Nonlinear Models. 3 Credits.

Introduction to maximum likelihood estimation interpretation of non-linear statistical models. Statistical inference, appropriate use, and presentation and interpretation of results.

PSC 8121. Causal Inference. 3 Credits.

Tools used in the social sciences to infer causation, including classical experiments, natural experiments, instrumental variables, regression discontinuity, and panel designs. Restricted to students in the PhD in political science program. Prerequisite: PSC 8101.

PSC 8122. Logitudinal Analysis. 3 Credits.

Examination of two classes of statistical models for longitudinal data—(1) models for time-series, cross-sectional and panel data and (2) modeling event history (i.e., duration, survival, hazard).

PSC 8124. Multilevel Modeling. 3 Credits.

Statistical issues and models for multilevel (hierarchical) data structures, including the variance components, random intercept, and random coefficient models. Handling cross-level interactions.

PSC 8128. Surveys and Experiments. 3 Credits.

Design and analysis of sample surveys and experiments, including lab, survey, and field experiments. Restricted to students in the PhD in political science program. Prerequisite: PSC 8101.

PSC 8130. Game Theory I. 3 Credits.

Introduction to the core elements of game theory and how it has been utilized in political science. Applications of formal models to political phenomena and the major insights that have come from this work. Restricted to graduate students in the political science program.

PSC 8131. Game Theory II. 3 Credits.

Builds on the introductory material in Game Theory I to focus on examples of formal work in political science. Students expand their knowledge of advanced games and learn the principles behind exemplary published research. Restricted to graduate students in the political science program.

PSC 8132. Network Analysis. 3 Credits.

Sociological and psychological foundations of network theory; network measurement and inferential tools; applications of these tools and concepts to political science. Restricted to graduate students in the political science program.

PSC 8185. Topics in Empirical and Formal Political Analysis. 3 Credits.

Selected topics in quantitative political methodology and formal political theory with varying emphasis on maximum likelihood estimation, nonlinear models, causal inference, formal theories, and mathematical/computational tools for the social sciences. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PSC 8187. Selected Topics in Political Theory. 3 Credits.

In-depth coverage of significant issues in political theory, including such topics as justice, toleration, and political community. For advanced students.

PSC 8210. American Political Process. 3 Credits.

A survey of American political institutions, processes, and behavior.

PSC 8211. Urban Politics. 3 Credits.

Comparative analysis of the context, institutions, processes, and policies of urban political systems.

PSC 8212. Urban Policy Problems. 3 Credits.

Analysis of public policy issues confronting urban governments; emphasis on the theoretical roots and empirical impact of past and present programs in such areas as housing, education, poverty, and crime.

PSC 8213. Judicial Politics. 3 Credits.

Introduction to the literature of judicial process and behavior studies; specific focus on selected topics. Emphasis on the major subfields of law, courts, and judicial process.

PSC 8215. Law, Politics, and Society. 3 Credits.

Role of the judiciary in policy formulation; emphasis on the U.S. Supreme Court and civil liberties issues.

PSC 8216. American Presidency. 3 Credits.

Personalized and institutionalized aspects of the presidency, with particular emphasis on the politics of contemporary policymaking.

PSC 8217. Executive Branch Politics. 3 Credits.

Structure and operation of governmental bureaucracy with particular emphasis on the politics of formulating and implementing public policy.

PSC 8218. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on member-constituency relations, individual and collective decision making, party and committee activities, executive-legislative relations, and interest-group activities.

PSC 8219. Political Parties and Elections. 3 Credits.

Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

PSC 8220. Public Opinion and Political Psychology. 3 Credits.

Sources and dynamics of public opinion and political socialization.

PSC 8221. Interest-Group Politics. 3 Credits.

Theory, structure, and activities of interest groups in American politics.

PSC 8226. Politics and Organizations. 3 Credits.

Theoretical approaches to understanding organizational behavior and change; applications to specific political problems in U.S., international, and comparative politics.

PSC 8229. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis.

PSC 8286. Selected Topics in American Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics. For advanced students. (Offered as the demand warrants).

PSC 8331. Advanced Theories of Comparative Politics. 3 Credits.

Major concepts, methods, and theoretical debates in comparative politics, including cultural, rational, and institutional approaches.

PSC 8333. Political Violence. 3 Credits.

Theoretical and methodological approaches to studying violence, such as civil wars, ethnic riots, suicide bombings, and genocide, and the impact of violence on societies and people. Restricted to graduate students in the political science program.

PSC 8334. Democracy and Democratization in Comparative Perspective. 3 Credits.

Theoretical approaches to processes of democratization. Evaluation of cultural, economic, institutional, and international-actor approaches. Case analysis of recently transitioned or transitioning nations. Primarily for PhD students in political science.

PSC 8337. Theories of Political Development. 3 Credits.

Examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions?.

PSC 8338. Nationalism and Nation-Building. 3 Credits.

Nationalism, ethnic conflict, and nation-building; the effects of nationalism on political identities, state formation, patterns of political violence, definitions of citizenship, migration policies, and voting behavior.

PSC 8340. Authoritarianism and Democratization. 3 Credits.

The political science scholarship on authoritarian regimes, including their institutional features, strategies for survival, and prospects for change.

PSC 8341. Theories of Ethnic Politics. 3 Credits.

Focus on cutting-edge interdisciplinary theories of ethnicity's role in politics. Ethnicity's relationship to democracy, economy, psychology, conflict, and solutions. Cases worldwide.

PSC 8388. Selected Topics in Comparative Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in comparative politics, including such topics as democratization, the politics of development, the role of the state in advanced industrial societies, gender and ethnicity, and the politics of nationalism. (Offered as the demand warrants).

PSC 8441. Advanced Theories of International Politics. 3 Credits.

Perspectives examined range from realism to critical theory and focus upon a variety of explanatory variables.

PSC 8450. Topics in International Relations. 3 Credits.

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PSC 8452. Theories of International Security. 3 Credits.

Focus on conflict in different systems and scenarios and on causes and consequences of different strategies. The role of ethics in international security.

PSC 8453. Advanced Theories of Political Economy. 3 Credits.

Major theories of political economy, from classical perspectives on problems of international cooperation to modern treatments of trade, finance, investment, and regulation.

PSC 8454. Domestic Politics and International Relations. 3 Credits.

Theoretical and empirical approaches to exploring the relationship between domestic politics and international relations. Restricted to PhD students in the political science program and MA students with permission of the instructor.

PSC 8460. Military Intervention. 3 Credits.

Theoretical and empirical approaches to the study of military interventions. The challenges of designing political science research on a complex and policy-relevant topic like military intervention.

PSC 8461. Military Effectiveness. 3 Credits.
Theories of military effectiveness in conventional wars. Case studies of several conflicts and brief exploration of effectiveness in unconventional wars.

PSC 8462. Civil War. 3 Credits.
Theories of causes, conduct, and termination of civil wars. Consideration of violence against civilians, rebel recruitment, counterinsurgency, and civil war outcomes.

PSC 8489. Selected Topics in International Politics. 3 Credits.
In-depth coverage of significant theoretical and empirical issues in international politics, including such topics as comparative foreign policy, ethics and norms in international politics, the politics of military intervention, and theories of security in a post-Cold War environment. For advanced students. (Offered as the demand warrants).

PSC 8997. Advanced Reading. 1-3 Credits.
Advanced reading course. Restricted to doctoral candidates preparing for the general examination.

PSC 8998. Advanced Research. 1-12 Credits.
May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

PSC 8999. Dissertation Research. 3-12 Credits.
May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (https://current.bulletin.gwu.edu/arts-sciences/#General_Education_Curriculum_Requirement).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics (or the equivalent)	

The program strongly recommends that students take 12 credits in introductory foreign language and statistics.

Code	Title	Credits
Required for the major		
Six 2000-level political science courses (18 credits) selected from the groups below, including one course from group D and one from group E: *		
Group A (comparative politics)		
PSC 2330	Comparative Politics of Western Europe	
PSC 2331	Comparative Politics of Central and Eastern Europe	
PSC 2332	European Integration	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2339	Comparative Political Economy	
PSC 2366	Russian Politics	
PSC 2367	Human Rights	
or PSC 2367W	Human Rights	
PSC 2368	Politics in the Two Koreas	
PSC 2369	Comparative Politics of South Asia	
PSC 2370	Comparative Politics of China and Northeast Asia	
PSC 2371	Politics and Foreign Policy of China	
PSC 2373	Comparative Politics of Southeast Asia	
PSC 2374	Politics and Foreign Policy of Japan	
PSC 2377	Comparative Politics of the Middle East	
or PSC 2377W	Comparative Politics of the Middle East	
PSC 2379	Politics and Foreign Policy of Israel	
PSC 2381	Comparative Politics of Sub-Saharan Africa	
PSC 2383	Comparative Politics of Latin America	
PSC 2993	Special Topics in Comparative Politics	
Group B (American government and politics)		
PSC 2211	State and Urban Politics	

PSC 2212	State and Urban Policy Problems	or PSC 2451W	Theory of War
PSC 2213	Judicial Politics	PSC 2453	U.S. Foreign Policy Perspectives
PSC 2214	U.S. Constitutional Law and Politics I	PSC 2454	Humanitarianism
PSC 2215	U.S. Constitutional Law and Politics II	PSC 2455	Global Governance
PSC 2216	The American Presidency	PSC 2461	European-Atlantic Relations
PSC 2217	Executive Branch Politics	PSC 2468	Post-Soviet Foreign Policy
PSC 2218	Legislative Politics	PSC 2475	International Relations of East Asia
or PSC 2218W	Legislative Politics	PSC 2476	The Arab-Israeli Conflict
PSC 2219	Political Parties and Interest Groups	or PSC 2476W	The Arab-Israeli Conflict
PSC 2220	Public Opinion	PSC 2478	International Relations of the Middle East
PSC 2221	African American Politics	PSC 2482	African International Politics
PSC 2222	Science, Technology, and Politics	PSC 2484	International Relations of Latin America
PSC 2223	Campaigns and Elections	PSC 2994	Special Topics in International Relations
PSC 2224	Issues in Domestic Public Policy	Group D (research methods)	
PSC 2225	Women and Politics	PSC 2101	Scope and Methods of Political Science
PSC 2228	Media, Politics, and Government	PSC 2102	Visualizing and Modeling Politics
PSC 2229	Media and Politics	Group E (political thought)	
PSC 2230	Law and Justice: The View from Hollywood	PSC 2105	Major Issues of Western Political Thought I
PSC 2240	Poverty, Welfare, and Work	PSC 2106	Major Issues of Western Political Thought II
PSC 2992	Special Topics in American Politics and Government	or PSC 2106W	Major Issues of Western Political Thought II
Group C (international politics, law, and organizations)		PSC 2106W	Major Issues of Western Political Thought II
PSC 2439	International Political Economy	PSC 2107	Twentieth-Century Political Thought
PSC 2440	Theories of International Politics	PSC 2108	Freedom and Equality
PSC 2442	International Organizations	PSC 2110	American Political Thought
or PSC 2442W	International Organizations	PSC 2111	Nietzsche and Political Theory
PSC 2444	Public International Law	PSC 2120W	Freedom in American Thought and Popular Culture
PSC 2446	U.S. Foreign Policy	PSC 2991	Special Topics in Political Thought
PSC 2447	American Presidents at War	One proseminar (3 credits) and one advanced topics course (3 credits)	
PSC 2449	International Security Politics		
or PSC 2449W	International Security Politics		
PSC 2451	Theory of War		

PSC 3192W Proseminar: Political Science (taken in the junior or senior year)

PSC 3500 Advanced Topics in Political Science

*No more than 3 credits of PSC 2987 Internship: Political Science may be credited to the 2000-level course requirement.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).

- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a GPA in upper level Political Science courses of 3.7 or higher.

The GPA in upper level PSC classes is calculated using only PSC upper level or 2000, 3000, and 4000 level classes with no substitution classes and no transfer classes.

The designation of Honors appears on the student's transcript, not on the diploma.

BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE (PUBLIC POLICY FOCUS)

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics	

Required for the major

18 credits of 2000-level courses in political science, distributed as follows: *

Three courses (9 credits) from the following:

PSC 2212 State and Urban Policy Problems

PSC 2213 Judicial Politics

PSC 2216 The American Presidency

PSC 2217 Executive Branch Politics

PSC 2218 Legislative Politics

or PSC 2218W Legislative Politics

PSC 2219 Political Parties and Interest Groups

PSC 2240 Poverty, Welfare, and Work

PSC 2222 Science, Technology, and Politics

PSC 2224 Issues in Domestic Public Policy

PSC 2446 U.S. Foreign Policy

PSC 2468 Post-Soviet Foreign Policy

Three courses (9 credits) from the following groups. One course must from group D.

Group A (comparative politics)

PSC 2330 Comparative Politics of Western Europe

PSC 2331 Comparative Politics of Central and Eastern Europe

PSC 2332 European Integration

PSC 2334 Global Perspectives on Democracy

PSC 2336 State-Society Relations in the Developing World

PSC 2337 Development Politics

PSC 2338 Nationalism

PSC 2339 Comparative Political Economy

PSC 2366 Russian Politics

PSC 2367 Human Rights

or PSC 2367W Human Rights

PSC 2368 Politics in the Two Koreas

PSC 2369 Comparative Politics of South Asia

PSC 2370 Comparative Politics of China and Northeast Asia

PSC 2371 Politics and Foreign Policy of China

PSC 2373 Comparative Politics of Southeast Asia

PSC 2374 Politics and Foreign Policy of Japan

PSC 2377 Comparative Politics of the Middle East

or PSC 2377W Comparative Politics of the Middle East

PSC 2379 Politics and Foreign Policy of Israel

PSC 2381 Comparative Politics of Sub-Saharan Africa

PSC 2383 Comparative Politics of Latin America

PSC 2993 Special Topics in Comparative Politics

Group B (American government and politics)

PSC 2211 State and Urban Politics

PSC 2213 Judicial Politics

PSC 2214 U.S. Constitutional Law and Politics I

PSC 2215 U.S. Constitutional Law and Politics II

PSC 2216 The American Presidency

PSC 2218 Legislative Politics

or PSC 2218W Legislative Politics

PSC 2219 Political Parties and Interest Groups

PSC 2220 Public Opinion

PSC 2221 African American Politics

PSC 2223 Campaigns and Elections

PSC 2225 Women and Politics

PSC 2228 Media, Politics, and Government

PSC 2229 Media and Politics

PSC 2230 Law and Justice: The View from Hollywood

PSC 2992 Special Topics in American Politics and Government

Group C (international politics, law, and organizations)

PSC 2439 International Political Economy

PSC 2440 Theories of International Politics

PSC 2442	International Organizations
or PSC 2442W	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2447	American Presidents at War
PSC 2449	International Security Politics
or PSC 2449W	International Security Politics
PSC 2451	Theory of War
or PSC 2451W	Theory of War
PSC 2453	U.S. Foreign Policy Perspectives
PSC 2454	Humanitarianism
PSC 2455	Global Governance
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
or PSC 2476W	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
PSC 2994	Special Topics in International Relations
Group D (research methods)	
PSC 2101	Scope and Methods of Political Science
PSC 2102	Visualizing and Modeling Politics
Group E (political thought)	
PSC 2105	Major Issues of Western Political Thought I
PSC 2106	Major Issues of Western Political Thought II
or PSC 2106W	Major Issues of Western Political Thought II
PSC 2107	Twentieth-Century Political Thought
PSC 2108	Freedom and Equality
PSC 2110	American Political Thought

PSC 2120W Freedom in American Thought and Popular Culture

PSC 2991 Special Topics in Political Thought

One proseminar (3 credits) and one advanced topics course (3 credits)

PSC 3192W Proseminar: Political Science (Taken in the junior or senior year. Topic must be policy oriented.)

PSC 3500 Advanced Topics in Political Science

Code	Title	Credits
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Six courses (18 credits) in other social sciences and statistics, which must include:

Four required courses:

ECON 1011 Principles of Economics I

ECON 1012 Principles of Economics II

ECON 2101 Intermediate Microeconomic Theory

STAT 1051 Introduction to Business and Economic Statistics

or STAT 1053 Introduction to Statistics in Social Science

or STAT 1111 Business and Economic Statistics I

and two of the following:

ECON 2122 Monetary Theory and Policy

ECON 2136 Environmental and Natural Resource Economics

ECON 2151W Economic Development

ECON 2151 Economic Development

ECON 2157 Urban and Regional Economics

ECON 2158 Industrial Organization

ECON 2159 Government Regulation of the Economy

ECON 2167 Economics of Crime

ECON 3142 Labor Economics

ECON 3148 Health Economics

ECON 3161 Public Finance: Expenditure Programs

ECON 3162 Public Finance: Taxation

ECON 3181 International Trade Theory

ECON 3190	Law and Economics
ECON 3191	Game Theory
SOC 2105	Social Problems in American Society
SOC 2112	Evaluation Research
SOC 2135	Youth and Delinquency
SOC 2136	Criminology
SOC 2137	Transnational Crime
SOC 2139	Alternatives to Imprisonment
SOC 2143	Criminal Justice System Arrest Through Appeal
SOC 2145	Criminal Law
SOC 2146	The Bill of Rights and Criminal Justice
SOC 2161	Sociology of Complex Organizations
SOC 2162	Sociology of the Family
SOC 2163	Sociology of Education
SOC 2169	Urban Sociology
SOC 2170	Class and Inequality in American Society
SOC 2174	Sociology of Immigration
SOC 2179	Race and Minority Relations
STAT 1129	Introduction to Computing
STAT 2118	Regression Analysis
STAT 2123	Introduction to Econometrics
STAT 2183	Intermediate Statistics Lab/Packages

*No more than 3 credits of PSC 2987 Internship: Political Science may be credited to the 2000-level course requirement.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible

citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a GPA in upper level Political Science courses of 3.7 or higher.

The GPA in upper level PSC classes is calculated using only PSC upper level or 2000, 3000, and 4000 level classes with no substitution classes and no transfer classes.

The designation of Honors appears on the student's transcript, not on the diploma.

BACHELOR OF SCIENCE WITH A MAJOR IN POLITICAL SCIENCE REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics	
Required for the major		
Six 2000-level political science courses (18 credits) from the groups below, including one course from group D and one from group E: *		
Group A (comparative politics)		
PSC 2330	Comparative Politics of Western Europe	
PSC 2331	Comparative Politics of Central and Eastern Europe	
PSC 2332	European Integration	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2339	Comparative Political Economy	

PSC 2366	Russian Politics
PSC 2367	Human Rights
or PSC 2367W	Human Rights
PSC 2368	Politics in the Two Koreas
PSC 2369	Comparative Politics of South Asia
PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2373	Comparative Politics of Southeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2377	Comparative Politics of the Middle East
or PSC 2377W	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2383	Comparative Politics of Latin America
PSC 2993	Special Topics in Comparative Politics
Group B (American government and politics)	
PSC 2211	State and Urban Politics
PSC 2212	State and Urban Policy Problems
PSC 2213	Judicial Politics
PSC 2214	U.S. Constitutional Law and Politics I
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2216	The American Presidency
PSC 2217	Executive Branch Politics
PSC 2218	Legislative Politics
or PSC 2218W	Legislative Politics
PSC 2219	Political Parties and Interest Groups
PSC 2220	Public Opinion
PSC 2221	African American Politics
PSC 2222	Science, Technology, and Politics
PSC 2223	Campaigns and Elections
PSC 2224	Issues in Domestic Public Policy

PSC 2225	Women and Politics
PSC 2228	Media, Politics, and Government
PSC 2229	Media and Politics
PSC 2230	Law and Justice: The View from Hollywood
PSC 2240	Poverty, Welfare, and Work
Group C (international politics, law, and organizations)	
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
or PSC 2442W	International Organizations
PSC 2444	Public International Law
PSC 2446	U.S. Foreign Policy
PSC 2447	American Presidents at War
PSC 2449	International Security Politics
or PSC 2449W	International Security Politics
PSC 2451	Theory of War
or PSC 2451W	Theory of War
PSC 2453	U.S. Foreign Policy Perspectives
PSC 2454	Humanitarianism
PSC 2455	Global Governance
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
or PSC 2476W	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
Group D (research methods)	
PSC 2101	Scope and Methods of Political Science
PSC 2102	Visualizing and Modeling Politics

Group E (political thought)

PSC 2105	Major Issues of Western Political Thought I
PSC 2106	Major Issues of Western Political Thought II
or PSC 2106W	Major Issues of Western Political Thought II
PSC 2106W	Major Issues of Western Political Thought II
PSC 2107	Twentieth-Century Political Thought
PSC 2108	Freedom and Equality
PSC 2110	American Political Thought
PSC 2120W	Freedom in American Thought and Popular Culture
PSC 2991	Special Topics in Political Thought
One proseminar (3 credits) and one advanced topics course (3 credits)	
PSC 3192W	Proseminar: Political Science (taken in the junior or senior year)
PSC 3500	Advanced Topics in Political Science
Required courses in related areas	
MATH 1232	Single-Variable Calculus II
STAT 1051	Introduction to Business and Economic Statistics (only one may be taken for credit)
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
Four additional courses in statistics, mathematics, and computer science, excluding the following:	
CSCI 1010	Computer Science Orientation
CSCI 1011	Introduction to Programming with Java
CSCI 1020	Applications Software
CSCI 1021	Introduction to Computers and the Internet
CSCI 1022	Introduction to Internet Technology
CSCI 1023	Introduction to Web Software Development
CSCI 1030	Technology and Society

or CSCI 1030W Technology and Society

MATH 1000	Dean's Seminar
MATH 1008	History of Mathematics
MATH 1009	Mathematical Ideas I
MATH 1010	Mathematical Ideas II
MATH 1220	Calculus with Precalculus I
MATH 1221	Calculus with Precalculus II
MATH 1231	Single-Variable Calculus I
MATH 1252	Calculus for the Social and Management Sciences
MATH 2991	Introductory Special Topics
STAT 1000	Dean's Seminar
STAT 1129	Introduction to Computing
STAT 4195	Reading and Research

*No more than 3 credits of PSC 2987 Internship: Political Science may be credited to the 2000-level course requirement.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.

- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must have a GPA in upper level Political Science courses of 3.7 or higher.

The GPA in upper level PSC classes is calculated using only PSC upper level or 2000, 3000, and 4000 level classes with no substitution classes and no transfer classes.

The designation of Honors appears on the student's transcript, not on the diploma.

DUAL BS IN POLITICAL SCIENCE AND MPP

The Departments of Political Science and Public Policy and Public Administration in Columbian College offer a dual bachelor of science (BS) in political science (p. 409) and master of public policy (MPP) (p. 448) degree program. The

program allows students to take 12 graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's. All requirements for both degrees must be fulfilled. Students interested in the dual degree program should consult with their advisor.

DUAL BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE (PUBLIC POLICY FOCUS) AND MASTER OF PUBLIC POLICY

The Department of Political Science and the Trachtenberg School of Public Policy and Public Administration work in cooperation to offer a dual bachelor of arts with a major in political science (public policy focus) (p. 403) and master of public policy (p. 382) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://tspppa.gwu.edu/combined-bampa-political-science-program/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE AND MASTER OF ARTS IN THE FIELD OF POLITICAL SCIENCE

The Department of Political Science offers a dual bachelor of arts with a major in political science (p. 403) and master of arts in the field of political science (p. 413) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://politicalscience.columbian.gwu.edu/combined-degree-programs/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN POLITICAL SCIENCE AND MASTER OF PUBLIC ADMINISTRATION

The Department of Political Science and the Trachtenberg School of Public Policy and Public Administration work in cooperation to offer a dual bachelor of arts with a major in

political science (p. 403) and master of public administration (p. 447) degree program. The program allows students to take 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://politicalscience.columbian.gwu.edu/combined-degree-programs/>) for additional information.

MINOR IN POLITICAL SCIENCE REQUIREMENTS

The following requirements must be fulfilled: 18 credits in political science (PSC) courses.

Code	Title	Credits
Required		
One course from the following:		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 1003	Introduction to International Politics	
One course from the following:		
PSC 2105	Major Issues of Western Political Thought I	
PSC 2106	Major Issues of Western Political Thought II	
or PSC 2106W	Major Issues of Western Political Thought II	
PSC 2107	Twentieth-Century Political Thought	
PSC 2108	Freedom and Equality	
PSC 2110	American Political Thought	
PSC 2120		
or PSC 2120W	Freedom in American Thought and Popular Culture	
or AMST 2120W	Freedom in American Thought and Popular Culture	
PSC 2991	Special Topics in Political Thought	
Four additional PSC courses.		

MINOR IN PUBLIC POLICY

The following requirements must be fulfilled: 24 credits, including 15 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
PSC 1001	Introduction to Comparative Politics	
PSC 1002	Introduction to American Politics and Government	
PSC 2101 or PSC 2102	Scope and Methods of Political Science Visualizing and Modeling Politics	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
Electives		
Three courses (9 credits) from the following:		
PSC 2212	State and Urban Policy Problems	
PSC 2213	Judicial Politics	
PSC 2216	The American Presidency	
PSC 2217	Executive Branch Politics	
PSC 2218	Legislative Politics	
PSC 2219	Political Parties and Interest Groups	
PSC 2222	Science, Technology, and Politics	
PSC 2224	Issues in Domestic Public Policy	
PSC 2240	Poverty, Welfare, and Work	
PSC 2446	U.S. Foreign Policy	
PSC 2468	Post-Soviet Foreign Policy	

MASTER OF ARTS IN THE FIELD OF POLITICAL SCIENCE

As part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the program examines politics on a national and international scale, with emphases on American politics, comparative politics and international relations. The nationally recognized political science program at GW offers graduate students an opportunity to work with prominent scholars in a wide range of

fields and to take advantage of the resources and opportunities of the nation’s capital.

We train students broadly and emphasize mastery of a variety of research methods. Our graduate students have won prestigious dissertation and post-doctoral awards and are active in all aspects of the profession. Our graduates have secured tenure-track positions at such schools as William & Mary, DePaul University, the University of Indiana, the University of Toronto, Colorado State University, Occidental College, SOAS/University of London, and the University of Oregon.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

33 credits, including a minimum 15 credits in a single track, selected according to departmental guidelines, and 18 credits selected from among all tracks; and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
15 credits (five courses) in one of the three tracks listed below and 18 credits (six courses) selected from among all tracks.		
American politics track		
PSC 6103	Approaches to Public Policy Analysis	
PSC 6114	Theories of Judicial Review	
PSC 6346	The Politics of U.S. Foreign Policy	
PSC 6347	U.S. Foreign Policy Traditions	
PSC 6348	Politics of U.S. National Security Policy	
PSC 8210	American Political Process	
PSC 8211	Urban Politics	
PSC 8212	Urban Policy Problems	
PSC 8213	Judicial Politics	
PSC 8215	Law, Politics, and Society	
PSC 8216	American Presidency	
PSC 8217	Executive Branch Politics	
PSC 8218	Legislative Politics	
PSC 8219	Political Parties and Elections	
PSC 8220	Public Opinion and Political Psychology	

PSC 8221	Interest-Group Politics
PSC 8226	Politics and Organizations
PSC 8229	Politics and Public Policy
PSC 8286	Selected Topics in American Politics
SMPA 6207	Political Persuasion and Public Opinion
SMPA 6210	Media and Foreign Policy
SMPA 6272	Media Bias, Power, and Democracy
SOC 6230	Sociological Research Methods
SOC 6231	Data Analysis
SOC 6245	Race Relations
SOC 6248	Race and Urban Redevelopment
SOC 6250	Urban Sociology
SOC 6263	Race and Crime
SOC 6265	Women, Welfare, and Poverty
SOC 6266	Gender and Criminal Justice
SOC 6268	Race, Gender, and Class
World politics track	
PSC 6330	Comparative Government and Politics
PSC 6333	Comparative Politics of Russia and Eurasia
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6338	U.S. Foreign Economic Policy
PSC 6345	Comparative Foreign Policy
PSC 6349	International Security Politics
PSC 6350	Foreign Policy Analysis—Selected Topics
PSC 6351	Civil-Military Relations
PSC 6360	Western European Politics
PSC 6361	Politics of European Integration
PSC 6362	Nation-Building in the Balkans
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
PSC 6366	Government and Politics of Russia
PSC 6367	Post-Soviet Politics

PSC 6368	Japanese Politics and Foreign Policy
PSC 6370	Politics of China I
PSC 6371	Politics of China II
PSC 6372	Foreign Policy of China
PSC 6373	Political Economy of Industrializing Asia
PSC 6374	Korean Politics
PSC 6377	Comparative Politics of the Middle East
PSC 6379	Government and Politics of Africa
PSC 6383	Comparative Politics of Latin America
PSC 6388	Topics in Comparative Politics
PSC 6390	Politics and Culture
PSC 6439	International Political Economy
PSC 6440	Theory in International Relations
PSC 6442	Politics and Practice of International Institutions
PSC 6444	Politics of International Law
PSC 6456	Origins of Major Wars and Terrorism
PSC 6457	Arms Control and Disarmament
PSC 6465	The International Politics of Central and Eastern Europe
PSC 6467	Asian Security
PSC 6475	International Politics of East Asia
PSC 6476	The Arab-Israeli Conflict
PSC 6478	International Relations of the Middle East
PSC 6484	International Relations of Latin America
PSC 6489	Topics in International Relations
PSC 8333	Political Violence
PSC 8334	Democracy and Democratization in Comparative Perspective
PSC 8337	Theories of Political Development
PSC 8338	Nationalism and Nation-Building
PSC 8340	Authoritarianism and Democratization
PSC 8341	Theories of Ethnic Politics

PSC 8388	Selected Topics in Comparative Politics
PSC 8461	Military Effectiveness
IAFF 6102	Global Gender Policy
IAFF 6106	Nuclear Weapons
IAFF 6118	Special Topics in International Affairs
IAFF 6122	Development Policy and Practice
IAFF 6136	Gender and Development
IAFF 6138	Special Topics in International Development Studies
IAFF 6142	Technology Creation/Diffusion
IAFF 6145	U.S. Space Policy
IAFF 6146	Space Law
IAFF 6148	Space and National Security
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy
IAFF 6160	Defense Policy and Program Analysis
IAFF 6163	Transnational Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6167	Defense Policy and Program Analysis II
IAFF 6169	Homeland Security
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies
IAFF 6198	Special Topics in International Economic Policy
IAFF 6208	Special Topics in Global Communication
IAFF 6222	Special Topics in International Policy and Practice
IAFF 6302	Taiwan: Internal Development and Foreign Policy
IAFF 6305	U.S.-South Asia Relations

IAFF 6308	International Relations of South Asia
IAFF 6318	Special Topics in Asian Studies
IAFF 6338	Special Topics in European and Eurasian Studies
IAFF 6342	Drug Trafficking in the Americas
IAFF 6358	Special Topics in Latin American and Hemispheric Studies
IAFF 6362	Regional Security in Middle East
IAFF 6363	Political Economy of the Middle East
IAFF 6364	Religion and Society in the Modern Middle East
IAFF 6378	Special Topics in Middle East Studies
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
Law and politics track	
PSC 6103	Approaches to Public Policy Analysis
PSC 6113	The Constitution: History and Ideas
PSC 6114	Theories of Judicial Review
PSC 6187	Selected Topics in Political Theory
PSC 6444	Politics of International Law
PSC 8210	American Political Process
PSC 8213	Judicial Politics
PSC 8215	Law, Politics, and Society
PSC 8217	Executive Branch Politics
PSC 8218	Legislative Politics
PSC 8219	Political Parties and Elections
PSC 8229	Politics and Public Policy
EDUC 6236	School Law and Policy
EDUC 6560	Legal Problems in Higher Education
HIST 6312	The Law of Race and Slavery
HIST 6370	U.S. Legal History
LAW 6214	Constitutional Law I
PHIL 6242	Philosophy, Law, and Social Policy
PPPA 6075	Law and the Public Administrator

SOC 6261	Sociology of Law
SOC 6263	Race and Crime
WGSS 6266	Gender and Criminal Justice

Other requirements

Successful completion of a comprehensive examination.

DOCTOR OF PHILOSOPHY IN THE FIELD OF POLITICAL SCIENCE

As part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the PhD in political science examines politics on a national and international scale, with emphasis on American politics, comparative politics, and international relations. The nationally recognized program offers graduate students an opportunity to work with prominent scholars in a wide range of fields and to take advantage of the resources and opportunities of the nation's capital.

The program trains students broadly, with emphasis on mastering a variety of research methods. Students have won prestigious dissertation and post-doctoral awards and are active in all aspects of the profession. Students are able to construct a program consisting of a major and minor field of study. The three major fields are American politics, international relations, and comparative politics. The PhD program allows students to construct a program consisting of a major and a minor field of study. The three major fields are American politics, international relations and comparative politics. Any of the major fields—plus public policy, political theory, or research methodology—is an option for a minor. In addition, the Trachtenberg School of Public Policy and Public Administration and the Department of Political Science offer a dual master of public policy (MPP) (p. 448) and doctor of philosophy in political science (PhD) (p. 416) degree program.

Program graduates have secured tenure-track positions at such schools as William & Mary, DePaul University, University of Indiana, University of Toronto, Colorado State University, Occidental College, SOAS/University of London, and University of Oregon. Graduates seeking positions outside of a university setting have found positions at the Congressional Research Service, the World Bank, and the Federal Bureau of Investigation, among others.

REQUIREMENTS

Students of outstanding ability are admitted to the doctoral program upon recommendation of a departmental graduate committee and the concurrence of Columbian College.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Code	Title	Credits
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Required

PSC 8101	Introduction to Empirical Political Analysis
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PSC 8108	Craft of Political Inquiry
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PSC 8109	Dissertation Development Workshop
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Five major field courses, including a field seminar, if applicable.

Four minor field courses, including a field seminar, if applicable.

Additional requirements

In addition to required coursework, program requirements consists of two comprehensive examinations covering a primary and supporting field, an original research paper, and a dissertation demonstrating the capacity to undertake original and significant research. The research paper, to be completed by the second year in the program, must reflect the student's ability to conduct original research. Students prepare for the comprehensive exams by taking at least five courses in their primary field and at least four courses in their supporting field, selected according to departmental guidelines. Three primary fields are available: American politics, international relations, and comparative politics. In addition, political theory, public policy, and research methodology are available as supporting fields. Petitions for a self-designed minor field (e.g., political communications) composed primarily of courses not offered by the established fields can be jointly proposed by students and faculty. All students must complete a sequence of courses in research methodology comprising PSC 8101, PSC 8108, and PSC 8109.

A recommendation to the Dean for Admissions to candidacy, or the dissertation research stage, will be considered upon satisfactory completion of all coursework, research paper, field examinations, and successful defense of the dissertation prospectus. Students must pass their primary field examination with a satisfactory pass or above and must pass their supporting field examination with a bare pass or above in order to be considered eligible for promotion to candidacy. Admission to candidacy is permitted only if the student's performance on the examinations and in the coursework gives a good indication of success in the second unit. Passing the field examinations does not in itself ensure admission to candidacy.

The dissertation prospectus must outline the central research question(s), relate the proposed research to the existing literature, detail a research methodology, and explain the nature of the original contribution that the completed project will provide. The prospectus must be presented and defended in an open forum, which all faculty and doctoral students are invited to attend. The full dissertation must be similarly defended. A dual degree program enables students to earn the master of public policy along with the PhD in the field of political science.

PROFESSIONAL PSYCHOLOGY

Offered through the Columbian College of Arts and Sciences social and behavioral sciences discipline, the professional psychology program offers the graduate degrees master of arts in the field of forensic psychology and doctor of psychology (PsyD) in the field of clinical psychology.

The MA degree program is designed to address a growing need for criminal profilers, competency experts, psychological evaluators, and counselors. Students are immersed in courses ranging from the psychopathology of serial criminals and terrorist agents to the treatment of sex offenders and ethical issues involving interrogation. The forensic psychology degree program offers two tracks; the applied forensics track prepares students for careers in law enforcement or homeland security, while the applied psychology track prepares students for careers as providers of direct services to clients in organizations such as rehabilitational facilities and community action organizations, and can serve as a springboard for clinical work at the doctoral level. Students are required to complete 250 hours of externship training, tailored to their professional interests.

The PsyD program offers a substantive introduction to the basic science aspects of psychology and the skills required of a clinical psychologist. Students take a series of foundation courses outlining biological, cognitive, social, and cultural foundations; basic and more advanced clinical courses, such as psychopathology, group dynamics, assessment, psychotherapy, supervision, and consultation; and research methods, statistics, history and systems, and ethics courses. The advanced curriculum offers courses tailored within three broad tracks: adult, assessment, and child. In addition to didactic courses, students work with a diverse patient population at different public and private agencies as well as at the department's in-house clinic. Upon completion of coursework and prior to receiving the PsyD, students perform a one-year, full-time internship.

The professional psychology program also offers the graduate certificate in LGBT health policy and practice.

Visit the Professional Psychology Program website (<https://psyd.columbian.gwu.edu/>) for additional information.

GRADUATE

Master's program

- Master of Arts in the field of forensic psychology (p. 420)

Doctoral program

- Doctor of Psychology in the field of clinical psychology (p. 418)

CERTIFICATE

- Graduate Certificate in LGBT health policy and practice (p. 419)

FACULTY

Professors Emeriti D. Holmes, R. Ruth

Professor L. Ingraham (*Director*)

Associate Professors R. Cooter, P. Gedo (Deputy Director and Director of Clinical Training), C. Marmarosh

Assistant Professors R. Lopez Sharifi, J. Sexton, S. Hedlund

Adjunct Professors Y. Aleshina, H. Devinney, K. Marshall Woods, K. Weise, L. Sheehi

Professorial Lecturers M. Forbes, S. Forssell, A. Gartner, D. Grasso, J. Gorin, C. Holl, S. Kane, P. Magaletta, B. McConnell, J. McNamara, B. Sheppard, P. Snejevski, A. Washington, N. Xenakis, H. Zelle

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: PSYD courses are limited to students enrolled in the Professional Psychology program except by permission of the director. See the Department of Psychology for the degree program leading to the Doctor of Philosophy in the field of clinical psychology.

- Forensic Psychology (FORP) (p. 1597)
- Professional Psychology (PSYD) (p. 1750)

DOCTOR OF PSYCHOLOGY IN THE FIELD OF CLINICAL PSYCHOLOGY

Offered through the Columbian College of Arts and Sciences' social and behavioral sciences discipline, the professional psychology program teaches students clinical research methods for new discoveries. Students receive in-depth psychodynamic training that combines extensive practical experience with classes on scientific foundations of psychology taught by seasoned clinicians, scholars, and researchers. Students also study cognitive behavioral, systems, and community consultation approaches. They have opportunities to learn group, family, and short-term interventions and to work in hospital, forensic, and school settings.

The professional psychology program offers a substantive introduction to the basic science aspects of psychology and the skills required of a clinical psychologist. Students take a series of foundation courses outlining biological, cognitive, social, and cultural foundations; basic and more advanced clinical courses, such as psychopathology, group dynamics, assessment, psychotherapy, supervision, and consultation; and research methods, statistics, history, and systems and ethics courses.

The advanced curriculum offers courses tailored within three broad tracks: adult, assessment, and child. In addition to coursework, students work with a diverse patient population at different public and private agencies as well as at the department's in-house clinic.

Upon completion of curriculum requirements and prior to receiving the PsyD, students perform a one-year, full-time internship.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Satisfactory completion of at least 83 credits of approved graduate coursework. A maximum of 12 credits may be taken in courses offered by the other affiliated members of the Consortium of Universities of the Washington DC Metropolitan Area (<https://www.consortium.org/>). Doctor of psychology students must complete all degree requirements within five years of matriculation in the program.

Successful completion of all required coursework and practical requirements and the general examination.

Code	Title	Credits
Curriculum requirements		
Core courses		
PSYD 8201	Psychological Assessment	
PSYD 8202	Psychological Assessment	
PSYD 8203	Practicum in Clinical Psychology	
PSYD 8204	Biological Bases of Clinical Psychology	
PSYD 8205	Psychodynamic Psychopathology	
PSYD 8206	Cognitive Bases of Clinical Psychology	
PSYD 8207	Group and Organizational Dynamics	
PSYD 8209	Statistics and Research Design	
PSYD 8210	Professional Issues	
PSYD 8220	Psychodynamic Psychotherapy	
PSYD 8221	Psychodynamic Psychotherapy	
PSYD 8222	Behavioral-Cognitive Therapies	
PSYD 8225	Theories of Mind	
PSYD 8226	Ego Psychology/Object Relations Theory	
PSYD 8227	History and Systems of Clinical Psychology	
PSYD 8231	Short-Term Psychotherapy	
or PSYD 8240	Group Psychotherapy	
PSYD 8246	Community Intervention (Consultation)	
PSYD 8261	Life Span Development	
PSYD 8270	Current Topics in Clinical Psychology *	
*Topics offered annually include Psychological Assessment III, Empirical Research, Prevention, and Supervision.		
Additional coursework		
Courses chosen from one of three tracks (adult, assessment, or child and adolescent) to complete the minimum requirement of 83 credits in graduate coursework.		
Practical requirements		
Practicum		

Successful completion of the practicum seminar PSYD 8203 in summer of first year and each fall and spring semester thereafter, as well as an additional practicum during a summer session.

Externship

Successful completion of an externship comprising a year-long, part-time supervised clinical assignment in two years of the program. A failed externship may, in exceptional circumstances and with the approval of the program director, be repeated. If the student fails a second time, no further opportunity will be provided, and the student’s degree candidacy is terminated.

Internship

Successful completion of a one-year, full-time internship at an institution approved by the program faculty is required. If the student fails the internship, no further opportunity will be provided and the student’s degree candidacy is terminated.

General examination

Satisfactory completion of the general examination.

Degree of master of psychology

Students who have earned 53 credits toward the PsyD may receive the degree of master of psychology (MPsy).

Transfer of Credit

Provisions are the same as those of the doctor of philosophy program, above, except that up to 27 credits may be transferred into the program.

Transfer of Credit

Provisions are the same as those of the Doctor of Philosophy Program, above, except that up to 27 credits may be transferred into the program.

The General Examination

Students are required to complete the general examination no later than the beginning of the final semester of the program. A student who fails to pass any part of the general examination may, in exceptional circumstances, and with the approval of the program, repeat the examination at the next scheduled date. If the student fails a second time, no further opportunity to take the examination is permitted and the student’s degree candidacy is terminated.

GRADUATE CERTIFICATE IN LGBT HEALTH POLICY AND PRACTICE

The graduate certificate program in Lesbian, Gay, Bisexual and Transgender (LGBT) Health Policy and Practice—the first of its kind in applied health for the LGBT community—trains current and future healthcare leaders to develop strategies that address health issues and reduce health disparities for LGBT

people. The one-year, 18-credit program provides students with a solid base in the psychological, medical, and policy-based issues faced by LGBT individuals.

Designed for working professionals, the program is a distance learning program with a combination of online coursework (completed throughout the year) and two, one-week residencies on the GW campus in Foggy Bottom. Core courses cover topics relating to LGBT health and well-being, mental health, and health policy. The required capstone projects enable students to put coursework into practice.

Each student will create a product designed to improve health outcomes for LGBT people that he or she can use in his or her place of employment to further his or her career, or can feature as a “real world” accomplishment in his or her resume in job applications. This program may be completed on either a two-year or a one-year schedule.

Visit the program website (<https://lgbt.columbian.gwu.edu/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses and three 2-credit elective courses.

Code	Title	Credits
Required		
PSYD 6201	Multi-disciplinary LGBT Health *	
PSYD 6202	LGBT Mental Health *	
PSYD 6203	LGBT Health Policy *	
Capstone		
PSYD 6211	LGBT Health Capstone	
Electives		
6 credits in elective courses selected from the following:**		
AMST 6430	Gender, Sexuality, and American Culture I	
PSYC 8275 or WGSS 8275	Women and Health	
PSYD 6221	Topics in LGBT Health	
PSYD 8270	Current Topics in Clinical Psychology	
PUBH 6099	Topics in Public Health (Designing and Evaluating HIV Prevention Programs)	
PUBH 6514	Preventing Health Disparities	
SOC 6268	Race, Gender, and Class	

SOC 6273	The Sex Industry
WGSS 6257	Gender and Sexuality

*Taken for 3 credits to meet program requirements.

**Students may petition the Program Director to include other courses as electives. Electives should be graduate-level courses offered at GW that pertain to the LGBT population (specifically, not the broader minority population), physical or mental health with a focus on minority/underserved populations, or public policy with a focus on health and/or minority/underserved populations.

MASTER OF ARTS IN THE FIELD OF FORENSIC PSYCHOLOGY

The Forensic Psychology program offers two tracks: Applied Forensics, which prepares students for careers in law enforcement or homeland security; and Applied Psychology, which prepares students for careers as providers of direct services to clients in organizations such as correctional facilities and community action organizations and can serve as a springboard for clinical work at the doctoral level. Students are required to complete 250 hours of externship training, tailored to their professional interest. Day, evening and weekend classes are offered to accommodate both full-time students and working professionals.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeeregulationtext>).

37 credits, including 25 credits in required courses and 12 credits in elective courses, and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
FORP 6101	Psychology and the Legal System I	
FORP 6102	Psychology and the Legal System II	
FORP 6103	Theories of Criminal Behavior	
FORP 6104	Psychopathology	
FORP 6105	Basics of Psychological Assessment	
FORP 6106	Ethics in Forensic Psychology	
FORP 6107	Research and Statistics	
FORP 6108	Consultation and Testimony	

FORP 6130	Practicum/Externship
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Potential Curriculum Paths:

Applied forensics

Four of the following recommended elective courses:

FORP 6117	Interrogation and Interviewing
FORP 6118	Psychological Profiling
FORP 6119	Police Psychology
FORP 6120	Counterintelligence
FORP 6128	Terrorism and Counterterrorism
FORP 6129	Investigative Psychology

Applied psychology

Four of the following recommended elective courses:

FORP 6109	Evaluation and Treatment of Offenders
FORP 6110	Forensic Psychological Assessment
FORP 6111	Evaluation and Treatment of Sex Offenders
FORP 6112	Substance Abuse Evaluation and Treatment
FORP 6113	Victimology
FORP 6115	Children and Adolescents in the Legal System
FORP 6131	Individuals with Mental Illness in the Legal System

PSYCHOLOGICAL AND BRAIN SCIENCES

The Department of Psychological and Brain Sciences, part of the social and behavioral sciences division within the Columbian College of Arts and Sciences, seeks to advance the science and practice of psychology through research and its dissemination, and to provide outstanding education and training to undergraduate and doctoral students. The faculty encourages a scientist/applied approach to psychology, which is achieved through research and coursework that emphasize psychological knowledge, theories and methods, and apply psychological science to important issues individuals, communities, and society face.

UNDERGRADUATE

Bachelor's programs

- Bachelor of arts with a major in psychological and brain sciences (p. 427)
- Bachelor of science with a major in cognitive neuroscience (p. 429)

Combined program

- Dual bachelor of arts with a major in psychological and brain sciences and master of arts in the field of art therapy (p. 431)

Minor

- Minor in psychological and brain sciences (p. 431)

GRADUATE

Doctoral programs

- Doctor of Philosophy in the field of applied social psychology (p. 431)
- Doctor of Philosophy in the field of clinical psychology (p. 432)
- Doctor of Philosophy in the field of cognitive neuroscience (p. 434)

FACULTY

Professors P. Barratt, I.A. Bowleg, J.M. Ganiban, G. Howe, H.N. Le, S. Mitroff, L.R. Offermann, J.W. Philbeck (*Chair*), P.J. Poppen, L.A. Rothblat, S. Shomstein, C.K. Sigelman, P. Wirtz, M.C. Zea

Associate Professors D.P. Costanza, T.L. Dodge, S. Dopkins, C. Gee, S. Lambert, S.D. Molock, P.J. Moore, C.A. Rohrbeck, M.H. Sohn, M. Stock

Assistant Professors C. Beil (*Research*), S. K. Calabrese, D.J. Kravitz, D.E. Schell, G.K. Wu

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: PSYC 1001 General Psychology is prerequisite to all undergraduate psychology courses.

PSYC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PSYC 1001. General Psychology. 3 Credits.

Fundamental principles underlying human behavior.

PSYC 1099. Variable Topics. 1-36 Credits.

PSYC 2011. Abnormal Psychology. 3 Credits.

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001. Same As: PSYC 2011W.

PSYC 2011W. Abnormal Psychology. 3 Credits.

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSYC 1001. Same As: PSYC 2011.

PSYC 2012. Social Psychology. 3 Credits.

Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. Prerequisite: PSYC 1001.

PSYC 2013. Developmental Psychology. 3 Credits.

Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. Prerequisite: PSYC 1001.

PSYC 2014. Cognitive Psychology. 3 Credits.

Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making. Prerequisite: PSYC 1001.

PSYC 2015. Biological Psychology. 3 Credits.

Introduction to the biological basis of behavior; review of data and empirical methods on the topics of neural structure and function, brain damage, neuroanatomy, genes, hormones, and their influence on behavior. Prerequisite: PSYC 1001.

PSYC 2099. Variable Topics. 1-12 Credits.

PSYC 2101. Research Methods in Psychology. 3 Credits.

Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). PSYC 1001 and STAT 1053 may be taken as a corequisite. Prerequisites: PSYC 1001 and STAT 1053.

PSYC 2199. Special Topics in Psychology. 3 Credits.

Special topics in psychology for students without advanced psychology background. Topics vary by semester. May be repeated once for credit provided the topic differs. See department for more details. Prerequisite: PSYC 1001. Credit cannot be earned for this course and PSYC 3199.

PSYC 2508. Humanistic Psychology. 3 Credits.

Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Formerly PSYC 3108) Prerequisites: PSYC 1001.

PSYC 2514. Adult Development and Aging. 3 Credits.

Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. (Formerly PSYC 3114) Prerequisites: PSYC 1001.

PSYC 2529. Theories of Personality. 3 Credits.

Survey of personality theories; emphasis on their application to problems of individuals. (Formerly PSYC 3129) Prerequisites: PSYC 1001.

PSYC 2531. Psychological Tests. 3 Credits.

Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. (Formerly PSYC 3131) Prerequisites: PSYC 1001.

PSYC 2533. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind; broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment. Prerequisite: PSYC 1001. Same As: SPHR 2133.

PSYC 2541. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisites: PSYC 1001; and SPHR 1071 or SPHR 2135. Credit cannot be earned for this course and SPHR 2131.

PSYC 2544. Industrial/Organizational Psychology. 3 Credits.

Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Formerly PSYC 2144. Prerequisites: ORSC 1109 or PSYC 1001. (Same as ORSC 2544).

PSYC 2550. Psychology of Sex Differences. 3 Credits.

Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Formerly PSYC 3150) Prerequisites: PSYC 1001.

PSYC 2554. Psychology of Crime and Violence. 3 Credits.

Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Formerly PSYC 3154) Prerequisites: PSYC 1001.

PSYC 2556. Psychology of Attitudes and Public Opinion. 3 Credits.

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare. (Formerly PSYC 3156) Prerequisites: PSYC 1001.

PSYC 2570. Peer Education. 3 Credits.

This is a course designed to train George Washington University undergraduate students to be health peer educators. Students are trained in various topics related to mental health, physical health, and alcohol and/or other drugs, and gain the skills needed for outreach programming. Prerequisite: PSYC 1001.

PSYC 2571. Helping Skills. 3 Credits.

Training for undergraduate students preparing to be entry-level support professionals as a part of the GW Listens program or similar programs offering support to individuals who have mental and physical health issues. Prerequisite: PSYC 1001.

PSYC 2588. Attitudes Toward Death and Dying. 3 Credits.

Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Formerly PSYC 3188) Prerequisites: PSYC 1001.

PSYC 2596. History and Systems of Psychology. 3 Credits.

A survey and integration of the major viewpoints and concepts of psychology. Recommended for students planning graduate study. (Formerly PSYC 4196) Prerequisites: PSYC 1001.

PSYC 2945. Psychological Study of Spirituality. 3 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Formerly PSYC 3945. Prerequisite: PSYC 1001.

PSYC 3099. Variable Topics. 1-12 Credits.**PSYC 3112. Psychology of Adolescence. 3 Credits.**

Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to the solution of such problems. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3115. Developmental Psychopathology. 3 Credits.

The origins of child psychopathology, including developmental perspectives and the potential contributions of child-, family-, and community-based characteristics to the emergence of psychopathology. The development of specific childhood disorders. Prerequisites: PSYC 2011 and PSYC 2101; or PSYC 2013.

PSYC 3116. Brain and Language. 3 Credits.

How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3118. Neuropsychology. 3 Credits.

Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3119. Cognitive Science in the District. 3 Credits.

Study of cognitive psychology abilities (e.g., memory, attention, perception, decision making) through primary research articles and class discussion; firsthand experiences in the practical application of cognitive psychology through field trips in the DC area. Prerequisites: PSYC 2014 or PSYC 2015.

PSYC 3120. Neuroscience of Consciousness. 3 Credits.

The phenomenon of human consciousness using the methods and concepts of neuroscience. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2014 or PSYC 2015. Recommended background: psychology or cognitive neuroscience major.

PSYC 3121. Memory and Cognition. 3 Credits.

An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of cognitive function from attention and pattern recognition to learning and memory. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3122. Cognitive Neuroscience. 3 Credits.

How the structure and functions of the brain are related to cognitive processes and their associated behaviors. The biological bases of behavior and mental activity. Research and case studies by cognitive psychologists, neuroscientists, psychiatrists, and linguists, focusing on how the brain affects pattern recognition, attention, short-term and long-term memory processes, and language. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3124. Visual Perception. 3 Credits.

An overview of human perception, ranging from the detection of simple stimuli to the identification of objects and events; perceptions of color, motion, and spatial layout; research methodology, biological foundations, and theoretical issues. Prerequisites: PSYC 1001, PSYC 2101, and PSYC 2014 or PSYC 2015.

PSYC 3125. Cross-Cultural Psychology. 3 Credits.

Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisites: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126. Multicultural Psychology. 3 Credits.

The influence of culture on major psychology concepts Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisite: PSYC 2101 and PSYC 2011 or PSYC 2012. Same As: PSYC 3126W.

PSYC 3126W. Multicultural Psychology. 3 Credits.

The influence of culture on major psychology concepts. Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSYC 2011 or PSYC 2012; and PSYC 2101. Same As: PSYC 3126.

PSYC 3128. Health Psychology. 3 Credits.

Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. Prerequisite: PSYC 2101.

PSYC 3132. Social and Personality Development. 3 Credits.

Examination of personal, emotional, and social development from infancy to adolescence and influences on that development. Prerequisites: PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 3170. Clinical Psychology. 3 Credits.

An exploration of the history, functions, and concerns of the clinical psychologist. Assessment, treatment, community approaches, ethics. Prerequisite: PSYC 2011 and PSYC 2101.

PSYC 3172. Psychopathology and the Media. 3 Credits.

How abnormal behaviors and mental disorders are portrayed in film and the media, including analysis of the accuracy of these portrayals, focusing on symptomatology, etiology, and treatment of adult psychopathology. Prerequisites: PSYC 2011 and PSYC 2101.

PSYC 3173. Community Psychology. 3 Credits.

Origins and current practice of community psychology, and comparison of community psychological approaches with traditional clinical perspectives; the role of psychology in addressing social issues facing communities; methods for research and intervention targeting communities. Prerequisites: PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 3180. Seminar in Cognitive Science. 3 Credits.

Advanced seminar for undergraduate students focusing on recent developments in cognitive science. Topics vary and may include perception, attention, memory, representation, and cognitive control, as well as neural bases of cognitive processes. Prerequisites: PSYC 3118 or PSYC 3121 or PSYC 3122 or PSYC 3124 or PSYC 4106W or PSYC 4107W.

PSYC 3193. Seminar in Industrial/Organizational Psychology. 3 Credits.

Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. (Formerly PSYC 4193). Prerequisites: PSYC 1001 and PSYC 2544; or permission of the instructor.

PSYC 3198. Current Research Issues. 3 Credits.

Recent studies in psychology, including studies performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3199. Current Topics in Psychology. 3 Credits.

Topics vary. May be repeated once for credit provided the topic differs. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3591. Supervised Research Internship. 1-3 Credits.

Open to qualified students with permission of a supervising faculty member. Arrangements must be made with the faculty supervisor prior to registration; a list of participating faculty members and their research specialties is available from the department. May be repeated for credit; PSYC 3591 and PSYC 4591 combined may be taken for a total of 9 credits maximum. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3592. Field Internship. 3 Credits.

Advanced psychology majors spend a minimum of six hours per week in a supervised internship in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. May be repeated for credit, but the repeat enrollment does not count toward the major. Restricted to psychology majors. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 4106W. Research Lab in Sensation and Perception. 4 Credits.

Capstone course focused on the study of sensation and perception. Students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2014 or PSYC 2015.

PSYC 4107W. Research Lab in Cognitive Neuroscience. 4 Credits.

A capstone course focused on the study of cognitive neuroscience in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2014 or PSYC 2015.

PSYC 4201W. Research Lab in Clinical/Community Psychology. 4 Credits.

A capstone course focused on the study of clinical/community psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4202W. Research Lab in Applied Social Psychology. 4 Credits.

A capstone course focused on the study of topics in applied social psychology, such as discrimination and health, in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4203W. Research Lab in Developmental Psychology. 4 Credits.

A capstone course focused on the study of developmental psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4285. Foundations of Experimental Neuroscience. 3 Credits.

Current theories of cognitive neuroscience; the link between transduction of sensory input to behavior output, link between cortical circuits and complex cognition and behavior, and development of these circuits during embryonic, fetal, and early post-natal development. Prerequisites: BISC 2220 or BISC 2320 or PSYC 2015 or PSYC 3118 or PSYC 3122. (Same as NRSC 8285).

PSYC 4591. Independent Research. 1-3 Credits.

Open to qualified students by permission to pursue an independent research project with the supervision of a faculty member; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated for credit; PSYC 3591 and PSYC 4591 may be taken for a total of 9 credits maximum. (Formerly PSYC 4191) Restricted to . Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 4997. Honors Seminar. 3 Credits.

Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101. (Formerly PSYC 4197).

PSYC 5099. Variable Topics. 1-99 Credits.**PSYC 6998. Thesis Research. 3 Credits.****PSYC 6999. Thesis Research. 3 Credits.****PSYC 8202. Psychological Research Methods and Procedures. 3 Credits.**

Required in all graduate psychology programs. Includes philosophy of science, types of research design, and methods of data collection. Restricted to graduate students. Prerequisites: One laboratory course in psychology, and a course in statistics.

PSYC 8203. Experimental Foundations of Psychology: Learning, Memory, and Cognition. 3 Credits.

Current conceptions of learning, memory, and cognition; the research upon which these conceptions are based; applications to practical contexts. Restricted to graduate students.

PSYC 8204. Experimental Foundations of Psychology: Biological Basis of Behavior. 3 Credits.

Introduction to the structure and function of the nervous system. Topics include neural communication, sensory processes, memory, neuroendocrinology of sex differences and stress, psychiatric and neurodegenerative disorders. Restricted to graduate students.

PSYC 8207. Psychological Assessment I. 3 Credits.

Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee. Restricted to students in the PhD in clinical psychology program.

PSYC 8208. Psychological Assessment II. 3 Credits.

Continuation of PSYC 8207. Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory—diagnostic work at clinical facilities. Material fee. Restricted to students in the clinical psychology program.

PSYC 8210. Developmental Theories and Issues. 3 Credits.

Orientation to the field of developmental psychology, with emphasis on traditional and contemporary theories, fundamental concepts and issues, and methodological approaches. Restricted to graduate students.

PSYC 8211. Community Psychology I. 3 Credits.

Survey of the history, theories, and values guiding community psychology; models of service delivery. Restricted to graduate students.

PSYC 8212. Community Psychology II. 3 Credits.

Continuation of PSYC 8211. Applications of the principles and theories of community psychology to interventions and research. Restricted to graduate students. Prerequisite: PSYC 8211.

PSYC 8218. Evidence-Based Interventions. 3 Credits.

Introduction to theory and technique of psychotherapeutic approaches of proven effectiveness. Restricted to graduate students.

PSYC 8219. Group Dynamics. 3 Credits.**PSYC 8220. Ethics and Professional Issues. 3 Credits.**

The foundations of ethics and ethical decision making, with an emphasis on the APA Ethics Code. Ethical conflicts and issues in the areas of research and practice. Restricted to graduate students.

PSYC 8223. Seminar: Human Memory. 3 Credits.

Selected topics of current research interest in the area of human memory. Emphasis on encoding and retrieval processes, amnesia, and disorders of memory. Restricted to graduate students.

PSYC 8225. Behavioral Approaches to Child Assessment and Therapy. 3 Credits.

Child assessment and treatment from a behavioral viewpoint. The application of conditioning, reinforcement, and shaping principles with reference to specific disorders of childhood. Restricted to graduate students.

PSYC 8227. Seminar: Principles of Psychotherapy. 3 Credits.

For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8228. Seminar: Principles of Psychotherapy. 3 Credits.

Continuation of PSYC 8227. For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8231. Development of Psychometric Instruments. 3 Credits.

Quantitative techniques and principles used in construction, standardization, and evaluation of personality and ability measures for research and practice; quantification of human judgment for measurement purposes. Restricted to graduate students. Prerequisites: course in tests and measurements and an elementary course in statistics.

PSYC 8236. Ethnic and Racial Diversity in Psychology. 3 Credits.

Basic theoretical models of research in ethnic, racial, and cultural diversity and new directions in the field. The impact of being an ethnic minority in the United States. Restricted to graduate students.

PSYC 8237. The Practice of General Psychology I. 3 Credits.

Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to students in the clinical psychology program.

PSYC 8238. The Practice of General Psychology II. 3 Credits.

Continuation of PSYC 8237. Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to students in the clinical psychology program.

PSYC 8239. Lifespan Developmental Psychopathology I. 3 Credits.

Infancy, childhood, and adolescence. Restricted to graduate students.

PSYC 8240. Lifespan Developmental Psychopathology II. 3 Credits.

Continuation of PSYC 8239. Restricted to graduate students.

PSYC 8243. Seminar: Psychology of Leadership in Organizations. 3 Credits.

Theories and issues related to the emergence and effectiveness of leaders, with focus on leadership behaviors and processes in organizations. Restricted to graduate students.

PSYC 8244. Theories and Processes of Organizational Management. 3 Credits.

Basic functions and techniques of organizational management—design, control, direction, and decision making—examined from the viewpoint of behavioral science. Restricted to graduate students.

PSYC 8245. Seminar: Organizational Behavior. 3 Credits.

Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. Restricted to graduate students.

PSYC 8246. Seminar: Personnel Evaluation Techniques. 3 Credits.

Techniques of personnel selection and performance evaluation. Employment tests, personal data, assessment interviews, performance ratings, and assessment centers. Federal guidelines in employee selection. Includes practicum. Restricted to graduate students.

PSYC 8248. Research Applications to Organizational Intervention and Change. 3 Credits.

Emphasis on development of models of organizational effectiveness; design of valid diagnostic instruments; implementation of research strategies; establishment of program evaluation criteria. Restricted to graduate students.

PSYC 8250. Seminar in Cognitive Neuroscience. 3 Credits.

Advanced topics in the fundamentals of cognitive neuroscience; attention, memory, scene processing, space perception, decision making, and social and affective functioning. Restricted to graduate students. Recommended background: a working knowledge of cognitive psychology concepts and core neuronal physiology.

PSYC 8251. Behavioral Neuroscience. 3 Credits.

The neural basis of behavior, with special focus on the psychobiological determinants of learning, memory, and cognition. Methodologies used for different levels of analysis with normal and brain-impaired subjects. Restricted to graduate students.

PSYC 8253. Social Cognition. 3 Credits.

Social psychology theories, conceptual approaches, and their applications. Social cognition, person perception, attribution, information processing, attraction, stereotyping. Restricted to graduate students.

PSYC 8254. Social Influence. 3 Credits.

Social psychology theories, conceptual approaches, and their applications. Analysis of intentional and unintentional social influence processes and their effects on behavior. Current research on conformity, social power, social exchange, and impression management. Restricted to graduate students.

PSYC 8255. Attitudes and Attitude Change. 3 Credits.

Current theory and research on attitudes and attitude change. Restricted to graduate students.

PSYC 8256. Introduction to Survey Research. 3 Credits.

Theory and practice of face-to-face telephone and mail surveys. Practical experience with all stages from the formulation of research questions and hypotheses to questionnaire design, sampling, pilot, testing, interviewing, coding, and data cleaning. Prerequisite: STAT 2105 .

PSYC 8257. Current Topics in Social Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas within field of social psychology. Topic changes each semester. Restricted to graduate students.

PSYC 8258. Qualitative Research and Analysis. 3 Credits.

Qualitative research and analysis with a focus on theory, didactic material relevant to qualitative methodologies, and applied qualitative research design and analysis. Restricted to graduate students.

PSYC 8259. Psychology of Individual and Group Decision Making. 3 Credits.

Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Restricted to graduate students.

PSYC 8260. Psychology of Work Group Development. 3 Credits.

Examination of theory and research on groups as task performance systems. Approaches to team development as a means of improving work group effectiveness, including goal setting, role clarification, increasing interpersonal skills, and conflict resolution. Restricted to graduate students.

PSYC 8268. Seminar: Neuropsychology. 3 Credits.

Selected problems in research relating the brain and behavior. Independent topics each semester, such as sensory processing, brain development and behavior, clinical aspects of nervous system function. Restricted to graduate students.

PSYC 8275. Women and Health. 3 Credits.

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Restricted to graduate students. (Same as WGSS 8275).

PSYC 8277. Health Psychology. 3 Credits.

Social psychological theories and research that relate to health and illness. Application of theories of social learning, attribution, attitude change, and social influence to topics such as health promotion and disease prevention, health compliance, and coping with illness and disability. Restricted to graduate students.

PSYC 8279. Special Topics in Health Psychology. 3 Credits.

May be repeated for credit provided the topic differs. Admission by permission of instructor. Restricted to graduate students.

PSYC 8280. Theories and Practice of Clinical Supervision. 0 Credits.

Theory and practice of clinical supervision through instruction and a supervision practicum in the clinical facilities. Restricted to clinical psychology graduate students.

PSYC 8283. First Year Seminar I: Motivational Interviewing. 0 Credits.

This course develops in clinical psychology doctoral students basic skills necessary for therapeutic effectiveness through motivational interviewing and familiarizes them with goals and values in their clinical training. Restricted to students in the clinical psychology program.

PSYC 8284. First Year Seminar II: Introduction to Therapy. 0 Credits.

Clinical psychology doctoral students gain basic familiarity with assessment and psychotherapy practices and understanding of the inner workings of the Meltzer Center clinic. Restricted to students in the clinical psychology program.

PSYC 8285. History and Systems of Psychology. 0 Credits.

Clinical psychology doctoral students engage in self-study of the history and systems of psychology. Restricted to students in the clinical psychology program.

PSYC 8286. Clinical Psychology Externship. 0 Credits.

Clinical psychology doctoral students participate in externship placements in clinical settings to develop their clinical skills and competencies. Restricted to students in the clinical psychology program.

PSYC 8287. Current Topics in Clinical Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to Graduate students only.

PSYC 8288. Current Topics in Industrial/Organizational Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to graduate students.

PSYC 8289. Seminar: Current Topics in Experimental Psychology. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Restricted to graduate students.

PSYC 8291. Theories of Organizational Behavior. 3 Credits.

Examination of current theoretical models and research. Restricted to graduate students.

PSYC 8295. Independent Research. 3 Credits.

Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. May be repeated for credit. Restricted to Psychology graduate students only.

PSYC 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the major field examination.

PSYC 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to PhD students in the psychology program.

BACHELOR OF ARTS WITH A MAJOR IN PSYCHOLOGICAL AND BRAIN SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
PSYC 1001	General Psychology	
PSYC 2101	Research Methods in Psychology	
STAT 1053	Introduction to Statistics in Social Science (or equivalent)	

Two survey courses (6 credits) selected from the following:

PSYC 2011 Abnormal Psychology

or PSYC 2011W Abnormal Psychology

PSYC 2012 Social Psychology

PSYC 2013 Developmental Psychology

One survey course (3 credits) selected from the following:

PSYC 2014 Cognitive Psychology

PSYC 2015 Biological Psychology

One course (3 credits) selected from the following:

PSYC 3112 Psychology of Adolescence

PSYC 3115 Developmental Psychopathology

PSYC 3125 Cross-Cultural Psychology

PSYC 3126 Multicultural Psychology

or PSYC 3126W Multicultural Psychology

PSYC 3128 Health Psychology

PSYC 3132 Social and Personality Development

PSYC 3170 Clinical Psychology

PSYC 3173 Community Psychology

One course (3 credits) selected from the following:

PSYC 3118 Neuropsychology

PSYC 3119 Cognitive Science in the District

PSYC 3120 Neuroscience of Consciousness

PSYC 3121 Memory and Cognition

PSYC 3122 Cognitive Neuroscience

PSYC 3124 Visual Perception

One advanced research lab course (4 credits) selected from the following:

PSYC 4106W Research Lab in Sensation and Perception

or PSYC 4107W Research Lab in Cognitive Neuroscience

PSYC 4201W Research Lab in Clinical/Community Psychology

or PSYC 4202W Research Lab in Applied Social Psychology

or PSYC 4203W Research Lab in Developmental Psychology

Electives

Four additional psychology (PSYC) courses (12 credits) numbered 2000 or above. Only 3 credits in PSYC 3591 or PSYC 4591 may be applied toward the major.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in

addition to the one course in this category required by the University General Education Requirement.

- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to meeting the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, the student must submit an application to the Psychology Department before the beginning of the senior year, take an honors seminar (PSYC 4997 Honors Seminar) and a graduate-level seminar, and complete a research experience (PSYC 3591 Supervised Research Internship or PSYC 4591 Independent Research). The grade-point average in psychology required for graduation with Special Honors is 3.5.

BACHELOR OF SCIENCE WITH A MAJOR IN COGNITIVE NEUROSCIENCE

The bachelor of science in cognitive neuroscience degree program addresses the fundamental theories, methods, and results involved in neurobiology, cognitive neuroscience, and the study of complex behavior. The major takes an integrated and rigorous approach that emphasizes convergence between the subfields of cognitive neuroscience and skill in presenting compelling neuroscientific arguments in both written and oral form. Students with sufficient interest and skill assist in undergraduate research and external internships.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
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Required

11 to 14 credits in introductory natural science courses, including 8 credits in biological sciences and 3 or 6 credits in mathematics.

BISC 1111	Introductory Biology: Cells and Molecules
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BISC 1112	Introductory Biology: The Biology of Organisms
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MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II
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or MATH 1231	Single-Variable Calculus I
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Two courses in analytical methods (6 credits) selected from the following:

BISC 2584	Introduction to Bioinformatics
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CSCI 1012	Introduction to Programming with Python
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STAT 1127	Statistics for the Biological Sciences ¹
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Three gateway courses (9 to 10 credits) that introduce core concepts selected from the following:

ANAT 2160	Human Functional Neuroanatomy
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or SPHR 2106	Neural Substrates of Speech, Language, and Hearing
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ANTH 1005	The Biological Bases of Human Behavior
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BISC 2320	Neural Circuits and Behavior
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PHIL 1153	The Meaning of Mind
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PHIL 2045	Introduction to Logic
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PSYC 2014	Cognitive Psychology
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PSYC 2015	Biological Psychology
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Six intermediate content courses (18 credits), which must include two courses from each of the following three groups:

Cellular/molecular/systems neuroscience

ANTH 3413	Evolution of the Human Brain
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BISC 2220	Developmental Neurobiology
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BISC 3320	Human Neurobiology
-----------	--------------------

Cognitive neuroscience

PSYC 3118	Neuropsychology
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PSYC 3121	Memory and Cognition
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PSYC 3122	Cognitive Neuroscience
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PSYC 3124	Visual Perception
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SPHR 2133	Autism
SPHR 3116	Brain and Language
Cognitive science	
PHIL 3121	Symbolic Logic
PHIL 3153	Mind, Brain, and Artificial Intelligence
SPHR 2131	Language Acquisition and Development
SPHR 2135	Language: Structure, Meaning, and Use
One research/laboratory experience (3 to 4 credits). This requirement may be fulfilled by one semester of guided or independent research in ANTH, BISC, CHEM, PHIL, PSYC, or SPHR, or one of the following options: ²	
BISC 2452 & BISC 2453	Animal Behavior and Animal Behavior Lab
PSYC 4106W	Research Lab in Sensation and Perception
PSYC 4107W	Research Lab in Cognitive Neuroscience

Electives

Four advanced content courses (12 credits) selected from the following:

ANTH 3413	Evolution of the Human Brain
ANTH 3491	Topics in Biological Anthropology ³
ANTH 3601	Language, Culture, and Cognition
ANTH 3603	Psycholinguistics
ANTH 3691	Special Topics in Linguistic Anthropology ³
BISC 2220	Developmental Neurobiology
BISC 2452 & BISC 2453	Animal Behavior and Animal Behavior Lab
BISC 3165	Biochemistry I
BISC 3166	Biochemistry II
BISC 3209	Molecular Biology
BISC 3320	Human Neurobiology
CHEM 2151 & CHEM 2153	Organic Chemistry I and Organic Chemistry Laboratory I
CHEM 2152 & CHEM 2154	Organic Chemistry II and Organic Chemistry Laboratory II

PHIL 3151	Philosophy of Science
PHIL 3153	Mind, Brain, and Artificial Intelligence
PHIL 4196	Topics in Theory of Knowledge ³
PSYC 3118	Neuropsychology
PSYC 3121	Memory and Cognition
PSYC 3122	Cognitive Neuroscience
PSYC 3124	Visual Perception
PSYC 3180	Seminar in Cognitive Science ³
PSYC 3198	Current Research Issues ³
PSYC 3199	Current Topics in Psychology ³
PSYC 4997	Honors Seminar
SPHR 2133	Autism
SPHR 2135	Language: Structure, Meaning, and Use
SPHR 3116	Brain and Language

¹STAT 1127 is recommended, but an equivalent course may be substituted.

²For SPHR, available only to students who have a minimum 3.5 GPA in major courses and/or the permission of the instructor.

³When the topic is relevant and with permission of the Program Director.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.

- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

DUAL BA IN PSYCHOLOGICAL AND BRAIN SCIENCES AND MA IN ART THERAPY

The Department of Psychological and Brain Sciences offers a combined bachelor of arts with a major in psychological and brain sciences (p. 427) and a master of arts in the field of art therapy (p. 133) program. The program allows students to take a specified number of graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://psychology.columbian.gwu.edu/bachelors-psychologymasters-art-therapy-bama/>) for additional information.

MINOR IN PSYCHOLOGICAL AND BRAIN SCIENCES

REQUIREMENTS

The following requirements must be fulfilled: 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
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Required

PSYC 1001	General Psychology	
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Two survey courses (6 credits) from the following, including at least one of PSYC 2014 or PSYC 2015:

PSYC 2011	Abnormal Psychology	
or PSYC 2011W	Abnormal Psychology	

PSYC 2012	Social Psychology	
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PSYC 2013	Developmental Psychology	
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PSYC 2014	Cognitive Psychology	
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PSYC 2015	Biological Psychology	
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Electives

At least three additional psychology (PSYC) courses (9 credits) numbered 2000 or above, not including PSYC 3591 or PSYC 4591

Students considering graduate study in psychology are advised to take PSYC 2101, which is a prerequisite for 3000 and 4000 level courses.

DOCTOR OF PHILOSOPHY IN THE FIELD OF APPLIED SOCIAL PSYCHOLOGY

The PhD in Applied Social Psychology program trains students to apply social psychological theories and methods to understand and address major health problems and health disparities.

Following the scientist-practitioner model, the program provides a solid foundation in social psychological topics such as attitudes, social cognition, social influence and decision-making, and also promotes mastery of research methods (i.e., experimental and correlational approaches, and quantitative,

qualitative and mixed methods research). Students may round out their academic experience with electives from other areas of study including, but not limited to, public health, public policy, economics, and minority and community psychology.

In addition, because faculty specialize in a broad range of analysis in their own research, students in the program also learn multiple perspectives on human behavior. With the program’s applied focus on health promotion and disease prevention, students have collaborated with faculty on research related to HIV/AIDS, obesity, sexual risk, substance use, sun exposure and the doctor-patient relationship.

Many students also add to their portfolio of skills by pursuing service-sector research and internship opportunities at consulting firms, government agencies, health care organizations, nonprofits, corporations and other organizations. This is a STEM-designated program.

Visit the program website (<https://psychology.columbian.gwu.edu/applied-social/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

72 credits, including 33 credits in core requirements, 21 to 27 credits in elective courses, and 12 to 18 credits in dissertation, and successful completion of a comprehensive examination.

Code	Title	Credits
Required core		
Applied social		
PSYC 8253	Social Cognition	
PSYC 8254	Social Influence	
PSYC 8255	Attitudes and Attitude Change	
PSYC 8277	Health Psychology	
Methods/statistics		
DNSC 6274	Statistical Modeling and Analysis	
DNSC 6275	Advanced Statistical Modeling and Analysis	
DNSC 6276	Exploratory and Multivariate Data Analysis	

PSYC 8202	Psychological Research Methods and Procedures
PSYC 8256	Introduction to Survey Research
Breadth	
6 credits in psychology (PSYC) courses out of the applied social program.	
Electives	
21 to 27 credits in elective courses. Recommended electives are listed below; other courses may be selected in consultation with the advisor.	
PSYC 8218	Evidence-Based Interventions
PSYC 8231	Development of Psychometric Instruments
PSYC 8245	Seminar: Organizational Behavior
PSYC 8257	Current Topics in Social Psychology
PSYC 8258	Qualitative Research and Analysis
PSYC 8259	Psychology of Individual and Group Decision Making
PSYC 8279	Special Topics in Health Psychology
PSYC 8295	Independent Research
Dissertation	
12 to 18 credits in dissertation.	
PSYC 8998	Advanced Reading and Research
PSYC 8999	Dissertation Research
Comprehensive examination	
Students must successfully complete a comprehensive examination.	

DOCTOR OF PHILOSOPHY IN THE FIELD OF CLINICAL PSYCHOLOGY

The PhD in clinical psychology program follows the scientist-practitioner model. In this American Psychological Association-accredited program, students are trained as applied researchers and scientists, developing skills in the research methods used to advance knowledge of the causes, prevention and treatment of emotional, behavioral and interpersonal problems.

Program faculty subscribe to a range of theoretical orientations, including cognitive-behavioral, family systems, social ecology, and community frameworks. These faculty perspectives enable

students to develop a broad base of knowledge, as well as specialize in particular areas of research and/or evidence-based application.

The program’s coursework, research, and clinical training embrace a community psychology perspective that emphasizes the importance of understanding the associations between individuals and the settings and systems in which they are embedded. This ecological orientation is evident throughout the curriculum and reflects the program theme: prevention and health promotion in diverse urban communities. Because of this focus, the clinical psychology program is also recognized by the Society for Community Research and Action as a doctoral clinical-community training program.

The PhD in clinical psychology is a STEM-designated program.

Visit the program website (<https://psychology.columbian.gwu.edu/clinical/>) for additional information

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

72 credits, including 54 credits in required courses, 6 credits in elective courses, and 12 credits in dissertation. Students also take five zero-credit courses and successfully complete a comprehensive examination.

In addition, students are required to obtain clinical training, including a minimum of two assessment practica and two therapy practica in the Meltzer Center (<https://psychology.columbian.gwu.edu/meltzer-center/>)’s Psychological and Community-Based Services, and to complete a one-year Psychology Internship Training Program. In almost all cases this will be an APA- approved predoctoral internship program.

Code	Title	Credits
Required		
Methods/Statistics		
DNSC 6274	Statistical Modeling and Analysis	
DNSC 6275	Advanced Statistical Modeling and Analysis	
DNSC 6276	Exploratory and Multivariate Data Analysis	
PSYC 8202	Psychological Research Methods and Procedures	

Breadth	
PSYC 8210	Developmental Theories and Issues
PSYC 8250	Seminar in Cognitive Neuroscience
PSYC 8253	Social Cognition
Clinical core	
PSYC 8207	Psychological Assessment I
PSYC 8208	Psychological Assessment II
PSYC 8211	Community Psychology I
PSYC 8212	Community Psychology II
PSYC 8218	Evidence-Based Interventions
PSYC 8220	Ethics and Professional Issues
PSYC 8236	Ethnic and Racial Diversity in Psychology
PSYC 8237	The Practice of General Psychology I
PSYC 8238	The Practice of General Psychology II
PSYC 8239	Lifespan Developmental Psychopathology I
PSYC 8240	Lifespan Developmental Psychopathology II

Required zero-credit courses

PSYC 8280	Theories and Practice of Clinical Supervision
PSYC 8283	First Year Seminar I: Motivational Interviewing
PSYC 8284	First Year Seminar II: Introduction to Therapy
PSYC 8285	History and Systems of Psychology
PSYC 8286	Clinical Psychology Externship

Electives

6 credits in elective courses outside of the clinical program.

Dissertation

PSYC 8998	Advanced Reading and Research
PSYC 8999	Dissertation Research

DOCTOR OF PHILOSOPHY IN THE FIELD OF COGNITIVE NEUROSCIENCE

The PhD in Cognitive Neuroscience program trains students to become independent scientists who perform research in academic and research institutions. Unlike clinical neuropsychology programs, this doctoral program does not provide any training in diagnosing or treating brain or neurological disorders.

Instead, the cognitive neuroscience curriculum offers an intense, focused research experience in the areas of perception, attention and memory, with an emphasis on the neural bases of these capacities. Students utilize diverse research methods throughout their studies, including patient-based testing, neuro-imaging, animal modeling, psychophysical scaling and computational modeling. The program also emphasizes faculty-student collaboration through joint research projects.

Students benefit from GW's location in Washington, D.C., where it is in close proximity to the National Institutes of Health and other major research institutions. On campus, GW's School of Medicine and Health Sciences and its associated teaching hospital are also great resources for cognitive neuroscience research, with their intensive Neuroscience Program and world-class Departments of Neurology, Neurosurgery and Neuroradiology. This is a STEM-designated degree program.

Visit the program website (<https://psychology.columbian.gwu.edu/cognitive-neuroscience/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

72 credits, including 33 credits in required courses, 21 to 27 credits in elective courses, 12 to 24 credits in dissertation, and successful completion of a comprehensive examination.

Code	Title	Credits
Required core		
PSYC 8250	Seminar in Cognitive Neuroscience (Foundations)	
PSYC 8250	Seminar in Cognitive Neuroscience (Proseminar)	

PSYC 8203	Experimental Foundations of Psychology: Learning, Memory, and Cognition
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PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior
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PSYC 8289	Seminar: Current Topics in Experimental Psychology
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Methods/statistics

DNSC 6274	Statistical Modeling and Analysis
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DNSC 6275	Advanced Statistical Modeling and Analysis
-----------	--

DNSC 6276	Exploratory and Multivariate Data Analysis
-----------	--

PSYC 8202	Psychological Research Methods and Procedures
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Breadth

6 credits in coursework taken outside of the cognitive neuroscience field.

Electives

21 to 27 credits in elective courses, which may include the courses listed below and/or other relevant courses.

PSYC 8223	Seminar: Human Memory
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PSYC 8251	Behavioral Neuroscience
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PSYC 8268	Seminar: Neuropsychology
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PSYC 8295	Independent Research
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Dissertation

PSYC 8998	Advanced Reading and Research (taken for 6 to 12 credits)
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PSYC 8999	Dissertation Research (taken for 6 to 12 credits)
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Comprehensive examination

Students must successfully complete a comprehensive examination.

PUBLIC POLICY AND PUBLIC ADMINISTRATION

Through its Trachtenberg School of Public Policy and Public Administration, Columbian College of Arts and Sciences offers master of public policy, master of public administration, and doctor of philosophy in the field of public policy and administration degree programs. The master's programs

provide academic preparation toward professional careers in government, business, and the nonprofit sector. The PhD program is designed to help students master subjects in multiple academic disciplines, including politics, economics, and quantitative and qualitative methods in policy research. In addition, a graduate certificate in nonprofit management provides an overview of central concepts in managing nonprofit organizations.

The Environmental Resource Policy (ENRP) program within the Trachtenberg School of Public Policy and Public Administration offers a multidisciplinary approach to environmental and sustainability studies. The master of arts degree prepares students to enter environmental policy careers in government, nonprofit organizations, the private sector, and environmental advocacy. In addition to the MA degree program, ENRP offers two graduate certificate programs. The graduate certificate in environmental resource policy provides an alternative to the MA for working professionals who may not have the need for or the time to commit to the full master's; however, once completed, the credits earned toward the certificate may be applied to the master's degree requirements. The graduate certificate in the contexts of environmental policy is designed to help support the professional development of current and future leaders of the National Park Service who are responsible for the preservation and protection of public lands and cultural heritage.

Visit the Trachtenberg School of Public Policy and Public Administration website (<https://tspppa.gwu.edu/>) for additional information.

GRADUATE

Master's programs

- Master of Arts in the field of environmental resource policy (p. 446)
- Master of Public Administration (p. 447)
- Master of Public Policy (p. 448)

Combined programs

- Dual Master of Arts in the field of environmental resource policy and Graduate Certificate in geographical information systems (p. 447)
- Dual Master of Public Administration and Graduate Certificate in homeland security emergency preparedness and response (p. 442)
- Dual Master of Public Administration and Graduate Certificate in nonprofit management (p. 445)
- Dual Master of Public Policy and Doctor of Philosophy in the field of political science (p. 443)
- Dual Master of Public Policy and Graduate Certificate in data science (p. 443)

Doctoral program

- Doctor of Philosophy in the field of public policy and administration (p. 441)

CERTIFICATE

Graduate Certificates

- Budget and public finance (p. 443)
- Contexts of environmental policy (p. 444)
- Environmental resource policy (p. 445)
- Nonprofit management (p. 445)

FACULTY

Professors W. Adams, B. Barnow, S. Cellini, D. Conger (*Associate Director*), J. Cordes, J. Brinkerhoff, K. Newcomer, S. Pandey, M. Tschirhart (*Director*), M. Worth

Associate Professors L. Brainard, L. Brooks, C. Carrigan, J.M. Johnson, J. Kastle, P. Linquiti, E. Rigby

Assistant Professors A. Nathan, E. Strader, L. Yang, N. Kelsey

Regular Part-Time Faculty N. Augustine, D. Brunori

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Programs in Public Administration are offered at the graduate level by the Trachtenberg School of Public Policy and Public Administration. Courses with 2000 designations are open to undergraduates.

PPPA 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PPPA 1099. Variable Topics. 36 Credits.

PPPA 2000. Justice and the Legal System I. 3 Credits.

The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country.

PPPA 2001. Justice and the Legal System II. 3 Credits.

Continuation of PPPA 2000. The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country. Prerequisite: PPPA 2000.

PPPA 2117. Executive Branch Politics. 3 Credits.

Contemporary concepts and issues in public administration and management. Major trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSC 2217.

PPPA 2701. Sustainability and Environmental Policy. 3 Credits.

A survey of the intersection of the principles of sustainability and the set of public policies that affect environmental management in the United States. Consideration of the idea that environmental policy is inevitably implemented in a complex interaction of both natural and human systems. Topics applicable to most environmental policy debates, such as the the balance between costs and benefits of environmental protection. Introduction to a "toolkit" of environmental policy instruments ranging from highly prescriptive command-and-control regulations to flexible market-based policies.

PPPA 5099. Variable Topics. 1-99 Credits.**PPPA 6000. Perspectives on Public Values. 1 Credit.**

The underpinnings and skills necessary for a functioning democratic society; empathy and the ability to have civil discourse to create, analyze, pass, implement, and evaluate policy and programs.

PPPA 6001. Introduction to Public Service and Administration. 3 Credits.

Introduction to the discipline of public administration. The intellectual traditions and theoretical frames of reference that inform public administration as a field of professional practice and study. Current and continuing challenges and controversies.

PPPA 6002. Research Methods and Applied Statistics. 3 Credits.

Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

PPPA 6003. Economics for Public Decision-Making. 3 Credits.

The basic tools and concepts in microeconomic analysis and how these tools can be useful in public decision-making.

PPPA 6004. Managing Public Organizations. 3 Credits.

Organizational dynamics, management approaches, and workplace relationships that affect behavior in public organizations. Prerequisite: PPPA 6001.

PPPA 6005. Public Budgeting, Revenue, and Expenditure Analysis. 3 Credits.

Survey of institutions and analytical tools associated with raising revenue and allocating/managing resources at all levels of government. Hands-on budgeting skills and communication of analysis to decision-makers.

PPPA 6006. Policy Analysis. 3 Credits.

Development of skills in conducting and critiquing policy analyses. Application of methodologies used in analyzing possible consequences of specified alternatives as applied in the public policy decision-making process. Appropriate applications and limitations of policy analysis and its relationship to politics and the policy process.

PPPA 6007. Microeconomics for Public Policy I. 3 Credits.

Intermediate microeconomics with a focus on policy-related topics and examples. Restricted to students in the MA in environmental resource policy, public affairs, and public policy programs.

PPPA 6008. MPA/MPP Capstone. 3 Credits.

For MPA and MPP students completing their degree program at the end of the fall semester. This course substitutes for PPPA 6009 and PPPA 6019, respectively.

PPPA 6009. MPA Capstone Seminar. 3 Credits.

Integration and synthesis of the knowledge and skills acquired during the MPA program. Analysis and integration of ethical, political, economic, managerial, and personal values and issues in the field. Prerequisites: Completion of all core courses in the MPA curriculum.

PPPA 6010. Politics and The Policy Process. 3 Credits.

The role of policy analysts in public policymaking. The impact that the political, economic, cultural, and bureaucratic context has on the policymaking process and outcomes. Political and ethical issues raised by the intricate interface of the private, not-for-profit, and public sectors in public policy formulation and implementation.

PPPA 6011. Politics and Policy Analysis. 3 Credits.

Foundations of the public policy field; the role of policy analysts in the policy making process; agenda setting, decision making, policy implementation, program evaluation, and policy feedback.

PPPA 6013. Econometrics for Policy Research I. 3 Credits.

Multivariate research methods in policy analysis.

PPPA 6014. Microeconomics for Public Policy II. 3 Credits.

The application of intermediate microeconomic theory to the study of public policy; models of individual choice in policy analysis, policy aspects of models of the firm, theory of market failure and welfare economics, and resource allocation decisions in the public sector. Credit cannot be earned for both PPPA 6014 and SMPP 6206. Prerequisite: PPPA 6007.

PPPA 6015. Benefit-Cost Analysis. 3 Credits.

The application of microeconomic theory and welfare economics to the empirical evaluation of public policies and programs. Applied welfare economics as a framework for policy analysis; empirical measures of welfare change; techniques of benefit-cost analysis. Prerequisite: PPPA 6014.

PPPA 6016. Public and Nonprofit Program Evaluation. 3 Credits.

Theory and practice of program evaluation and evaluative research. Exploration of scope and limitations of current practice in evaluation, considering economic, political, social, and administrative factors. Examination of methodological considerations for design, data collection, analysis, and dissemination. Prerequisite: PPPA 6002 .

PPPA 6017. Introductory Microeconomics for Public Policy. 3 Credits.

Intermediate microeconomics with a focus on policy-relevant topics and examples. Restricted to MPA and MPP degree candidates.

PPPA 6018. Public Policy, Governance, and the Global Market. 3 Credits.

The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets, and globalization. The evolution of national, transatlantic, and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization, and industry standards.

PPPA 6019. MPP Capstone. 3 Credits.

Policy theory and typologies; policy formulation, implementation, and evaluation; ethics and practice in policy analysis, processes, content, and contexts; policy linkages to multiple disciplines. Students submit an analysis of a substantive policy primarily utilizing resources in the DC region.

PPPA 6020. Decision Modeling for Public Policy. 3 Credits.

Practical modeling approaches used by policy analysts to explain and assess complex problems, bound a solution space, or determine what data is needed to support policy decisions; using spreadsheets (specifically, Microsoft Excel) to begin modeling policy problems. Prerequisite: PPPA 6002.

PPPA 6021. Data Visualization. 3 Credits.

How graphics can be used to obfuscate, illuminate, and compel. Focusing on the programming language R, includes working with large-scale data and distilling such data into pictures that communicate. Prerequisite: PPPA 6013.

PPPA 6024. Leadership in Complex Organizations. 3 Credits.

What the manager must know and do to provide leadership and guidance in large, complex organizations. An exploration of leadership theories and the factors and processes that condition effective leadership.

PPPA 6025. Ethics and Public Values. 3 Credits.

Ethical dimensions of personal and professional judgments of public officials. Cases are used to consider the ethos of public organizations and the moral foundations of public policy.

PPPA 6027. Program Management. 1 Credit.

Program management as a basis for developing policy and evaluating programs; how managers look at problems, the competing demands they face, what (and who) influences their decisions and actions, and how they get things done.

PPPA 6031. Governing and Managing Nonprofit Organizations. 3 Credits.

Historical, legal, and social foundations of the nonprofit sector. Developing organizational strategy and capacity; managing staff, boards, and volunteers; financial management; fund raising, marketing, public advocacy, and other external relations; partnerships and entrepreneurial activities; measuring performance; and policy issues.

PPPA 6032. Managing Fund Raising and Philanthropy. 3 Credits.

Fund-raising for nonprofit organizations and the management of relationships between donors and recipient organizations. Positioning the organization for fund raising; roles of staff and volunteers; principal techniques for identifying, cultivating, and soliciting donors; ethical principles; emerging trends; and relevant policy issues.

PPPA 6033. Nonprofit Enterprise. 3 Credits.

The use of business methods by nonprofit organizations, commercialization in the nonprofit sector, and the relationship between nonprofit and for-profit entities in pursuing social purposes. Case studies.

PPPA 6034. Managing Nonprofit Boards. 3 Credits.

Overview of the responsibilities, roles, and management of nonprofit boards. The emphasis is on governing boards, but advisory councils and boards of other types are also considered.

PPPA 6042. Managing State and Local Governments. 3 Credits.

Examination of state and local governmental structures and functions, their place within the federal system, their revenue sources, their limitations, and the alternatives available to encourage more effective administration to meet public and private demands.

PPPA 6043. Land Use Planning and Community Development. 3 Credits.

Theory and practice of land use planning. Issues of competing land uses in an era of increased sprawl, population pressure, and environmental threat. Growth management techniques and practices in states and localities; the use of various regulatory controls and economic incentives to achieve desired outcomes. The idea of "sustainable community."

PPPA 6044. State Politics and Policy. 3 Credits.

Important concepts of state politics and government with emphasis on how those concepts affect the formulation and implementation of policy. The functions of state government and the political, economic, and legal factors that shape state public policies.

PPPA 6048. Financing State and Local Government. 3 Credits.

Analysis of the theory and practice of public finance in state and local governments. Includes the financing of services through municipal taxation, intergovernmental funds, debt instruments, and other revenue sources. Review of expenditures as well as financial management practices.

PPPA 6049. Urban and Regional Policy Analysis. 3 Credits.

Examination of selected national policies and their effects on urban areas and governments. Emphasis on policy dimensions of urban systems and their relationship to the social, political, and economic context. Against the background of urban politics and administration, areas of health, education, welfare, manpower, transportation, and housing are addressed.

PPPA 6051. Governmental Budgeting. 3 Credits.

Survey of the actors, institutions, and processes in the federal budgeting system. Executive budget preparation/execution, legislative review and approval of budget requirements, and independent audit of government spending.

PPPA 6052. Tax Policy Analysis. 3 Credits.

This course provides a guided, critical study of budgeting by the U.S. Government: its conceptual foundations, structure, processes, accounting, scoring, and results. This process is evaluated, as a system and by its component elements, using the criteria of performance with respect to its fundamental objectives; fiscal and economic stability and efficiency, including for those programs aimed at promoting equity. Because of the dominant role of the Congress in the budget process, attention is focused on the system and process created by the Congressional Budget Act of 1974.

PPPA 6053. Financial Management for Public and Nonprofit Organizations. 3 Credits.

Intensive analysis, using the case study approach, of concepts and principles used in the not-for-profit sector for financial management purposes. Disciplines of accounting, budgeting, operations control, management, and auditing are integrated into comprehensive management control systems and include issues of system design and implementation.

PPPA 6054. Issues in Federal Budgeting. 3 Credits.

Policy tools available to pursue social objectives, including grants, loans, contracting out, regulation, tax credits, and tax expenditures. Focus on criteria such as effectiveness, efficiency, equity, legitimacy, and administrative ease.

PPPA 6055. Contracting Out and Public-Private Partnerships. 3 Credits.

Contracting out and public-private partnerships as methods of delivering government goods and services. Policy and implementation issues, including when and how contracting out may provide a more efficient and effective method of delivering government goods and services.

PPPA 6056. Regulatory Comment Clinic. 3 Credits.

Survey of regulatory theories, institutions, policies, and procedures. Application of economic tools to analyze the effect of existing and proposed regulations on social welfare. Communication of analysis to decision makers and the public.

PPPA 6057. International Development Administration. 3 Credits.

An institutional and policy context for work in the international development industry. Mainstream policies, reform efforts, and alternative approaches. Major actors, selected policy areas, and regional and comparative perspectives.

PPPA 6058. International Development NGO Management. 3 Credits.

Provides an understanding of the primary implementers of international development assistance. Overview of NGO management, highlighting those features that are particular to NGOs active in international development, including NGO relations with government and donors. Recommended background: PPPA 6057 or permission of the instructor.

PPPA 6059. International Development Management Processes and Tools. 3 Credits.

Training in development management tools and processes; application of international development approaches specific to the development management profession. Key theories and perspectives of community development and development management. Recommended background: PPPA 6057 or permission of the instructor.

PPPA 6060. Policy Formulation and Administration. 3 Credits.

Impact of economic and political factors on public policy formulation and implementation; intensive analysis of the analytical, normative, and decision-making models of the policy process with special emphasis on their relationship to current policy problems.

PPPA 6061. Banking and Financial Institutions Policy. 3 Credits.

This course examines the broad range of policy issues applicable to banking and financial institutions – including those related to monetary policy, financial stability, consumer protection, and community reinvestment. This area includes a number of questions that are at the forefront of the current national policy debate about the appropriate role of government and how best to regulate financial institutions and financial markets.

PPPA 6062. Community Development Policy and Management. 3 Credits.

This course examines the policy and practice of community development, including how private sector developers and lenders work with nonprofits, foundations, and the public sector to promote sustainable affordable housing, economic development, and other community-based projects that meet both financial as well as social impact criteria. This category of finance and development is intended to help people and communities just outside the margins of conventional, mainstream finance join the economic mainstream – and to help the economic mainstream enter emerging opportunity markets. The course explores different types of community development opportunities, including affordable housing, charter school, community facility, small business lending, and nonprofit real estate projects. The course also addresses emerging trends that are likely to affect community development policymakers and practitioners, including transportation oriented development, “green” development, use of technology, comprehensive community initiatives, and new ways of raising capital for community development projects.

PPPA 6063. Policy Issues in Corporate Social Responsibility (CSR) and Impact Investing. 3 Credits.

This course examines the role of the public and nonprofit sectors in supporting corporate and investor activities that are intended to have social and environmental, in addition to financial, benefits. These activities – often referred to as “corporate Social Responsibility” (CSR) and “impact investing” – have been described as having significant potential to create social benefits in addition to being in the financial best interests of the corporation or investor. At the same time, some critics of these activities have said that they are less about producing social benefits and more about marketing private sector activities that are primarily designed to produce corporate financial gains. The course explores what is meant by these two terms, what steps the public and nonprofit sectors have taken to support the wide range of activities that these terms encompass, and what have been the results of this work both in the United States and in other countries. The course also addresses emerging trends that are likely to affect the public and nonprofit role in CSR and impact investing in the future.

PPPA 6065. Federalism and Public Policy. 3 Credits.

PPPA 6066. U.S. Environmental Policy. 3 Credits.

Current issues in environmental policy; biodiversity, land use including wilderness protection, climate change, environmental justice, economic growth, and ecological sustainability.

PPPA 6067. Environment, Energy, Technology, and Society. 3 Credits.

The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as SMPP 6207.

PPPA 6068. Leading Diverse and Inclusive Organizations. 3 Credits.

Organizational leadership, decision-making, and communications skills necessary for leading in a diverse, multicultural, multi-generational environment.

PPPA 6072. Legislative Management and Congress. 3 Credits.

Analysis of Congress as a management system; examination of its internal administration and its role in formulating policy through legislation. Staffing practices, leadership, rules and procedures, oversight functions, and coalition building.

PPPA 6075. Law and the Public Administrator. 3 Credits.

Exploration and analysis of the functions of law in a democratic society. Emphasis is placed upon the procedural, historical, and jurisprudential dimensions of American law. This broad perspective seeks to convey understanding of the law as a legal and moral force guiding and constraining public decision making.

PPPA 6076. Federal Government Regulation of Society. 3 Credits.

Analysis of the federal regulatory process as it affects the public and private sectors. The regulatory process from legal, economic, administrative, and political perspectives.

PPPA 6077. Case Studies in Public Policy. 1-3 Credits.

Critical analysis of topical issues in public policy, using a case-study approach. Specific issues covered vary.

PPPA 6081. Poverty and Social Policy. 3 Credits.

Introduction to analytical and political issues surrounding the ongoing American and British debates on poverty and social policy; evaluating social assistance programs; the complementary roles of policy analysis and public management.

PPPA 6085. Special Topics in Public Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more information.

PPPA 6097. Practicum in Public Policy and Public Administration. 0 Credits.

PPPA 6098. Independent Research. 1-12 Credits.

Permission of the instructor and program director required prior to enrollment.

PPPA 6140. Introduction to Environmental Law. 3 Credits.

Federal environmental statutes, implementing regulations, state regulatory programs, international environmental agreements; environmental governance tools; strengths, weaknesses of legal, administrative, private approaches to environmental threats; the role of federal courts, administrative law in environmental protection.

PPPA 6145. Global Environmental Justice and Policy. 3 Credits.

Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

PPPA 6198. Environmental Resource Policy Capstone. 3 Credits.

Team development of a project sponsored by an external entity, such as a government or nongovernmental agency, or participation in an aspect of a research project directed by a faculty member. The student team functions as an external consultant tasked with analysis of the chosen issue.

PPPA 6207. Program Management. 1 Credit.

PPPA 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.

May be repeated for credit to a maximum of 6 credits.

PPPA 8022. Econometrics for Policy Research II. 3 Credits.

For doctoral students who wish to use econometric tools in their research. An equivalent course in introductory econometrics may be substituted for the prerequisite with permission. Prerequisite: PPPA 6013.

PPPA 8023. Mixed Methods in Research Design. 3 Credits.

The historical and philosophical foundations of mixed method research design; review of canonical designs; developing and honing skills to implement mixed methods research designs.

PPPA 8085. U.S. Social Policy. 3 Credits.

Development and implementation of social welfare policy in the United States. Introduction to welfare state theory and different welfare models. Critical interrogation of the values and ideologies underlying the policy formulation process. Restricted to doctoral students. Recommended background: A general understanding of the public sector is helpful.

PPPA 8100. Seminar: Literature of Public Administration. 3 Credits.

Contemporary and historical literature in the institutional and intellectual development of public administration.

PPPA 8101. Research Methods. 3 Credits.

Doctoral seminar on theory and practice in research methodology. Data sources and gathering, research models and designs. Critical evaluation of research studies. Emphasis on application of research methods to policy questions.

PPPA 8105. Public Finance and Human Capital. 3 Credits.

The many facets of budgeting and finance and the research approaches used to study issues in this field.

PPPA 8111. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Restricted to doctoral candidates. Credit cannot be earned for this course and SMPP 8311.

PPPA 8123. Seminar: The Policy Organization. 3 Credits.

Unique problems of complex organizations: public, private, and mixed. Emerging concepts and theories. Selected issues.

PPPA 8164. Seminar on Program Evaluation. 3 Credits.

Doctoral seminar on theory and practice in public and nonprofit program evaluation. The broad range of approaches undertaken, current controversies in the field, and the political and ethical context for evaluators.

PPPA 8174. Seminar: Public Management. 3 Credits.

Public organization theory and behavior. Organizational behavior, organization theory, and public management. Key traditions of inquiry in the study of public organizations.

Restricted to students in the PhD in public policy and administration program.

PPPA 8183. Current Topics and Research. 1 Credit.

Current scholarship discussed in a seminar setting. The conduct of research and presentation of research findings. May be repeated for credit.

PPPA 8190. Philosophical Foundations of Policy and Administrative Research. 3 Credits.

Philosophy of science as applied to research in public policy and public administration. The nature of and current problems related to epistemology, development and role of theories, and relationships among theory, methodology, and empirical data.

PPPA 8191. Dissertation Workshop. 3 Credits.

Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies. Credit for this course may be applied toward the dissertation credit requirement. Restricted to public policy and administration doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field.

PPPA 8197. Doctoral Seminar: Special Topics. 1-3 Credits.

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PPPA 8998. Advanced Reading and Research. 1-12 Credits.

Restricted to doctoral candidates preparing for the general examination.

PPPA 8999. Dissertation Research. 3-12 Credits.

Doctoral candidates in dissertation research. Restricted to doctoral candidates.

ENRP 5099. Variable Topics. 1-99 Credits.

ENRP 6085. Topics in Environmental Resource Policy. 1-3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ENRP 6097. Practicum in Environmental Resource Policy. 0 Credits.

International students engage in an unpaid internship. Restricted to students enrolled in the MA in environmental resource policy program. Credit cannot be earned for this course and PPPA 6097.

ENRP 6101. Environmental Sciences I: Physical Sciences. 3 Credits.

Basic physical sciences crucial to environmental issues, including chemistry, geology, hydrology, climate science, and cross-media interactions; land, air, and water pollution, climate change, production and consumption of energy, sea level rise, and anthropogenic changes in the cryosphere. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6102. Environmental Sciences II: Life Sciences. 3 Credits.

Basic life sciences crucial to environmental issues, including biology, ecology, environmental health and toxicology, epidemiology, and agriculture; biodiversity, ecosystem services, habitat preservation, deforestation, conservation biology, nutrient cycling, and the impacts of climate change on living systems. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6145. Global Environmental Justice and Policy. 3 Credits.

Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

ENRP 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.

May be repeated for credit to a maximum of 6 credits.

DOCTOR OF PHILOSOPHY IN THE FIELD OF PUBLIC POLICY AND ADMINISTRATION

Our curriculum emphasizes interdisciplinary, applied research in public policy and administration and related subfields as it prepares students for traditional faculty or public-policy

research positions. Trachtenberg School classes are held on the Foggy Bottom Campus. Most classes are in the evenings, enabling full-time and part-time students to pursue their degree while working.

The PhD is a 72-credit program offered through the Trachtenberg School of Public Policy and Public Administration; the Columbian College of Arts and Sciences grants the degree. The multidisciplinary PhD is designed to develop a range of competencies needed to undertake sophisticated research in public policy and public administration. Core courses cover multiple academic disciplines, including politics, economics, and quantitative and qualitative methods in policy research. Built upon the diversity and strengths of academic departments and faculty distributed throughout TSPPPA and the University community, our program offers an exceptional education across these disciplines. Graduates of the doctoral program pursue careers in teaching and research related to public policy and administration and as policy researchers and analysts in government and the private sector. Some hold administrative positions in these sectors and many are closely involved in the development and evaluation of public policies.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Completion of 72 credits beyond the baccalaureate or a minimum of 48 credits beyond the master's degree. Students who have completed graduate coursework judged to satisfy program requirements may be granted advanced standing of up to 24 credits toward the overall 72 credits required for the PhD.

Students must maintain a minimum grade-point average of 3.3 to remain in the program.

Code	Title	Credits
Required		
Core Courses		
PPPA 6014	Microeconomics for Public Policy II *	
PPPA 8100	Seminar: Literature of Public Administration *	
PPPA 8101	Research Methods *	
PPPA 8105	Public Finance and Human Capital	
PPPA 8174	Seminar: Public Management	

PPPA 8190	Philosophical Foundations of Policy and Administrative Research
PSC 8229	Politics and Public Policy *
One of the following to fulfill the intermediate quantitative course requirement:	
DNSC 6274	Statistical Modeling and Analysis
ECON 8375	Econometrics I
ECON 8379	Laboratory in Applied Econometrics
PPPA 6013	Econometrics for Policy Research I *
PSC 8102	Empirical Political Analysis
One of the following to fulfill the advanced quantitative course requirement:	
DNSC 6275	Advanced Statistical Modeling and Analysis
ECON 8376	Econometrics II
ECON 8377	Econometrics III
PPPA 8022	Econometrics for Policy Research II
One of the following to fulfill the qualitative course requirement:	
EDUC 8122	Qualitative Research Methods
EDUC 8131	Case Study Research Methods
HIST 6030	History and Its Uses in International Affairs
PPPA 8023	Mixed Methods in Research Design
PSC 8104	Qualitative Research Methods
PUBH 8417	Qualitative Research Methods and Analysis
SOC 6232	Qualitative Methodology: Doing Field Research
A written qualifying examination covering designated core courses. *	
A minimum of 12 credits in one of the following fields:	
Education policy; budgeting and public finance; program evaluation; science and technology policy; public and nonprofit management; and social policy. **	
Dissertation research	
PPPA 8191	Dissertation Workshop

PPPA 8999	Dissertation Research (taken for 6 to 12 credits)
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*Course is covered by the core comprehensive examination.

**The social policy field has four subfields, each with specific requirements: gender and social policy, poverty and inequality, ethnicity and public policy, and urban policy.

Visit the program website (<https://tspppa.gwu.edu/phd-public-policy-and-administration/>) for additional information.

DUAL MASTER OF PUBLIC ADMINISTRATION AND GRADUATE CERTIFICATE IN HOMELAND SECURITY EMERGENCY PREPAREDNESS AND RESPONSE

REQUIREMENTS

Master of public administration students can earn a graduate certificate in homeland security emergency preparedness and response in the school of engineering and applied science.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

Code	Title	Credits
Required		
PPPA 6000	Perspectives on Public Values	
PPPA 6001	Introduction to Public Service and Administration	
PPPA 6002	Research Methods and Applied Statistics	
PPPA 6003	Economics for Public Decision-Making	
PPPA 6004	Managing Public Organizations	
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis	
PPPA 6006	Policy Analysis	
PPPA 6009	MPA Capstone Seminar	
Policy field		
Three or four courses		

Policy fields include budget and public finance; federal policy, politics, and management; international development management; managing state and local governments; homeland security and emergency management; nonprofit management; policy analysis and evaluation; public-private policy and management. With approval, a special field may be constructed, tailored to the student's academic interests and career objectives.

Requirements toward the graduate certificate fulfill the elective credits toward the Master of Public Administration degree and are as follows:

EMSE 6300	Homeland Security: The National Challenge
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Five additional courses from the following:

EMSE 6305	Crisis and Emergency Management
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EMSE 6310	Information Technology in Crisis and Emergency Management
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EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism
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EMSE 6320	International Disaster Management
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EMSE 6325	Medical and Public Health Emergency Management
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EMSE 6330	Management of Terrorism Preparedness and Response
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EMSE 6992	Special Topics
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EMSE 6345	Disaster Recovery and Organizational Continuity
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EMSE 6350	Hazard Mitigation in Disaster Management
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EMSE 6240	Environmental Hazard Management
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Visit the program website (<https://tspppa.gwu.edu/master-public-administration-mpa/>) for additional information.

DUAL MPA AND GC IN NONPROFIT MANAGEMENT

The Trachtenberg School in Columbian College of Arts and Sciences offers a dual master of public administration (MPA) (p. 447) and graduate certificate in nonprofit management (p. 445) program. The 12 credits required for the certificate may be shared with the MPA by using them as field and/or elective courses. This allows students to earn both credentials in a shorter amount of time and at a lower cost than if pursued separately. All requirements for both programs must be fulfilled.

Visit the program website (<https://tspppa.gwu.edu/combined-degree-programs/>) for additional information.

DUAL MPP AND PHD IN POLITICAL SCIENCE

The Master of Public Policy Program and the Department of Political Science offer a dual master of public policy (MPP) (p. 448) and doctor of philosophy in political science (PhD) (p. 416) degree program. Students receive both the MPP and PhD within the same 72 credit hours that would be normally required for a PhD in Political Science. Interested students must apply to and be accepted by both the Public Policy and Political Science programs. All requirements for both degrees must be fulfilled.

Visit the MPP and PhD in political science website (<https://tspppa.gwu.edu/combined-mppphd-political-science-program/>) for additional information.

DUAL MPP AND GRADUATE CERTIFICATE IN DATA SCIENCE

The Trachtenberg School in Columbian College of Arts and Sciences offers a dual master of public policy (MPP) (p. 448) and graduate certificate in data science (p. 211) program. Of the 12 credits required for the certificate, 9 may be shared with the MPP, thereby decreasing the number of credits normally required for the master's. All requirements for both programs must be fulfilled. Students interested in the dual degree program should consult with their advisor.

Visit the program website (<https://tspppa.gwu.edu/combined-masters-and-graduate-certificate-programs/>) for additional information.

GRADUATE CERTIFICATE IN BUDGET AND PUBLIC FINANCE

The certificate in budgeting and public finance provides course work in the theoretical and practical foundations of public budgeting and in the formulation and evaluation of public budgets, as well as the complex choices of economic reasoning in response to resource allocation in the process of formulating and implementing public budgets. The courses in the certificate provide a background in budget policy and process, characteristics of public revenue and expenditure, and governmental accounting and financial reporting. This certificate is particularly well suited for those who are, or envision becoming, budget analysts or financial management officers in public agencies at any level of government.

Visit the program website (<https://tspppa.gwu.edu/certificate-budget-public-finance/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The following requirements must be fulfilled: 12 credits, including 3 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis	
Electives		
Three of the following:		
PPPA 6048	Financing State and Local Government	
PPPA 6051	Governmental Budgeting	
PPPA 6052	Tax PolicyAnalysis	
or PPPA 6054	Issues in Federal Budgeting	
PPPA 6053	Financial Management for Public and Nonprofit Organizations	
PPPA 6055	Contracting Out and Public-Private Partnerships	

GRADUATE CERTIFICATE IN CONTEXTS OF ENVIRONMENTAL POLICY

This program is offered exclusively to National Park Service (NPS) employees who have served for three years or more.

The Contexts of Environmental Policy graduate certificate program is designed to help prepare current and future leaders who are responsible for the preservation and protection of our public lands and cultural heritage. Inspired by a gift from Roger and Frances Kennedy and made possible by the Friends of Roger Kennedy, this program funds NPS students to undertake a course of study that strengthens their knowledge of the natural and cultural resources which lie at the heart of the NPS mission. Offering a wide range of courses that contextualize environmental policy, the certificate allows both flexibility and purpose to NPS students.

Visit the program website (<https://enrp.columbian.gwu.edu/national-park-service-contexts-environmental-policy-graduate-certificate/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including one 3-credit required course and 9 credits in elective courses.

Code	Title	Credits
Required:		
PPPA 6006	Policy Analysis	
or PPPA 6066	U.S. Environmental Policy	
Electives		
9 credits in elective courses selected from the following:		
AMST 6530	Field Methods in Architectural Documentation	
ANTH 6101	Proseminar in Biological Anthropology	
ANTH 6807	Public Archaeology	
ENGL 6510	Writing, Race, and Nation	
ENGL 6520	Ethnicity and Identity	
ENRP 6101	Environmental Sciences I: Physical Sciences	
ENRP 6102	Environmental Sciences II: Life Sciences	
GEOG 6219	Seminar: Climatology	
GEOG 6230	Seminar: Environmental Issues in Development	
HIST 6011	Reading and Research in History and Public Policy	
HIST 6302	Colonial North America	
HIST 6304	American Indian History to 1890	
HIST 6420	Religion and American Culture	
HIST 6480	Theory and Practice of Public History	
HIST 6495	Historic Preservation: Principles and Methods	
MSTD 6101	Museum Management	
MSTD 6203	Preventive Conservation Concepts	
PHIL 6281	Environmental Philosophy and Policy	
PPPA 6010	Politics and The Policy Process	

PPPA 6031	Governing and Managing Nonprofit Organizations
PPPA 6043	Land Use Planning and Community Development
PPPA 6067	Environment, Energy, Technology, and Society
PPPA 6140	Introduction to Environmental Law
PSC 6103	Approaches to Public Policy Analysis
SMPA 6201	Strategic Communications Skills
SOC 6250	Urban Sociology
STAT 6104	Statistics in Management, Administration, and Policy Studies
Students may be permitted to take alternative electives with permission of the advisor.	

Students should consult with Environmental and Resource Policy Director of Graduate Studies to construct an individualized curriculum best suited to their needs and interests.

GRADUATE CERTIFICATE IN ENVIRONMENTAL RESOURCE POLICY

The Environmental Resource Policy (ENRP) Program at GW offers a multidisciplinary approach to environmental and sustainability studies. The Master of Arts program prepares students to enter environmental policy careers in government, non-profit organizations, the private sector, and environmental advocacy groups. ENRP is built on a multidisciplinary curriculum that includes environmental economics, environmental law, public policy, research methods, and a two-semester environmental science course. ENRP blends theory and practical experience with a professional, client-oriented, capstone project, academic credit for relevant internships and research, and a wide range of DC-based internship opportunities.

The MA is a STEM-designated program.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
ENRP 6101	Environmental Sciences I: Physical Sciences	

or ENRP 6102	Environmental Sciences II: Life Sciences
PPPA 6006	Policy Analysis
PPPA 6007	Microeconomics for Public Policy I
or ECON 6237	Economics of the Environment and Natural Resources
PPPA 6066	U.S. Environmental Policy
or PPPA 6140	Introduction to Environmental Law

If, by virtue of prior coursework, a student can demonstrate competency in all topics covered in a required course, another graduate course relevant to environmental policy may be substituted for that course. Permission of the Environmental Resource Policy Program Director or Director of Graduate Studies is required.

GRADUATE CERTIFICATE IN NONPROFIT MANAGEMENT

The graduate certificate in nonprofit management provides an overview of central concepts in managing nonprofit organizations and is intended to meet the needs of students seeking a focused experience in preparation for a career in nonprofit organizations. It may be appropriate for students who seek to expand their knowledge but who do not wish to commit to a master's degree program.

Certificate students enroll in regular courses of the Trachtenberg School of Public Policy and Public Administration, which carry graduate credit. Regular graduate tuition and fees apply. Under certain circumstances, credit earned in the certificate program also may be applied toward the Master of Public Administration (MPA) degree. However, admission to the MPA degree program has separate requirements from those of the certificate program and students considering going on for a degree should consult with a faculty advisor early in their program.

Visit the program webpage (<http://tspppa.gwu.edu/graduate-certificate-nonprofit-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
PPPA 6031	Governing and Managing Nonprofit Organizations	

PPPA 6032 Managing Fund Raising and Philanthropy

or PPPA 6033 Nonprofit Enterprise

Electives, Trachtenberg School

At least one course (3 credits) and as many as two courses (6 credits) selected from the following:

PPPA 6016 Public and Nonprofit Program Evaluation *

PPPA 6033 Nonprofit Enterprise *

PPPA 6032 Managing Fund Raising and Philanthropy *

PPPA 6034 Managing Nonprofit Boards

PPPA 6053 Financial Management for Public and Nonprofit Organizations

PPPA 6055 Contracting Out and Public-Private Partnerships

PPPA 6058 International Development NGO Management

PPPA 6062 Community Development Policy and Management

PPPA 6063 Policy Issues in Corporate Social Responsibility (CSR) and Impact Investing

PPPA 6068 Leading Diverse and Inclusive Organizations

Electives, other GW schools

Students may select one course (3 credits) from the following**:

ACCY 6701 Government Accounting

MGT 6285 Social Entrepreneurship

PMGT 6414 Lobbying

PUBH 6054 Community Engagement and Advocacy

SMPA 6206 Advocacy Communication and Political Networks

*If not taken as a core course.

**Students may supplement or substitute elective courses with other relevant courses in related disciplines with the permission of a field advisor. Field advisors can recommend courses

in various schools of the university that address a student's particular interest and career goals.

MASTER OF ARTS IN THE FIELD OF ENVIRONMENTAL RESOURCE POLICY

The Environmental Resource Policy (ENRP) Program at GW offers a multidisciplinary approach to environmental and sustainability studies. The Master of Arts program prepares students to enter environmental policy careers in government, non-profit organizations, the private sector, and environmental advocacy groups. ENRP is built on a multidisciplinary curriculum that includes environmental economics, environmental law, public policy, research methods, and a two-semester environmental science course. ENRP blends theory and practical experience with a professional, client-oriented, capstone project, academic credit for relevant internships and research, and a wide range of DC-based internship opportunities.

The MA and Graduate Certificate in Environmental Resource Policy are STEM-designated programs.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ECON 6237	Economics of the Environment and Natural Resources	
ENRP 6101	Environmental Sciences I: Physical Sciences	
ENRP 6102	Environmental Sciences II: Life Sciences	
PPPA 6002	Research Methods and Applied Statistics	
PPPA 6006	Policy Analysis	
PPPA 6007	Microeconomics for Public Policy I	
PPPA 6140	Introduction to Environmental Law	
PPPA 6198	Environmental Resource Policy Capstone	
Electives		

12 credits of approved elective drawn from a number of departments throughout the University.

Students who previously completed required courses may be allowed to substitute additional elective courses with program approval. Students may substitute PPPA 6017, PPPA 6014, or Econ 6217 for PPPA 6007.

MA IN THE FIELD OF ENVIRONMENTAL RESOURCE POLICY AND GRADUATE CERTIFICATE IN GEOGRAPHICAL INFORMATION SYSTEMS

The Trachtenberg School of Public Policy and Public Administration in the Columbian College of Arts and Sciences and the Department of Geography offer a dual master of arts in environmental resource policy (p. 446) (ENRP) and graduate certificate in geographical information systems (p. 287) (GIS) program. The 12 credits earned for the certificate may be shared between programs, thereby decreasing the total number of credits normally required.

The program offers a multidisciplinary approach to environmental and sustainability studies, blending theory and practical experience with a curriculum that includes environmental economics, environmental law, public policy, research methods, and environmental science. Elective courses can be taken in almost any department at the University, including, but not limited to, biology, chemistry, geography, international affairs, public policy, economics, political science, engineering management and systems engineering, business administration, and public health. Students graduate prepared to enter environmental policy careers in government, nonprofit organizations, the private sector, and environmental advocacy groups. The GIS certificate curriculum guides students through all aspects of GIS theory and practice, from the science of cartography to analyzing geographical statistics to database design and geospatial modeling. Students are equipped with a solid grounding in geospatial theory and techniques as well as its practical applications.

MASTER OF PUBLIC ADMINISTRATION

The master of public administration degree (MPA) is the recognized professional degree in public administration, public management, and public service. It is designed principally, but not exclusively, for those who are pursuing careers in public service. Graduates are employed in government agencies at all levels, national associations, public interest groups, research and consulting firms, and in the private sector.

The MPA degree program provides an opportunity to study management and policy issues in an intergovernmental and

intersectoral context. The program focuses on developing critical intellectual capacities, sound analytical skills, and a sensitivity to the ethical and value concerns that are central to the traditions of the field of public administration.

Visit the program website (<https://tspppa.gwu.edu/master-public-administration-mpa/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

40 credits, including 22 credits in required courses, 9 to 12 credits in a selected policy field, and 3 to 6 credits in elective courses.

Code	Title	Credits
Required		
PPPA 6000	Perspectives on Public Values	
PPPA 6001	Introduction to Public Service and Administration	
PPPA 6002	Research Methods and Applied Statistics	
PPPA 6003	Economics for Public Decision-Making	
PPPA 6004	Managing Public Organizations	
PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis	
PPPA 6006	Policy Analysis	
PPPA 6016	Public and Nonprofit Program Evaluation	
PPPA 6009	MPA Capstone Seminar	

Policy field

Completion of a 9- or 12-credit policy field. Field options include budget and public finance; federal policy, politics, and management; international development management; managing state and local governments; homeland security and emergency management; nonprofit management; policy analysis and evaluation; public-private policy and management. With approval, a special field may be constructed, tailored to the student's academic interests and career objectives..

Electives

3 to 6 credits in graduate-level elective courses selected in consultation with the faculty advisor. Courses may be from any related program or discipline.

*Students completing their degree program at the end of the fall semester take PPPA 6008 instead of PPPA 6009.

MASTER OF PUBLIC POLICY

We prepare students for positions in public policy research and analysis; we also prepare them for leadership roles in the field. Trachtenberg School classes are held on the Foggy Bottom Campus. Many classes are in the evenings, enabling full-time and part-time students to pursue their degree while working. The MPP is a 40-credit degree offered through the Trachtenberg School of Public Policy and Public Administration; the Columbian College of Arts and Sciences grants the degree. The curriculum balances coverage of public policy theory and practice with contemporary policy issues.

Policy fields include budget and public finance; education policy; environmental policy; health policy; national security policy; philosophy and social policy; program and policy evaluation; public-private policy and management; science and technology policy; social policy; urban policy; and international development management. Students can also design their own field of concentration. The MPP can be combined with the GW Law School's JD for a dual MPP-JD degree and with the PhD in political science for a dual MPP-PhD degree.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

40 credits, including 19 credits in required core courses, 6 credits in tools courses, a minimum of 9 credits in a policy field, and 6 credits in elective courses.

Code	Title	Credits
Required		
Policy core		
PPPA 6000	Perspectives on Public Values	
PPPA 6002	Research Methods and Applied Statistics (taken for 3 credits)	
PPPA 6007	Microeconomics for Public Policy I	
PPPA 6011	Politics and Policy Analysis	
PPPA 6013	Econometrics for Policy Research I	
PPPA 6014	Microeconomics for Public Policy II	

PPPA 6019 MPP Capstone

Tools of analysis (two courses from the following):

PPPA 6005 Public Budgeting, Revenue, and Expenditure Analysis

PPPA 6015 Benefit-Cost Analysis

PPPA 6016 Public and Nonprofit Program Evaluation

PPPA 6020 Decision Modeling for Public Policy

PPPA 6021 Data Visualization

PPPA 6085 Special Topics in Public Policy

PPPA 8022 Econometrics for Policy Research II

PPPA 8023 Mixed Methods in Research Design

Field of study/electives

Students must complete a policy field of at least 9 credits. The remaining 6 credits required for the degree may be taken in that field or they may be used as electives to, e.g., include more tools courses or courses in other fields in their program of study.

The master of public policy is available in a dual degree program with the PhD in the field of political science and a joint degree program with the JD in the Law School.

Visit the program website (<https://tspppa.gwu.edu/master-public-policy-mpp/>) for additional information.

RELIGION

The study of religion at GW promotes analysis rather than advocacy of religion or a particular tradition. At the undergraduate level, the Department of Religion offers the bachelor of arts with a major in religion. The program curriculum fosters knowledge of the world's religions, as well as their history, literature, and community structure. Areas of study include Biblical literature, Judaism, Christianity, Islam, Hinduism, ethics, sociology of religion, contemporary movements in theology, and religion in American culture. A minor in religion is also offered.

At the graduate level, the cross-disciplinary master of arts in the field of Islamic studies program focuses on the study of Islam in its classical and contemporary formations, with an emphasis on developing competence in classical Islamic intellectual traditions.

The graduate certificate in Islamic studies is also offered for professionals in related fields who benefit from instruction in critical aspects of Islam.

The doctor of philosophy in the field of American religious history is offered by the Department of History in cooperation with the Department of Religion.

Visit the Department of Religion website (<https://religion.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in religion (p. 455)

Minor

- Minor in religion (p. 458)
- Minor in linguistics (p. 68) (interdisciplinary)

GRADUATE

Master's program

- Master of Arts in the field of Islamic studies (p. 457)

Doctoral program

- Doctor of Philosophy in the field of American religious history (p. 310)

CERTIFICATE

Certificates

- Graduate certificate in Islamic studies (p. 456)

FACULTY

University Professor S.H. Nasr

Professors P.B. Duff, R.J. Eisen (*Chair*), R.W. Tuttle

Associate Professors X. Kang, I. Oh-Koukios, D. Malone-France, K. Pemberton

Assistant Professors E. Aviv, J.D. Wood

Adjunct Professors M. Faghfoory

Professorial Lecturers B.N. Hebbar, E.C. Hostetter

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

REL 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

REL 1003. Introduction to World Religions. 3 Credits.

Introduction to the major religions of the world: Judaism, Christianity, Islam, Hinduism, Buddhism, Confucianism, and Daoism. Examination of the central aspects of these religions including the doctrinal, ethical, ritual, experiential, and social dimensions. Exploration of similarities and differences between these religious traditions.

REL 1009. The Hebrew Scriptures. 3 Credits.

The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature.

REL 1010. The New Testament. 3 Credits.

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 1010W. The New Testament. 3 Credits.

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 1099. Variable Topics. 1-36 Credits.

REL 2165. The Gospels. 3 Credits.

Study of the four canonical gospels (traditionally those of Matthew, Mark, Luke, and John) in terms of each presenting a distinct literary portrait of Jesus of Nazareth and each being the product of a religious community that shared at least some beliefs and practices with surrounding "pagan" and Jewish communities.

REL 2169. Lost Gospels. 3 Credits.

Examination of some of the gospels not included in the Christian canon. These include, among others, Q, the Gospel of Thomas, the Gospel of Mary, and the Gospel of Judas. These lost gospels provide a fresh perspective on the development and diversity of early Christianity.

REL 2201. Judaism. 3 Credits.

A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals.

REL 2211. Rabbinic Thought and Literature. 3 Credits.

The thought-world of rabbinic Judaism in its formative period, 100 to 500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

REL 2301. Christianity. 3 Credits.

Typical themes, patterns, and points of diversity within the Christian religion; commonly shared and contested features and complex relationship with broader culture.

REL 2314. Contemporary Philosophy of Religion. 3 Credits.

The arguments of major figures in contemporary schools of thought within the philosophy of religion, including analytic, continental, deconstructionist, and process philosophy.

REL 2401. Islam. 3 Credits.

Islam as both a religion and a civilization. The basic Islamic beliefs and practices: the Qur'an, Hadith, and Islamic intellectual legacy; and the history of Islam from 632 to the present with particular attention to its encounter with the West.

REL 2501. Hinduism. 3 Credits.

Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

REL 2506. Religion, Myth, and Magic. 3 Credits.

Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. (Same as ANTH 2506).

REL 2562. Mythologies of India. 3 Credits.

The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

REL 2601. Buddhism. 3 Credits.

Consideration of the Buddhist tradition both thematically and historically, focusing on topics such as Buddhist doctrine, meditation, and rituals. The lived tradition in the pre-modern and modern periods.

REL 2802. Introduction to Chinese Religions. 3 Credits.

General introduction to Chinese religions focusing on religious doctrines and institutions; religious practices, including ancestor worship, family and communal rituals, spirit possession, fengshui theories, pilgrimage, popular worship of ghosts and gods. (Same as EALL 2802).

REL 2811. Confucian Literature in East Asia. 3 Credits.

Introduction to Confucian literature in China and other parts of East Asia, from its beginnings to the present day. The various historical, philosophical, and religious dimensions of Confucian texts and practices; the role of Confucianism in the formation and development of Chinese and East Asian political systems, family systems, and gender relationships; recent intellectual debates on Confucianism in East Asia. (Same as EALL 3811, EALL 6811).

REL 2814. Religion and Philosophy in East Asia. 3 Credits.

Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions how these traditions evolved over time, and the way each cultures assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. (Same as EALL 3814, REL 3814).

REL 2831. Introduction to Daoism. 3 Credits.

A general introduction to the Daoist tradition from the antiquity to contemporary times, through reading major Daoist classics, scriptures, poems, novels, and examining Daoist material cultures and bodily cultivation techniques. Those who take it for graduate credit will have extra assignments. (Same as EALL 3831, EALL 6831).

REL 2921. The Religions Wage Peace. 3 Credits.

Resources in various world religions that contribute to peacemaking in interpersonal relations and in domestic and international politics. Consideration of ways in which religions contribute to intolerance and violence. Case-based approach to religions as related to peace and conflict resolution.

REL 2922. Ethics and World Religions. 3 Credits.

Modern concepts of ethics and their relation to major world religions, religion as stimulus and barrier to moral change, and modern moral issues ranging from bioethics to war.

REL 2945. Psychological Study of Spirituality. 3 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Formerly REL 3945. Recommended background: Prior completion of a religion (REL) course. Same As: PSYC 2945.

REL 2981. Women in Western Religion. 3 Credits.

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WSTU 3981.

REL 2990. Selected Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

REL 3099. Variable Topics. 1-12 Credits.**REL 3141. Second Temple/Hellenistic Judaism. 3 Credits.**

History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

REL 3151. The Historical Jesus. 3 Credits.

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus. Same As: REL 3151W.

REL 3151W. The Historical Jesus. 3 Credits.

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: REL 3151.

REL 3161. The Life and Thought of Paul. 3 Credits.

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3161W. The Life and Thought of Paul. 3 Credits.

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 3221. Issues in Jewish Ethics. 3 Credits.

Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

REL 3291. Modern Jewish Thought. 3 Credits.

Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

REL 3310. Apocalypse and Social Change. 3 Credits.

Investigation of typical ideas, patterns, and areas of social engagement associated with the genre of religious literature known as apocalypse. Why and how diverse groups within Jewish, Christian, and Muslim traditions crafted apocalypses that have shaped cultures across the globe from past to present.

REL 3321. Christian Ethics and Modern Society. 3 Credits.

Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

REL 3341. Christianity in the Ancient World. 3 Credits.

Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

REL 3342. Medieval Faith and Symbolism. 3 Credits.

Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.

REL 3343. Religion in the Renaissance and Reformation. 3 Credits.

Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.

REL 3344. Christianity in the Modern World. 3 Credits.

Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.

REL 3405. Shi'ite Islam. 3 Credits.

This course examines the emergence and development of Shi'ism as a branch of Islamic orthodoxy with particular emphasis on its doctrine, practices, theology, the law, politics, and the geographical and political context within which a distinct Shi'i identity developed.

REL 3414. Islamic Philosophy and Theology. 3 Credits.

Major schools of Islamic philosophy and theology considered in morphological and historical contexts. Relation between revelation and reason, determination and free will, and divine and human knowledge, and among science, philosophy, and religion. Recommended background: REL 2401 or basic knowledge of Islam. Same As: REL 6414.

REL 3419. Islamic Civilization and the West. 3 Credits.

Interaction between Islamic and Western civilization during the past fourteen centuries. Christian contact with and development of views about Islam; formation of Islamic civilization and the influence of Islamic ideas upon the West; encroachment upon and subsequent colonization of the Islamic world by the West; the spread of Western ideas among Muslims; and Islamic responses to the advent of modernism coming from the West. Present day relations.

REL 3425. Islamic Political Thought. 3 Credits.

Islamic political thought from inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists and its encounter with political thought from the Western world in the modern period. Same As: REL 6425.

REL 3431. Sufism/Islamic Mysticism. 3 Credits.

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Same As: REL 6431.

REL 3432. Persian Sufi Literature East and West. 3 Credits.

The teachings of Sufism as reflected in the history of Persian Sufi literature. The influence of that literature on literary figures outside of the Islamic world, especially in the West, but also in India and China, from the 18th to the 20th centuries.

REL 3475. Islamic Religion and Art. 3 Credits.

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design. Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same As: REL 6475.

REL 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. (Same as WGSS 3481).

REL 3482. Gender and Piety in Islam. 3 Credits.

Issues related to gender, sainthood, and piety in Islam. Reading of classical primary texts and historical, ethnographic, and philosophical works. Focus on mysticism and metaphysics in Sufi and Shi'i traditions. Final projects are creative or research oriented.

REL 3566. Dharma in Hinduism and Buddhism. 3 Credits.

Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3612. Buddhist Ethics. 3 Credits.

Introduction to basic concepts in Buddhist ethics. Exploration of the unique landscape of Buddhist moral psychology. Analysis of the moral thought of leading contemporary Buddhists Thich Nhat Hanh and the Dalai Lama. Prerequisites: .

REL 3614. Buddhist Philosophy. 3 Credits.

Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3615. Buddhist Contemplative Traditions in Theory and Practice. 3 Credits.

Exploration of Buddhist meditation. The meditation movement in the West and the emerging science of meditation. Includes discussion of and practicing different styles of Buddhist meditation.

REL 3666. The Book of Revelation and Other Apocalypses. 3 Credits.

Examination of the Book of Revelation in its original historical context. This includes investigation of the origins of apocalyptic thought within Judaism and comparison of the Book of Revelation with other apocalypses such as Daniel, 1 Enoch, and 4 Ezra.

REL 3701. Religion in the United States. 3 Credits.

Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

REL 3711. Religion in Contemporary America. 3 Credits.

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3711W. Religion in Contemporary America. 3 Credits.

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 3814W. Religion and Philosophy in East Asia. 3 Credits.

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as EALL 3814).

REL 3831W. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as EALL 3831).

REL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.

Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage. Same As: EALL 3832.

REL 3841. Religion and Politics in China. 3 Credits.

The changes, destructions, and reconstructions of Chinese religions from the late nineteenth century to the present. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation state. Same As: CHIN 3841.

REL 3881. Women, Gender, and Religion in China. 3 Credits.

Historical introduction to women and men as gendered subjects and the construction of gender and power in Chinese religions. May be taken for graduate credit with extra work assigned. Same as EALL 3881/WGSS 3811. (Same as EALL 3881, WGSS 3881).

REL 3901. Thinking About Religion: Classic and Contemporary Approaches. 3 Credits.

Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 3910. Perennial Philosophy. 3 Credits.

The meaning of the concept of 'perennial philosophy' as understood by various scholars of thought throughout Eastern and Western history, including its contemporary significance. Perennial philosophy as it concerns the nature of the 'divine reality,' the human state, the cosmos, the arts, and relations between religions.

REL 3912. Religion and Science. 3 Credits.

The relationship between religion and science globally and over time. Egypt, Greece, the Far East, India, and the Islamic world; the West during the Renaissance, with a focus on alchemy and the hermetical tradition; and the Scientific Revolution in the 17th century and biological revolution in the 19th century. Issues and various currents of thought in the contemporary world.

REL 3915. Islam and Hinduism in South Asia. 3 Credits.

Investigation of the historical development and contemporary practice of Islam in South Asia (India, Nepal, Pakistan, Bangladesh, and Afghanistan). Particular attention to devotional traditions within Sufism and Bhakti Hinduism.

REL 3923. Violence and Peace in Judaism, Christianity, and Islam. 3 Credits.

Historical analysis of the violent and peaceful dimensions of the three Abrahamic faiths, with focus on the relationship of the scriptures of each of the three traditions to the later interpretations that supported both violent and peaceful readings of those texts.

REL 3930. Mysticism East and West. 3 Credits.

Mysticism and its various meanings in Eastern and Western religious and spiritual traditions. Comparative study of major figures and works. What schools of mysticism teach about the nature of God and the world and the human state. The rapport between mysticism and various forms of sacred and traditional art.

REL 3931. Interfaith Dialogue in World Religions. 3 Credits.

Comparison of certain families of religions and the doctrinal debates in which they have engaged, including Hindu-Buddhist, inter-Hindu, inter-Buddhist, Buddhist-Confucian, Jewish-Christian, inter-Christian (Catholic-Protestant), Christian-Islamic, and inter-Islamic debates.

REL 3989. The Goddess in India and Beyond. 3 Credits.

The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskrit, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.

REL 3990. Selected Topics in Religion. 3 Credits.

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3990W. Selected Topics in Religion. 3 Credits.

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 3999. Readings and Research. 2-3 Credits.

REL 4101W. Senior Capstone Seminar. 3 Credits.

Required of religion majors. Students refine and consolidate what they have learned over the course of their studies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 4191W. Senior Honors Thesis. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 5099. Variable Topics. 1-99 Credits.

REL 5701. Selected Topics. 4 Credits.

REL 6201. Special Topics in Religion. 3 Credits.

May be repeated for credit provided the topic differs.

REL 6401. Islamic Historiographies. 3 Credits.

Muslim historiographic traditions from the 7th to 15th centuries, including what they looked like and how they developed; the development of scholarly methods used to evaluate the source materials for these traditions in the formative and classical periods of Islam; key developments in postclassical, non-Arabic Muslim historiographic traditions in the Indian Subcontinent, Ottoman Turkey, and the Persian lands.

REL 6402. Qur'an and Hadith. 3 Credits.

The structure, major themes, and literary aspects of the twin sources of Islam. Commentaries written by Muslim scholars and their part in spreading the teachings of the sacred book of Islam. The general principle elements of Islamic theology, law, politics, ethics, philosophy, and art and architecture. The science of Hadith, its types, its relation to the Qur'an, and methods used for authentication of the sayings of the Prophet. The historical role of the Qur'an and Hadith both in classical as well as modern period with particular emphasis on its part in forming Muslim perception of society, history, and politics.

REL 6412. Shi'i Thought. 3 Credits.

Introduction to Shi'i Islam, with a particular focus on the integration of textual, rational, polemical, and philosophical sources in the development of the fundamental doctrines of Twelver, Isma'ili, and Zaydi (Imami) Shi'ism. Restricted to MA students in Islamic Studies.

REL 6413. Philosophy and Mysticism in the Shi'i World. 3 Credits.

Major figures and concepts in philosophy and mysticism in the Shi'i world, including Sufism and the 'irfān tradition, with a focus on ethics. Parallel phenomena in Judaism and Christianity. Restricted to students in the MA in Islamic studies program.

REL 6414. Islamic Philosophy and Theology. 3 Credits.

Major schools of Islamic philosophy and theology considered in morphological and historical contexts. Relation between revelation and reason, determination and free will, and divine and human knowledge, and among science, philosophy, and religion. Recommended background: REL 2401 or basic knowledge of Islam. Same As: REL 3414.

REL 6420. Shi'i Political Thought. 3 Credits.

Survey of contemporary Twelver Shi'i political thought, focusing on scholars from Lebanon, Iraq, and Iran, during the twentieth and twenty-first centuries. Restricted to students in the MA in Islamic studies program.

REL 6425. Islamic Political Thought. 3 Credits.

Islamic political thought from inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists and its encounter with political thought from the Western world in the modern period. Same As: REL 3425.

REL 6431. Sufism/Islamic Mysticism. 3 Credits.

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Same As: REL 3431.

REL 6441. Islamic Law. 3 Credits.

Islamic positive law in the contemporary context. The family law of Islam (marriage, dowry, custody, guardianship and various forms of divorce); the law of inheritance and public trust (waqf) as two selected topics of Islamic private law. Examination of theories of jihad and siyar in the contemporary context of nation-state systems of international relationships. Islamic rituals ('ibadat) whose spirituality prevails the totality of the Islamic set of laws and regulations.

REL 6442. Principles of Shi'i Jurisprudence. 3 Credits.

Islamic legal theory in the Shi'i tradition. Topics include sources of Shi'i law; resolving contradictory reports from divinely-inspired sources; authentic vs. inauthentic evidence; distinguishing which actions are obligatory, forbidden, and permissible; and parallels with secular legal systems. Restricted to students in the MA in Islamic studies program.

REL 6460. Topics in the Study of Islam. 3 Credits.

Study of topics in Islam, as selected by the instructor, that may include philosophy, theology, mysticism, law, and/or literature. Prerequisites: A course on Islam or permission of the instructor.

REL 6461. Topics in Islamic Thought. 3 Credits.

Perennial major issues in Islamic theology, philosophy, and Sufism such as Divine Unity, prophetology, eschatology, religious knowledge, sacred law, and ethics. Prerequisites: A course on Islam or permission of the instructor.

REL 6475. Islamic Religion and Art. 3 Credits.

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design. Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same As: REL 3475.

REL 6481. Global Islamic Feminisms. 3 Credits.

History and current trajectory of Islamic feminism, beginning with various debates over understandings of its meanings and manifestations. Introduction to multidisciplinary methods of analysis for national and global contexts. Recommended background: Previous knowledge of or coursework in Islam.

REL 6511. Currents of Modern Hinduism. 3 Credits.

Hinduism since the early seventeenth century. Colonialism, the impact of missionaries, orientalism, reform, relations between Brahmanical and popular Hinduism, Sanskrit and vernacular traditions, regionalism, communalism, nationalism, fundamentalism, politicized "syndicated" Hinduism, and secularism.

REL 6557. India's Great Epics. 3 Credits.

The Mahabharata and the Ramayana are treated in alternate offerings of the course. These founding epic texts of devotional (bhakti) Hinduism are taught in English translation. Vernacular and performative versions of the epics and Western adaptations.

REL 6771. American Religion to 1830. 3 Credits.

Religious thought and life during the Colonial and early National periods.

REL 6773. American Religion Since 1830. 3 Credits.

Religious thought and life from the Civil War to the present.

REL 6831. Introduction to Daoism. 3 Credits.

A general introduction to the Daoist tradition from the antiquity to contemporary times, through reading major Daoist classics, scriptures, poems, novels, and examining Daoist material cultures and bodily cultivation techniques. Students taking the course for graduate credit must complete additional work. (Same as EALL 3831W, EALL 6831, REL 3831W).

REL 6901. Thinking about Religion: Classic and Contemporary Approaches. 3 Credits.

Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 6911. Myth, Ritual, and Language. 3 Credits.

Method and theory in the interpretation of myth and narrative, ritual and sacrifice, and symbolism, with primary reference to the history of religions.

REL 6997. Readings and Research. 2-3 Credits.

Investigation of special problems.

REL 6998. Thesis Research. 3 Credits.

REL 6999. Thesis Research. 3 Credits.

BACHELOR OF ARTS WITH A MAJOR IN RELIGION

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
REL 1003	Introduction to World Religions	
Required		
REL 3901	Thinking About Religion: Classic and Contemporary Approaches	
REL 4101W	Senior Capstone Seminar	
Electives		
Students take nine elective REL courses. Two of these courses must be taken at the 2000 level. Two must be courses focused on Abrahamic religions and two must be focused on non-Abrahamic religions.		
Abrahamic religions courses		
REL 1009	The Hebrew Scriptures	
REL 1010	The New Testament	
REL 1010W	The New Testament	
REL 2165	The Gospels	
REL 2169	Lost Gospels	
REL 2201	Judaism	
REL 2211	Rabbinic Thought and Literature	
REL 2301	Christianity	
REL 2401	Islam	
REL 2981	Women in Western Religion	
REL 3141	Second Temple/Hellenistic Judaism	
REL 3151	The Historical Jesus	
REL 3151W	The Historical Jesus	
REL 3221	Issues in Jewish Ethics	
REL 3291	Modern Jewish Thought	

REL 3310	Apocalypse and Social Change
REL 3321	Christian Ethics and Modern Society
REL 3342	Medieval Faith and Symbolism
REL 3343	Religion in the Renaissance and Reformation
REL 3405	Shi'ite Islam
REL 3414	Islamic Philosophy and Theology
REL 3419	Islamic Civilization and the West
REL 3425	Islamic Political Thought
REL 3431	Sufism/Islamic Mysticism
REL 3432	Persian Sufi Literature East and West
REL 3475	Islamic Religion and Art
REL 3481	Women in Islam
REL 3482	Gender and Piety in Islam
REL 3666	The Book of Revelation and Other Apocalypses
REL 3701	Religion in the United States
REL 3711	Religion in Contemporary America
REL 3711W	Religion in Contemporary America
REL 3915	Islam and Hinduism in South Asia
REL 3923	Violence and Peace in Judaism, Christianity, and Islam
Non-Abrahamic religions courses	
REL 2501	Hinduism
REL 2562	Mythologies of India
REL 2601	Buddhism
REL 2802	Introduction to Chinese Religions
REL 2811	Confucian Literature in East Asia
REL 2814	Religion and Philosophy in East Asia
REL 2831	Introduction to Daoism
REL 3566	Dharma in Hinduism and Buddhism
REL 3614	Buddhist Philosophy
REL 3814W	Religion and Philosophy in East Asia
REL 3831W	Introduction to Daoism

REL 3832 Myth, Ritual, and Popular Religion in China

REL 3841 Religion and Politics in China

REL 3881 Women, Gender, and Religion in China

REL 3915 Islam and Hinduism in South Asia

REL 3989 The Goddess in India and Beyond

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).

- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a grade-point average of 3.5 in courses in the major, and receive a minimum grade of A- in REL 4101.

GRADUATE CERTIFICATE IN ISLAMIC STUDIES

The graduate certificate, offered by the Department of Religion, focus on the study of Islam in its classical and contemporary formations, with an emphasis on developing competence in classical Islamic intellectual traditions. The cross-disciplinary program allows students to study with a variety of faculty members who are knowledgeable about the classical formulations of Islam, and have on-the-ground experience in Muslim-majority countries and communities. Centrally located in Washington, D.C., the program offers students the opportunity to interact with U.S. government agencies, think tanks, non-governmental institutions, and the large Muslim community residing and working in the metro area. The program also offers "non-traditional students" such as working professionals, civil servants, and employees of international agencies the opportunity to tailor the program to their particular needs.

Visit the program website (<https://religion.columbian.gwu.edu/islamic-studies-graduate-certificate/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
REL 6401	Islamic Historiographies	
REL 6402	Qur'an and Hadith	
REL 6441	Islamic Law	
REL 6460	Topics in the Study of Islam	
Electives		
Two additional courses chosen from an approved list in a variety of disciplines, most of which focus on Islam in the contemporary world		

MASTER OF ARTS IN THE FIELD OF ISLAMIC STUDIES

The Master of Arts in Islamic Studies, offered by the Department of Religion, focus on the study of Islam in its classical and contemporary formations, with an emphasis on developing competence in classical Islamic intellectual traditions. The cross-disciplinary program allows students to study with a variety of faculty members who are knowledgeable about the classical formulations of Islam, and have on-the-ground experience in Muslim-majority countries and communities. Centrally located in Washington, D.C., the program offers students the opportunity to interact with U.S. government agencies, think tanks, non-governmental institutions, and the large Muslim community residing and working in the metro area. The program also offers “non-traditional students” such as working professionals, civil servants, and employees of international agencies the opportunity to tailor the program to their particular needs.

A concentration in Shi'ism is available in the MA program. Please see the website for the Department of Religion for more information on the requirements for the concentration. The division between Sunnis and Shi'ites lies at the root of much of the strife in the Islamic world today. Our program uniquely features not only an education in Sunni Islam, but Shi'ite Islam as well. A comprehensive study must include both major branches of Islamic tradition for a full understanding of current issues in the world of Islam, and what its future holds.

Qualified applicants who intend to pursue the concentration in Shi'ism may be eligible for community supported fellowships. These fellowships are not sponsored, awarded, or managed by the university.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

36 credits, including 18 credits in required courses and 18 credits in pre-approved elective courses.

All students must complete at least four semesters of Arabic, which do not count toward the 36 credits required for the program. Alternatively, students may demonstrate competence in Arabic through examination. Depending on their focus of study, students may also be asked to take courses in other languages, which do not count toward the degree. In rare instances, students may substitute another language for Arabic, such as Persian, Turkish, or Urdu, if their research focuses on texts composed in one of these languages.

Code	Title	Credits
Islamic studies program		
Required core courses		
REL 6401	Islamic Historiographies	
REL 6402	Qur'an and Hadith	
REL 6441	Islamic Law	
REL 6460	Topics in the Study of Islam	
REL 6998	Thesis Research	
REL 6999	Thesis Research	
Electives		
Six additional courses (18 credits) selected from a pre-approved list in consultation with the graduate program advisor(s). Most of the selected courses should focus on Islam in the contemporary world.		
Code	Title	Credits
Concentration in Shi'ism		
In addition to the required core curriculum, students pursuing the concentration take the following:		
Required		
REL 6412	Shi'i Thought	
REL 6413	Philosophy and Mysticism in the Shi'i World	
REL 6420	Shi'i Political Thought	
REL 6442	Principles of Shi'i Jurisprudence	
Electives		

Two additional courses (6 credits) selected from a pre-approved list in consultation with the graduate program advisor(s). Selected courses should focus on Islam in the contemporary world.

MINOR IN RELIGION

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses, of which no more than 9 credits may be taken in any one of the major religious traditions listed below:

Code	Title	Credits
Buddhism		
REL 2601	Buddhism	
REL 3566	Dharma in Hinduism and Buddhism	
REL 3614	Buddhist Philosophy	
Christianity		
REL 2165	The Gospels	
REL 2169	Lost Gospels	
REL 2301	Christianity	
REL 3151	The Historical Jesus	
or REL 3151W	The Historical Jesus	
REL 3161	The Life and Thought of Paul	
or REL 3161W	The Life and Thought of Paul	
REL 3321	Christian Ethics and Modern Society	
REL 3341	Christianity in the Ancient World	
REL 3342	Medieval Faith and Symbolism	
REL 3343	Religion in the Renaissance and Reformation	
REL 3344	Christianity in the Modern World	
REL 3666	The Book of Revelation and Other Apocalypses	
Hinduism		
REL 2562	Mythologies of India	
REL 3566	Dharma in Hinduism and Buddhism	
REL 3915	Islam and Hinduism in South Asia	
REL 3989	The Goddess in India and Beyond	

Islam	
REL 2401	Islam
REL 3405	Shi'ite Islam
REL 3414	Islamic Philosophy and Theology
REL 3425	Islamic Political Thought
REL 3431	Sufism/Islamic Mysticism
REL 3475	Islamic Religion and Art
REL 3481	Women in Islam
REL 3482	Gender and Piety in Islam
REL 3915	Islam and Hinduism in South Asia
Judaism	
REL 2201	Judaism
REL 2211	Rabbinic Thought and Literature
REL 3141	Second Temple/Hellenistic Judaism
REL 3221	Issues in Jewish Ethics
REL 3291	Modern Jewish Thought
REL 3292	
East Asian Religions	
REL 2811	Confucian Literature in East Asia
or EALL 3811	Confucian Literature in East Asia
REL 2814	Religion and Philosophy in East Asia
REL 3831	
or REL 3831W	Introduction to Daoism
REL 3832	Myth, Ritual, and Popular Religion in China
or EALL 3832	Myth, Ritual, and Popular Religion in China
REL 3841	Religion and Politics in China
or CHIN 3841	Religion and Politics in China
REL 3881	Women, Gender, and Religion in China
or EALL 3881	Women, Gender, and Religion in China
or WSTU 3881	

REL 3901 is recommended.

ROMANCE, GERMAN, AND SLAVIC LANGUAGES AND LITERATURES

The Department of Romance, German, and Slavic Languages and Literatures offers undergraduate instruction in French, German, Italian, Portuguese, Russian, and Spanish. In general, Romance language courses are conducted entirely in the language concerned. The proficiency-based curriculum emphasizes skills in aural comprehension, speaking, reading, and writing. Culture, an essential dimension of language acquisition, is integrated from the start.

The undergraduate program is designed to strengthen a student's ability to communicate, reason, and understand the linguistic, social, cultural, and physical environments that inform the lives of the people who speak the target language. Course work fosters critical thinking, based in the linguistic, cultural, and historical roots of the locations where the language is spoken. The curriculum prepares students for careers in academia, business, diplomacy, government, medicine, and law, among other fields.

Classroom and laboratory study is supplemented by the diverse resources of Washington, DC, through field trips, foreign films, lectures, and cultural programs at embassies.

Visit the department's website (<http://rgsll.columbian.gwu.edu/>) for information concerning eligibility, requirements, and procedures for the wide variety of opportunities to study abroad (<https://studyabroad.gwu.edu/>).

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in French language, literature, and culture (p. 460)
- Bachelor of Arts with a major in German language and literature (p. 461)
- Bachelor of Arts with a major in Russian language and literature (p. 463)
- Bachelor of Arts with a major in Spanish and Latin American languages, literatures, and cultures (p. 464)

Minors

- Minor in French language, literature, and culture (p. 466)
- Minor in German language and literature (p. 467)
- Minor in Italian language and literature (p. 467)
- Minor in Russian language and literature (p. 467)
- Minor in Spanish and Latin American languages, literatures, and cultures (p. 468)

Combined program

- Dual Bachelor of Arts with a major in Spanish and Latin American languages, literatures, and cultures, and Master of

Education in Secondary Education, with a concentration in foreign language education (p. 657)

FACULTY

Professors M. Belenky, C. Britt, M. de la Fuente, P. Rollberg, R. Robin, S. Waisman, L.L. Westwater

Associate Professors Y. Captain-Hidalgo, M.R. Gonglewski, H. Bamford,, K. Kleppinger, D.B. Marshall, M.B. Stein

Assistant Professors A. Caras, M. Cuellar, P. Goul, S.K. Hurst, , A. LaBoda, G. Shatalina, A. Waberi, A. Martin (*Visiting*), V. Valdivia

Adjunct Faculty S. Erradi, B. Marguerre, B. Mazurkiewicz, L. Michael, E. Ovtcharenko, B. Schaefer

Instructors C. Adoyo, H. Anaye, A. Behzadi, M. Dieppa Perea, N. Erradi, J. Freedman, C. Goldenberg, N. Khavari, A. Jurado, A.J. Kratz, T. Leyva, A. Longoni, M. Marinose, R. McPeak, Z. Mirsharif, P. Montilla Keeling, S. Norlan, E. Parker, A. Pechnikova, D.G. Perillan, A. Pichs, E. Piera Rosa, P. Rappoport, M. Rodman, R. Rogan, F. Santoro, E. Sieg Barthold, M. Sitzler-Sawicki, A. Suarez-Touzon, J. Vidal Gandia, S. Vistamehr, P. Warfield

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Placement examinations: A student who has not been granted advanced standing and who wishes to continue in college the language begun in high school must take a placement examination (<http://departments.columbian.gwu.edu/rgsll/>) before registration. Upon completion of the examination, assignment is made to the appropriate course.

Note: In general, Romance language courses are conducted entirely in the language concerned. Oral comprehension, speaking, reading, and writing are the basis of all courses through FREN 2006 Language, Culture, and Society II/ITAL 2006 Language, Culture, and Society II/PORT 2006 Applied Portuguese Grammar/SPAN 2006 Advanced Spanish II, with culture integrated from the start as an essential dimension of language acquisition.

- French (FREN) (p. 1602)
- Germanic Language and Literature (GER) (p. 1611)
- Italian (ITAL) (p. 1669)
- Portuguese (PORT) (p. 1749)
- Slavic Language and Literature (SLAV) (p. 1819)
- Spanish (SPAN) (p. 1826)

BACHELOR OF ARTS WITH A MAJOR IN FRENCH LANGUAGE, LITERATURE, AND CULTURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite courses		
FREN 1001	Basic French I	
FREN 1002	Basic French II	
FREN 1003	Intermediate French I	
FREN 1004	Intermediate French II	
FREN 2005	Language, Culture, and Society I	
Code	Title	Credits
Required for the major		
30 credits including:		
FREN 3100	Introduction to French Literature	
FREN 4910	Proseminar: Readings for the Major	
FREN 4920W	Proseminar II	
Seven additional upper-level courses numbered 2006 and above. Four of these courses must be in French literature and culture. Two must be FREN courses in the 4000 range. With approval of the major advisor, two may be in a related field.		
FREN 2500	Cultural Politics of Food in France	
FREN 3010W	Advanced French Language, Structure, and Composition	
FREN 3020	Contemporary France	
FREN 3100W	Introduction to French Literature	

FREN 3210	Medieval and Early Modern French Literature in Context
FREN 3220	Modern French Literature
FREN 3290	Textual Analysis
FREN 3300	Topics in French and Francophone Literatures and Cultures in Translation
FREN 3400	Studies in Genre
FREN 3500	Race, Religion, and Identity in France
FREN 3520	The Age of Classicism
FREN 3530	The Age of Enlightenment
FREN 3550	Studies in Twentieth-Century French Literature
FREN 3560	Topics in Contemporary Francophone Literature and Cinema
FREN 3600	Special Topics in French Literature
FREN 3700	History of French Cinema
FREN 4135	Folger Seminar
FREN 4470	Writing Women
FREN 4500	Studies in Medieval French Literature
FREN 4510	French Literature of the Renaissance
FREN 4540	Nineteenth-Century French Literature and Culture
FREN 4600	Special Topics in French Literature
FREN 4700	Race Matters: Literature, Culture, and Identity in Contemporary France

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the

CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in French language, literature, and culture, candidates must have attained a 3.75 GPA in the major and at

least a 3.0 average overall. Qualified students may be invited to write an honors thesis by their major advisor and proseminar professor by the beginning of the fall semester of the senior year.

BACHELOR OF ARTS WITH A MAJOR IN GERMAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisites		
One of the following options:		
Option A:		
GER 1005 & GER 1006	Intensive Beginning German I and Intensive Beginning German II	
Option B:		
GER 1001 & GER 1002	First-Year German I and First-Year German II	
GER 1003 & GER 1004	Second-Year German I and Second-Year German II	
Code	Title	Credits
Required		
GER 2009 & GER 2100	Intermediate German I and Intermediate German II	
GER 2109 & GER 2110	Advanced Conversation and Composition and Germany in the Age of Globalization	
Two courses from the following:		
GER 2091 & GER 2092	Introduction to German Literature—in English I and Introduction to German Literature—in English II	
GER 2161 & GER 2162	German Culture—in English I and German Culture—in English II	
Electives		

Two courses from the following:

GER 2111	Business German
GER 2161 & GER 2162	German Culture-in English I and German Culture-in English II (if not taken above)
GER 2165	Twentieth-Century German Literature-in English
GER 3181	History of German Cinema-in English
GER 3182	The Fairy Tale from the Grimms to Disney
GER 3183	Berlin Before and After the Wall (in English)
GER 3184	German Thought-in English
GER 3185	Literary Voices and the Fascist Experience-in English
GER 3186	German Women Writers of the 19th and 20th Centuries (in English)
GER 3187	German Cinema after 1945 (in English)
GER 3188	The Lives of East Germans (in English)

Four courses from the following:

GER 3189	Dealing with the Communist Past in Germany and Eastern Europe
GER 4171	The Age of Goethe-in German (in German)
GER 4172	From Romanticism to Realism (in German)
GER 4173	Naturalism to Expressionism (in German)
GER 4174	Inside/Outside the Third Reich (in German)
GER 4175	Literature of two Germanies (in German)
GER 4176	Contemporary German Literature (in German)

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that

enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, candidates must have attained a 3.5 grade-point average in the major and at least a 3.0 average overall. Students must apply for honors candidacy by the end of the first semester of the junior year; must attain speaking proficiency at the advanced level, as measured by the ACTFL (American Council on the Teaching of Foreign Languages) Oral Proficiency Interview; and must successfully complete an honors thesis (GER 4197 Senior Honors Thesis I–GER 4198 Senior Honors Thesis II).

BACHELOR OF ARTS WITH A MAJOR IN RUSSIAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Prerequisite		
All courses in one of the following options:		
Option A:		
SLAV 1012	Intensive Basic Russian I	
SLAV 1034	Intensive Basic Russian II	
Option B:		
SLAV 1001	First-Year Russian I	
SLAV 1002	First-Year Russian II	
SLAV 1003	Second-Year Russian I	
SLAV 1004	Second-Year Russian II	
Code	Title	Credits
Required in the major		
SLAV 1391	Introduction to Russian Literature I	
SLAV 1392	Introduction to Russian Literature II	
SLAV 2005	Intermediate Russian I	
SLAV 2006	Intermediate Russian II	

SLAV 2007	Russia Today: Topics in Advanced Russian I
SLAV 2008	Russia Today: Topics in Advanced Russian II
SLAV 2361	Russian Culture
SLAV 2362	Russian Culture
Two of the following:	
SLAV 2471	Nineteenth-Century Russian Prose
SLAV 2472	Nineteenth-Century Russian Poetry
SLAV 2473	20th-Century Russian Prose
SLAV 2474	Twentieth-Century Russian Poetry
Two of the following:	
SLAV 2365	Twentieth-Century Russian Literature to World War II
SLAV 2366	Russian Literature from World War II to the Present
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II
SLAV 4595W	Special Topics

Proficiency requirements for the Russian major

After completing SLAV 2006, students should consult their advisor to choose one of the following proficiency tracks:

1. Emphasis on proficiency in speaking—students choosing this track must attain speaking proficiency at the intermediate high level, as measured by the ACTFL Oral Proficiency Interview. A semester of intensive language study in Russia on an approved program is required unless waived by the department.
2. Emphasis on proficiency in reading—students choosing this track must attain reading proficiency at the advanced level on the ACTFL scale, as measured by a departmental examination. Students should consult their advisor and use the Russian reading resource site (<https://sites.google.com/site/russianesia/>).

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that

enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a candidate must have attained a 3.5 grade-point average in the major and at least a 3.0 average overall. Students must apply for honors candidacy by the end of the first semester of the junior year; must attain speaking proficiency at the advanced level, as measured by the ACTFL (American Council on the Teaching of Foreign Languages) Oral Proficiency Interview; and must successfully complete an honors thesis (SLAV 4597 Senior Honors Thesis I–SLAV 4598 Senior Honors Thesis II).

BACHELOR OF ARTS WITH A MAJOR IN SPANISH AND LATIN AMERICAN LANGUAGES, LITERATURES, AND CULTURES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

The major-specific curriculum.

Code	Title	Credits
Required		
SPAN 1095	The Spanish-Speaking World: Spain, Latin America, and the United States	
SPAN 2006	Advanced Spanish II	
or SPAN 2026	Advanced Spanish for Heritage Learners	
or SPAN 2056	Intensive Advanced Spanish	
or SPAN 2156	Intensive Advanced Spanish for Heritage Learners	
SPAN 3100W	Texts and Contexts of the Spanish-Speaking World	
SPAN 4910W	Senior Seminar (required of all Spanish majors in the fall semester of the senior year)	
Two courses (6 credits) from the following:		
SPAN 3500	Medieval Iberia in the Modern World	
SPAN 3510	Heresy and the Other in Early Modern Iberia	
SPAN 3520	Decolonizing the Empire: Colonial Latin America	

SPAN 3530	Enlightenment Spain
SPAN 3600	Special Topics
SPAN 4510	Cervantes Don Quixote
Four courses (12 credits) from the following. Two of these courses may be substituted with courses from outside the program, with the approval of the Spanish major advisor.	
SPAN 3200	Bilingualism in the Spanish-Speaking World
SPAN 3400	Theatre of Spain and Latin America
SPAN 3410	Latin American Short Fiction
SPAN 3420	The Essay in Spain and Latin America
SPAN 3430	Afro-Latin America in the Diaspora
SPAN 3440	Caribbean Literature and Culture
SPAN 3540	Major Authors of Spain and Latin America
SPAN 3550	Queer Latin America
SPAN 3570	Women Writers of Spain and Latin America
SPAN 3650	Literature and Dictatorship
SPAN 3700	Cinema of Spain and Latin America
SPAN 4200	Spanish Applied Linguistics
SPAN 4410	Contemporary Narrative in Latin America
SPAN 4450	Mexican Literature and Culture
SPAN 4460	Southern Cone Literature and Culture
SPAN 4480	Studies in Latinx Cultural Production
SPAN 4520	Experimental Literature
SPAN 4540	The Myth of the Two Spains
SPAN 4550	1898 to 1998: Spain's First Century without Empire
SPAN 4560	Modern Poetry of Spain and Latin America
SPAN 4600	Special Topics
SPAN 4650	Literary Translation
SPAN 4700	Film as Text in Latin America
SPAN 4800	Independent Study

Excluding courses taught at GW Study Centers abroad, no more than four courses taken abroad or at another institution may count toward the major.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in

addition to the one course in this category required by the University General Education Requirement.

- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Spanish and Latin American languages, literatures, and cultures, candidates must have attained a 3.75 GPA in the major and at least a 3.0 average overall. Qualified students may be invited to write an honors thesis by the Director of the Spanish and Latin American Literatures and Cultures program by the end of the spring semester of their junior year. Students writing an honors thesis complete thesis research in the fall of the senior year and thesis writing in the spring of the senior year.

MINOR IN FRENCH LANGUAGE, LITERATURE, AND CULTURE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, as follows:

Code	Title	Credits
Prerequisites		
FREN 1001	Basic French I	
FREN 1002	Basic French II	
FREN 1003	Intermediate French I	
FREN 1004	Intermediate French II (AP credit may be substituted)	
Minor curriculum		
Required		
FREN 3100W	Introduction to French Literature	
One course from the following:		
FREN 3210	Medieval and Early Modern French Literature in Context	

FREN 3520	The Age of Classicism
FREN 3530	The Age of Enlightenment
FREN 4500	Studies in Medieval French Literature
FREN 4510	French Literature of the Renaissance
Four courses from the following:	
FREN 2005	Language, Culture, and Society I *
FREN 2006	Language, Culture, and Society II
FREN 2500	Cultural Politics of Food in France
FREN 3010W	Advanced French Language, Structure, and Composition
FREN 3020	Contemporary France
FREN 3210	Medieval and Early Modern French Literature in Context
FREN 3220	Modern French Literature
FREN 3300	Topics in French and Francophone Literatures and Cultures in Translation
FREN 3400	Studies in Genre
FREN 3500	Race, Religion, and Identity in France
FREN 3520	The Age of Classicism
FREN 3530	The Age of Enlightenment
FREN 3550	Studies in Twentieth-Century French Literature
FREN 3560	Topics in Contemporary Francophone Literature and Cinema
FREN 3560	Topics in Contemporary Francophone Literature and Cinema
FREN 3600	Special Topics in French Literature
FREN 3700	History of French Cinema
FREN 4470	Writing Women
FREN 4500	Studies in Medieval French Literature
FREN 4510	French Literature of the Renaissance
FREN 4540	Nineteenth-Century French Literature and Culture
FREN 4600	Special Topics in French Literature
FREN 4700	Race Matters: Literature, Culture, and Identity in Contemporary France

*AP credit for FREN 2005 allows students to place into higher-level FREN courses, but those credits do not count toward the total required for the minor.

MINOR IN GERMAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 34 credits, including 28 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
One of the following options:		
Option A:		
GER 1001	First-Year German I	
GER 1002	First-Year German II	
GER 1003	Second-Year German I	
GER 1004	Second-Year German II	
Option B		
GER 1005	Intensive Beginning German I	
GER 1006	Intensive Beginning German II	
One of the following:		
GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
GER 2101 & GER 2102	Readings in Contemporary German I and Readings in Contemporary German II	
One of the following:		
GER 2091 & GER 2092	Introduction to German Literature—in English I and Introduction to German Literature—in English II	
GER 2109 & GER 2110	Advanced Conversation and Composition and Germany in the Age of Globalization	
GER 2161 & GER 2162	German Culture—in English I and German Culture—in English II	
Electives		

Two additional upper-division German (GER) courses excluding:

GER 2101	Readings in Contemporary German I
GER 2102	Readings in Contemporary German II

MINOR IN ITALIAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
ITAL 2005	Language, Culture, and Society I *	
ITAL 2006	Language, Culture, and Society II *	
If a student places out of ITAL 2005 and/or ITAL 2006, they must take the equivalent number of credits in elective courses.		
Electives		
A minimum of 12 credits in ITAL courses at the 3000 level or above. At least 6 of these credits must be taken in courses taught in Italian. See course descriptions in this Bulletin.		

MINOR IN RUSSIAN LANGUAGE AND LITERATURE

REQUIREMENTS

The following requirements must be fulfilled: 38 credits in required courses.

Code	Title	Credits
Required courses:		
One of the following options:		
Option A:		
SLAV 1001	First-Year Russian I	
SLAV 1002	First-Year Russian II	
SLAV 1003	Second-Year Russian I	
SLAV 1004	Second-Year Russian II	
Option B		

SLAV 1012	Intensive Basic Russian I
SLAV 1034	Intensive Basic Russian II
And also:	
SLAV 2005 & SLAV 2006	Intermediate Russian I and Intermediate Russian I
And four courses from the following:	
SLAV 1391	Introduction to Russian Literature I
SLAV 1392	Introduction to Russian Literature II
SLAV 2361	Russian Culture
SLAV 2362	Russian Culture
SLAV 2365	Twentieth-Century Russian Literature to World War II
SLAV 2366	Russian Literature from World War II to the Present
SLAV 2471	Nineteenth-Century Russian Prose
SLAV 2472	Nineteenth-Century Russian Poetry
SLAV 2473	20th-Century Russian Prose
SLAV 2474	Twentieth-Century Russian Poetry
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II

MINOR IN SPANISH AND LATIN AMERICAN LANGUAGES, LITERATURES, AND CULTURES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in courses for the minor and satisfactory completion of the prerequisite introductory language sequence.

Code	Title	Credits
Required		
SPAN 2006	Advanced Spanish II *	
or SPAN 2026	Advanced Spanish for Heritage Learners	
or SPAN 2056	Intensive Advanced Spanish	
or SPAN 2156	Intensive Advanced Spanish for Heritage Learners	

SPAN 3100	Texts and Contexts of the Spanish-Speaking World
or SPAN 3100W	Texts and Contexts of the Spanish-Speaking World

12 credits in any Spanish (SPAN) courses at the 3000 level or above. At least 3 of these credits must be in literary studies. Literary studies courses include:

SPAN 3400	Theatre of Spain and Latin America
SPAN 3410	Latin American Short Fiction
SPAN 3420	The Essay in Spain and Latin America
SPAN 3440	Caribbean Literature and Culture
SPAN 3500	Medieval Iberia in the Modern World
SPAN 3510	Heresy and the Other in Early Modern Iberia
SPAN 3520	Decolonizing the Empire: Colonial Latin America
SPAN 3530	Enlightenment Spain
SPAN 3540	Major Authors of Spain and Latin America
SPAN 3550	Queer Latin America
SPAN 3570	Women Writers of Spain and Latin America
SPAN 3600	Special Topics
SPAN 3650	Literature and Dictatorship
SPAN 3700	Cinema of Spain and Latin America
SPAN 4410	Contemporary Narrative in Latin America
SPAN 4450	Mexican Literature and Culture
SPAN 4460	Southern Cone Literature and Culture
SPAN 4480	Studies in Latinx Cultural Production
SPAN 4510	Cervantes Don Quixote
SPAN 4520	Experimental Literature
SPAN 4540	The Myth of the Two Spains
SPAN 4550	1898 to 1998: Spain's First Century without Empire
SPAN 4560	Modern Poetry of Spain and Latin America

SPAN 4650	Literary Translation
SPAN 4700	Film as Text in Latin America

*Only 3 of the 6 credits earned in SPAN 2056 are applied to this requirement.

Note: No more than three courses taken abroad may count toward the minor, excluding GW Study Centers in Chile and Spain.

SOCIOLOGY

One of the social and behavioral sciences disciplines in the Columbian College of Arts and Sciences, the sociology program offers undergraduate and graduate degree programs and a range of courses, from deviant behavior to sociology of sport. It is designed to strengthen a student's knowledge about human social structure and activity. By living in a city that offers a rich social laboratory, students gain real-life experience conducting quantitative and qualitative research and developing skills in sociological observation and analysis.

Visit the Department of Sociology website (<http://sociology.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in sociology (p. 472)
- Bachelor of Arts with a major in criminal justice (p. 469)
- Bachelor of Arts with a major in human services and social justice (p. 471)
- Combined programs (p. 473)

Minors

- Minor in sociology (p. 476)
- Minor in criminal justice (p. 475)
- Minor in law and society (p. 476)
- Minor in human services and social justice (p. 475)

GRADUATE

Master's programs

- Master of Arts in the field of sociology (p. 474)
- Master of Arts in the field of criminology (p. 473)

FACULTY

University Professor A. Etzioni

Professors R.J. Cottrol, X. Mangcu, H. Silver, G.D. Squires, S.A. Tuch, R. Weitzer

Associate Professors D.S. Eglitis, H. Ishizawa (*Chair*), A. Jones, I. Ken

Assistant Professors F. Buntman, M. Kelso, E. Morrison

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Human Services and Social (HSSJ) (p. 1650))
- Sociology (SOC) (p. 1821)

BACHELOR OF ARTS WITH A MAJOR IN CRIMINAL JUSTICE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum (below).

Achievement of a minimum grade of C- in any course that counts toward the degree.

Code	Title	Credits
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Prerequisites

SOC 1001	Introduction to Sociology
or SOC 1002	The Sociological Imagination
SOC 1003	Introduction to Criminal Justice

Code	Title	Credits
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Required

SOC 2101	Social Research Methods (recommended to be taken before the senior year)
SOC 2102	Techniques of Data Analysis (recommended to be taken before the senior year)
SOC 2135	Youth and Delinquency
SOC 2136	Criminology

SOC 2145	Criminal Law
SOC 4192	Advanced Seminar in Criminal Justice
SOC 4193	Internship in Criminal Justice

Electives

Five of the following courses, including at least one Sociology (SOC) course and at least one non-Sociology course:

ANTH 3513	Anthropology of Human Rights
ECON 2167	Economics of Crime
FORS 2104	Introduction to Forensic Sciences II
FORS 2151	Crime Scene Investigation
HIST 2341	History of FBI Counterintelligence
HIST 3370	U.S. Constitutional History
PSC 2213	Judicial Politics
PSC 2215	U.S. Constitutional Law and Politics II
PSYC 2011	Abnormal Psychology
PSYC 2554	Psychology of Crime and Violence
SOC 2137	Transnational Crime
SOC 2139	Alternatives to Imprisonment
SOC 2146	The Bill of Rights and Criminal Justice
SOC 2164	Sociology of the Holocaust and Genocide
SOC 2167	Sociology of Law
SOC 2177	Sociology of the Sex Industry
SOC 2178	Deviance and Control
SOC 2184	Violence and the Family
SOC 2189	Special Topics in Criminal Justice

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that

enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a 3.5 grade-point average in the major, must be registered for 3 credits of SOC 3195 Research during the senior year, and must receive a grade of A on the research paper.

BACHELOR OF ARTS WITH A MAJOR IN HUMAN SERVICES AND SOCIAL JUSTICE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum (below).

Achievement of a minimum grade of C- in all courses that count toward the degree.

Code	Title	Credits
Prerequisites		
HSSJ 1100	Introduction to Human Services and Social Justice	3
SOC 1001	Introduction to Sociology	3
or SOC 1002	The Sociological Imagination	
Code	Title	Credits
Required		
HSSJ 1177	Organizing for Social Justice in Human Services	
HSSJ 2170	Interpersonal Relationships in Human Services	
HSSJ 2171	Human Interactions: Child and Adolescent Development	
HSSJ 2172	Human Interactions: Adult Development	
HSSJ 2200	Principles of Ethical Leadership	
HSSJ 3100W	Program Planning and Evaluation	
HSSJ 3110W	Nonprofit and Organizational Management	

HSSJ 3152 & HSSJ 3153	Fact/Field/Fiction: Intersections in HSSJ and Internship in Human Services and Social Justice*
HSSJ 4195	Capstone Seminar in Human Services and Social Justice
SOC 2101	Social Research Methods
*HSSJ 3152 and HSSJ 3153 must be taken concurrently.	
Electives	
Two courses (6 credits) selected from the following:	
HSSJ 2160	Role of NGOs in International Humanitarian Assistance
SOC 2104	Contemporary Sociological Theory
SOC 2105	Social Problems in American Society
SOC 2163	Sociology of Education
SOC 2170	Class and Inequality in American Society
SOC 2173	Social Movements
SOC 2175	Sociology of Sex and Gender
SOC 2179	Race and Minority Relations

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.

- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must maintain a 3.5 grade-point average in the major, must be registered in HSSJ 4193 Research and Independent Study during the senior year (fall and spring), and must receive an A grade on the research paper.

BACHELOR OF ARTS WITH A MAJOR IN SOCIOLOGY

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum (below)

Achievement of a minimum grade of C- in all courses that count toward the degree.

Code	Title	Credits
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Prerequisites

SOC 1001	Introduction to Sociology	
or SOC 1002	The Sociological Imagination	

Code	Title	Credits
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Required

SOC 2101	Social Research Methods (recommended to be taken before the senior year)	
SOC 2102	Techniques of Data Analysis (recommended to be taken before the senior year)	
SOC 2103	Classical Sociological Theory	
SOC 2104	Contemporary Sociological Theory	
SOC 4195	Senior Research Seminar	

Electives

Seven additional upper-division Sociology (SOC) courses, including at least two courses in the 2160s or 2170s.

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations (<http://bulletin.gwu.edu/university-regulations/>), in order to be considered for graduation with Special Honors, students must maintain a 3.5 grade-point average in the major, must be registered in SOC 4195 Senior Research

Seminar during the senior year, and must receive an A grade on the research paper.

COMBINED PROGRAMS, SOCIOLOGY

REQUIREMENTS

The Department of Sociology offers four programs leading to combined bachelor's and master's degrees. The programs allow students to take a specified number of graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

- Bachelor of Arts and Master of Arts in Sociology
- Bachelor of Arts and Master of Arts in Criminal Justice/Criminology
- Bachelor of Arts in Criminal Justice and Master of Public Administration
- Bachelor of Arts in Human Services and Social Justice and Master of Arts in Public Administration

Interested students should contact their advisor. Visit the Department of Sociology website (<http://sociology.columbian.gwu.edu/combined-degree-bama-programs/>) for application deadlines and other program information.

MASTER OF ARTS IN THE FIELD OF CRIMINOLOGY

One of the social and behavioral sciences disciplines in the Columbian College of Arts and Sciences, the program looks at the historical development of criminal justice, its evolution into modern legal systems and ongoing problems and reforms in policing, the courts and corrections. Students develop an understanding of the causes of criminal behavior and the social conditions that contribute to crime, and they analyze how the criminal justice system operates.

Students who complete the program and receive an MA degree may continue to pursue training in a PhD program. Or they may secure a position in a research organization, government agency or related jobs in the criminal justice field.

The MA in criminology is a joint program between GW's sociology and forensic sciences departments. The program combines training in traditional criminology, criminal justice and forensic sciences. Requirements include courses in research methods, statistics, criminology, criminal law and forensic sciences.

REQUIREMENTS

This program is a joint offering of the Department of Sociology and the Department of Forensic Sciences.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The following requirements must be fulfilled: Non-thesis option—36 credits, including 21 credits in required courses and 15 credits in elective courses; thesis option—36 credits, including 27 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
SOC 6230	Sociological Research Methods	
SOC 6231	Data Analysis	
SOC 6232	Qualitative Methodology: Doing Field Research	
or SOC 6240	Field Research in Organizational Settings	
SOC 6238	Development of Sociological Theory	
or SOC 6239	Contemporary Sociological Theory	
SOC 6257	Criminal Law for Forensic Scientists	
SOC 6258	Deviance and Control	
SOC 6259	Criminology	
Electives		
Five elective courses in criminology, of which at least two are in forensic sciences and at least one is selected from the following:		
SOC 6260	Special Topics in Criminology	
SOC 6261	Sociology of Law	
SOC 6262	Corrections	
SOC 6263	Race and Crime	
SOC 6264	Organized Crime	
SOC 6266	Gender and Criminal Justice	
SOC 6273	The Sex Industry	
Thesis option		
Students choosing the thesis option substitute the following for two elective courses:		
SOC 6998	Thesis Research	
SOC 6999	Thesis Research	

MASTER OF ARTS IN THE FIELD OF SOCIOLOGY

Part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the sociology graduate program provides students with a solid grounding in sociological theory and research methods. Students gain hands-on experience conducting quantitative and qualitative research and develop skills in data collection and analysis.

The MA program offers comprehensive coverage of the core areas of sociological theory and social research methods, along with a range of disciplinary substantive areas. Examples of courses include research methods, data analysis, qualitative methodology, field research in organizational settings, development of sociological theory and modern sociological theory. To graduate, all students must complete 30 credit hours and write a publishable thesis. Students are required to identify major and minor concentrations, selecting from the department's three core areas: social stratification, criminology and urban sociology.

Training provided by experienced faculty members prepares students for further graduate work or immediate employment in social research positions, government agencies and related jobs. After completing the master's program, students may enroll in a doctoral program in sociology. The Department of Sociology also offers a Master of Arts in criminology with the Forensics Sciences department, and a PhD in race, ethnicity and public policy through the Trachtenberg School of Public Policy & Public Administration. The department awards teaching assistantships on a competitive basis for students pursuing an MA in sociology.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 86).

36 credits, including 15 credits in required courses, 9 credits in primary and secondary field courses, six credits in elective courses, and 6 credits of thesis.

Code	Title	Credits
Required		
SOC 6230	Sociological Research Methods	
SOC 6231	Data Analysis	
SOC 6232	Qualitative Methodology: Doing Field Research	
or SOC 6240	Field Research in Organizational Settings	
SOC 6238	Development of Sociological Theory	

SOC 6239	Contemporary Sociological Theory
Primary and secondary fields	
Students take two courses in a primary field of specialization and one course in a secondary field of specialization. Fields of specialization are criminology, social inequality, and urban sociology. With the consent of an advisor, one graduate course in a related department or program can be used for either one of the primary required courses or for the the secondary required course.	
Electives	
Any two other Sociology (SOC) courses at the 6000 level or above..	
SOC 6295 may be taken once (3 credits) toward degree requirements	
Thesis	
Six credits of the following taken in the final two semesters:	
SOC 6998	Thesis Research
SOC 6999	Thesis Research

MINOR IN CRIMINAL JUSTICE REQUIREMENTS

The following requirements must be fulfilled:

Achievement of a minimum grade of C- in any course that counts toward the minor.

18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
SOC 1001 or SOC 1002	Introduction to Sociology The Sociological Imagination	
SOC 1003	Introduction to Criminal Justice	
SOC 2136	Criminology	
SOC 2145	Criminal Law	
Electives		
Two of the following courses (6 credits), at least one of which must be a Sociology (SOC) course.		
ANTH 3513	Anthropology of Human Rights	
FORS 2104	Introduction to Forensic Sciences II	

HIST 2341	History of FBI Counterintelligence
PSC 2213	Judicial Politics
PSC 2215	U.S. Constitutional Law and Politics II
PSYC 2011	Abnormal Psychology
PSYC 2554	Psychology of Crime and Violence
SOC 2135	Youth and Delinquency
SOC 2137	Transnational Crime
SOC 2139	Alternatives to Imprisonment
SOC 2146	The Bill of Rights and Criminal Justice
SOC 2164	Sociology of the Holocaust and Genocide
SOC 2167	Sociology of Law
SOC 2177	Sociology of the Sex Industry
SOC 2178	Deviance and Control
SOC 2184	Violence and the Family
SOC 2189	Special Topics in Criminal Justice

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

Visit the program website (<https://sociology.columbian.gwu.edu/ba-criminal-justice/>) for additional information.

MINOR IN HUMAN SERVICES AND SOCIAL JUSTICE REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Achievement of a minimum grade of C- in any course that counts toward the degree.

Code	Title	Credits
Required		
HSSJ 1100	Introduction to Human Services and Social Justice	
HSSJ 3152	Fact/Field/Fiction: Intersections in HSSJ *	

HSSJ 3153	Internship in Human Services and Social Justice*
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Electives

Three elective HSSJ courses (at least 9 credits total), with no more than one course taken at the 1000 level, selected in consultation with the program director.

*HSSJ 3152 and HSSJ 3153 must be taken together in the same semester during which all coursework for the minor will be completed.

MINOR IN LAW AND SOCIETY REQUIREMENTS

Admission to this minor requires a minimum 3.3 GPA based on at least 30 credits of coursework at GW.

The following requirements must be fulfilled:

Achievement of a minimum grade of C- in any course that counts toward the minor.

18 credits, including 6 credits in required courses and 12 credits in elective courses.*

Code	Title	Credits
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Required

SOC 2167	Sociology of Law
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UW 2031	Equality and the Law
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or UW 2031W	Equality and the Law
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One of the following:

AMST 1160	Race, Gender, and Law
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PHIL 3142	Philosophy of Law
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PSC 2214	U.S. Constitutional Law and Politics I
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PSC 2215	U.S. Constitutional Law and Politics II
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Three courses (9 credits), which may include any of the three remaining courses listed immediately above and/or the courses listed below.

BADM 4101	Business Ethics and the Legal Environment
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ECON 3190	Law and Economics
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HIST 3370	U.S. Constitutional History
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MAE 3171	Patent Law for Engineers
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PSC 2213	Judicial Politics
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PSC 2444	Public International Law
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PUBH 3136	Health Law
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SMPA 2173	Media Law
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SOC 2145	Criminal Law
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SOC 2146	The Bill of Rights and Criminal Justice
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SOC 2988	Internship in Law and Society
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WGSS 3470/3170	Sexuality and the Law
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A student may take a maximum of two courses from any one department (except for SOC 2988). No more than two courses may be counted both for this minor and any other major or minor.

*Correction: The total number of credits required for the program is 18, not 19 as was stated due to a typographical error. Updated 11/24/20.

MINOR IN SOCIOLOGY REQUIREMENTS

The following requirements must be fulfilled:

Achievement of a minimum grade of C- in any course that counts toward the minor.

18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
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Required

SOC 1001	Introduction to Sociology
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or SOC 1002	The Sociological Imagination
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SOC 2103	Classical Sociological Theory
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or SOC 2104	Contemporary Sociological Theory
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Electives

Four courses (12 credits) at the 2000 level or above; these may not include SOC 4192 or SOC 4195.

Note: A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa.

SPEECH, LANGUAGE, AND HEARING SCIENCES

Whether learning about communication sciences, the relationship between language and society, or preparing to

become a speech-language pathologist, students studying in the Department of Speech, Language, and Hearing Sciences at GW receive in-depth knowledge of all aspects of communication and its disorders. As part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the program provides deep knowledge of language and communication, including the consequences of speech and hearing challenges to individuals and society, and the treatment of communication delays and disorders.

Visit the Department of Speech, Language, and Hearing Sciences website (<https://speechhearing.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Arts with a major in speech, language, and hearing sciences (p. 481)

Minor

- Minor in speech, language, and hearing sciences (p. 485)
- Minor in linguistics (p. 68) (interdisciplinary)

GRADUATE

Master's program

- Master of Arts in the field of speech-language pathology (p. 484) (For students with an undergraduate degree in speech-language pathology.)

Post-baccalaureate program

- Speech-language pathology post-baccalaureate (p. 486) (For students with an undergraduate degree in a field other than speech-language pathology.)

DOCTORAL

Doctoral program

- Doctor of Philosophy in the field of speech, language, and hearing science (p. 483)

FACULTY

Professors L. Bernstein, S. Brundage (*Chair*), J. Mahshie, G.M.Schulz

Associate Professors C. Core, A.B. Hancock, F. Subiaul, M. Thoathathiri, G. Wallace

Assistant Professors S. Campbell (*Teaching*), M. Fama, W. Krok, M.E. O'Donnell (*Teaching*)

Adjunct Professors L. Barrett, A. Clare, M. Dorn, L. Edwards-Gaither, S. Kothari, J. Kumar, K. Lim, S. Martin, V. Sisskin

Professional Lecturers M. Bamdad

Clinical Instructors L. Barrett, E.A. Cardman, A. Clare, G. Greenman, N. Jordan, J. Kumar, K. Lim, J. McHugh, L. Siegfriedt, D. Smiley,

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPHR 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SPHR 1011. Voice and Diction. 3 Credits.

Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance. Laboratory fee.

SPHR 1071. Foundations of Human Communication. 3 Credits.

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1071W. Foundations of Human Communication. 3 Credits.

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SPHR 1072. Multicultural Issues in Human Communication. 3 Credits.

The influences of culture and bilingualism on language development and use, and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society.

SPHR 1081. American Sign Language I. 3 Credits.

Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills.

SPHR 1082. American Sign Language II. 3 Credits.

Continuation of SPHR 1081. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1081.

SPHR 1084. Perspectives in Deaf Culture. 3 Credits.

Introduction to the Deaf community as a linguistic and cultural minority group. The roles of deaf people in the larger society, including political activism. Generational differences concerning education, socioeconomic status, medical issues, and language.

SPHR 1099. Variable Topics. 1-36 Credits.**SPHR 2083. American Sign Language III. 3 Credits.**

Continuation of SPHR 1082. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1082.

SPHR 2101. Research Methods. 3 Credits.

Introduction to fundamental research principles (e.g., hypothesis testing, sampling, validity and reliability), designs (e.g., experiments, case studies), and methods (e.g., behavioral observations, acoustic and physiologic measurements, neuro-imaging) used in the study of speech, language, and hearing. Prerequisites: SPHR 1071.

SPHR 2102. Neural Substrates-SpHr & Lang. 3 Credits.**SPHR 2104. Speech and Language Disorders. 3 Credits.**

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment.

SPHR 2104W. Speech and Language Disorders. 3 Credits.

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SPHR 2105. Anatomy and Physiology for Speech and Hearing. 3 Credits.

Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; cranial nerves.

SPHR 2106. Neural Substrates of Speech, Language, and Hearing. 3 Credits.

Neuroanatomy and neurophysiology for speech, language and hearing. Anatomy of the auditory and vestibular systems; physiology of hearing.

SPHR 2107. Acoustics. 3 Credits.

This course focuses on speech acoustics, with emphasis on how the speech signal is produced and the elements of speech important for speech perception. Recommended background: Prior or concurrent registration in SPHR 2105 and SPHR 2136. Credit cannot be earned for this course and SLHS 2107.

SPHR 2108. Introduction to Audiology. 3 Credits.

Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. SPHR 2106 may be taken as a corequisite. Laboratory fee. Prerequisites: SPHR 2106 and SPHR 2107.

SPHR 2117. Hearing and Perception. 3 Credits.

Consideration of the psychoacoustics of the normal auditory system in terms of auditory sensitivity, loudness, pitch, masking, and binaural hearing. Topics in speech perception that build upon psychoacoustics and speech acoustics. Prerequisite: SPHR 2108.

SPHR 2130. Phonetics and Phonological Development. 3 Credits.

Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. SPHR 2105 may be taken as a corequisite. Laboratory fee. Prerequisite: SPHR 2105.

SPHR 2131. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisite: SPHR 2135.

SPHR 2132. Literacy. 3 Credits.

An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Prerequisites: SPHR 1071 or SPHR 1071W.

SPHR 2133. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SPHR 2135. Language: Structure, Meaning, and Use. 3 Credits.

A survey of basic linguistic terminology and the components of language structures. Major topics include language structure (syntax, morphology, phonology), meaning (semantics), and the use of language as a means of communication among individuals (pragmatics). Credit cannot be earned for this course and LING 3603.

SPHR 3099. Variable Topics. 1-12 Credits.

SPHR 3109. Auditory Learning/Aural Rehabilitation. 3 Credits.

Introduction to theories and procedures used to provide aural and audiological (re)habilitation to children and adults who have hearing loss and to provide concomitant services to their family members; assessment and prosthetic management of children and adults with hearing loss; effects of hearing loss on conversational fluency and everyday speech communication; and means for developing aural rehabilitation plans and assessing their effectiveness. Corequisite: SPHR 2108. Prerequisite: none. Recommended background: major in speech, language and hearing sciences.

SPHR 3116. Brain and Language. 3 Credits.

How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. SPHR 2106 may be taken as a corequisite. Prerequisite: SPHR 2106.

SPHR 3199. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

SPHR 4118. Senior Seminar. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Laboratory fee. Prerequisite: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4118W. Senior Seminar. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4119. Principles and Methods in Speech-Language Pathology. 3 Credits.

Survey of evaluation and treatment of communication disorders across the lifespan, including: ethics, test administration, interpretation, intervention procedures, and clinical writing. Emphasis on clinical scenarios and practice. Restricted to seniors majoring in speech, language and hearing sciences. Laboratory fee. Restricted to seniors majoring in speech, language and hearing sciences.

SPHR 4120. Senior Research Seminar in Speech, Language, and Hearing Sciences. 3 Credits.

Introduction to the speech, language, and hearing sciences (SLHS) research literature and how to critically evaluate it; the process of scientific writing and analysis; the creation of presentations for different audiences on research-based topics; and how SLHS research can be applied in a variety of research and clinical domains. Restricted to seniors in the speech, language, and hearing sciences program, neuroscience of language and communication and language across cultures and the life span concentrations. Prerequisites: SPHR 1071 or SPHR 1071W, SPHR 2101, and SPHR 2104 or SPHR 2104W.

SPHR 4120W. Senior Research Seminar in Speech, Language, and Hearing Sciences. 3 Credits.

Introduction to the speech, language, and hearing sciences (SLHS) research literature and how to critically evaluate it; the process of scientific writing and analysis; the creation of presentations for different audiences on research-based topics; and how SLHS research can be applied in a variety of research and clinical domains. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to seniors in the speech, language, and hearing sciences program, neuroscience of language and communication and language across cultures and the life span concentrations. Prerequisites: SPHR 1071 or SPHR 1071W, SPHR 2101, and SPHR 2104 or SPHR 2104W.

SPHR 4196. Independent Study. 1-6 Credits.

Independent research and special projects. Before students are permitted to register for SPHR 4196, they must submit a written proposal of the plan of study and obtain approval of the staff member who directs the study and of the department chair.

SPHR 4201. Early Social and Cognitive Development. 3 Credits.

Infants' understanding of social concepts and how these concepts influence the development of memory, attention, and executive functions; children's ability to imitate across different domains and how children's social concepts and social learning abilities underlie language and culture. Prerequisites: SPHR 1071 or SPHR 1071W.

SPHR 4221. Language and Communication in Aging. 2 Credits.

Communication and swallowing abilities in older adults; distinguishing the normal changes of aging from pathological symptoms to better assess older patients' capabilities and provide more effective intervention.

SPHR 5099. Variable Topics. 1-99 Credits.

SPHR 6201. Clinical Practicum in Speech-Language Pathology. 1-6 Credits.

Supervised clinical practice in the evaluation and treatment of speech and language disorders; counseling of clients and families; development of treatment plans and writing of evaluation and progress reports. Permission of the instructor required prior to enrollment. May be repeated for up to 6 credits.

SPHR 6202. Clinical Practicum in Audiology. 1-6 Credits.

Supervised clinical practice in behavioral and electrophysiologic assessment of hearing, hearing aid assessment and fitting, and aural rehabilitation; counseling clients and families; writing evaluation and progress reports. Permission of the instructor required prior to enrollment. May be repeated, but may not be taken for more than 6 credits.

SPHR 6205. Professional and Clinical Issues in Speech and Hearing. 1 Credit.

SPHR 6207. Diagnostic Procedures in Speech and Hearing. 3 Credits.

Fundamental philosophical and conceptual issues in the assessment of speech-language functioning across a wide range of disorders and diverse populations. Consideration of how assessment procedures guide treatment decisions.

SPHR 6210. Research in Communication Sciences and Disorders. 1,3 Credit.

Fundamental issues and methods in clinical research; group and single-subject experimental designs; application of clinical research methodology and findings to assessment and treatment. Non-thesis students register for 3 credits; thesis students register for 1 credit concurrent with SPHR 6211. Restricted to graduate students in the speech and hearing science program.

SPHR 6211. Preparing the Thesis Prospectus. 2 Credits.

For first-year graduate students. Introduction to the fundamentals of quantitative research design and procedures in the speech and hearing sciences. Critical evaluation of research in speech and hearing sciences; scientific writing skills; the process and expectations for conducting thesis research. Students register for SPHR 6210 for 1 credit. Restricted to speech and hearing sciences master's thesis students.

SPHR 6220. Disorders of Articulation and Phonology. 3 Credits.

Survey of the nature and causes of impairments of speech sound production in children and adults. Differential diagnosis of oral motor versus phonological disorders; treatment approaches; identification and modification of regional dialects and foreign accents. Laboratory fee.

SPHR 6221. Neurodevelopmental Disorders of Speech Production. 2 Credits.

Evaluation and treatment of infants and children with neurodevelopmental speech disorders, including cerebral palsy. Emphasis on management of prespeech oral motor and feeding impairments. Laboratory fee.

SPHR 6222. Acquired Neuromotor Disorders of Speech Production. 2 Credits.

Examination of the neuroanatomical and neurophysiological bases and acoustic and perceptual characteristics of acquired dysarthrias and apraxia of speech. Evidence-based approaches to the assessment, differential diagnosis, and treatment of these disorders. Laboratory fee.

SPHR 6230. Pediatric Language and Speech Disorders I. 3 Credits.

Survey of current approaches for assessing and treating language delays and disorders in infants, toddlers, preschoolers, school-age children, and adolescents. Review of standardized, observational, and ethnographic approaches used in language assessment; current models of intervention and service delivery. Laboratory fee.

SPHR 6231. Pediatric Language and Speech Disorders II. 3 Credits.

SPHR 6240. Neurogenic Communication Disorders. 3 Credits.

Differential diagnosis of acquired speech and language disorders, with an emphasis on the aphasias acquired in adulthood. Evidence-based approaches to the assessment and treatment of adult neurogenic language disorders. Laboratory fee.

SPHR 6241. Applied Neuroanatomy. 3 Credits.

Neuroanatomy and neurophysiology of systems underlying speech, language, and hearing. Neuroimaging techniques and investigations. Applications to the assessment and treatment of communication disorders. Laboratory fee.

SPHR 6250. Eval/Treatment-Speech Disorder. 3 Credits.

SPHR 6251. Seminar: Speech Fluency Disorders. 3 Credits.

Consideration of stuttering and other disorders of speech rate and rhythm from developmental, linguistic, physiological, and psychosocial points of view. Investigation of evidence-based approaches to assessment and treatment.

SPHR 6260. Voice Disorders: Evaluation and Treatment. 3 Credits.

Normal anatomy and physiology of the human vocal mechanism. Nature, causes, and clinical management of functional and organic voice disorders, including laryngectomy. Laboratory fee.

SPHR 6261. Seminar: Voice Disorders. 2 Credits.

SPHR 6276. Aural Rehabilitation. 3 Credits.

Habilitation/rehabilitation of the hearing impaired, including auditory training, speech reading, hearing aids, assistive listening devices, communication strategies, and counseling. Laboratory fee.

SPHR 6277. Psychoeducational Management of Children With Hearing Impairment. 3 Credits.

SPHR 6281. Dysphagia. 2 Credits.

Anatomy and physiology of normal swallowing. Nature and causes of dysphagia in adults. Assessment, including clinical examination and radiologic methods; treatment. Laboratory fee.

SPHR 6282. Augmentative Communication and Computer Applications in Communication Disorders. 2 Credits.

Principles of assessment, development, and selection of augmentative and alternative communication systems; application through case studies. Computer applications, including review of selected hardware and software and selection criteria. Laboratory fee.

SPHR 6283. Multicultural Perspectives in Communication Development and Disorders. 2 Credits.

Application of culturally appropriate and theoretically based speech and language procedures to clinical assessment and intervention with multilingual/multicultural populations.

SPHR 6284. Autism. 2 Credits.

The various facets of Autism Spectrum Disorder (ASD); clinical aspects and how speech-language pathologists are involved in the assessment, diagnosis, and treatment of ASD; the relationship between typical cognitive and brain development throughout the lifespan and how it is manifested in ASD. Restricted to graduate students.

SPHR 6290. Selected Topics in Clinical Audiology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues. May be repeated, but may not be taken for more than a total of 6 credits.

SPHR 6291. Selected Topics in Speech-Language Pathology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues regarding various aspects of practice in speech-language pathology. May be repeated but not for more than a total of 6 credits.

SPHR 6295. Independent Research in Speech, Language, and Hearing. 1-12 Credits.

SPHR 6998. Thesis Research. 2 Credits.

SPHR 6999. Thesis Research. 2 Credits.

Needs to be added:

SPHR 6211: Preparing the Thesis Prospectus (2)

SPHR 6284: Autism (2)

BACHELOR OF ARTS WITH A MAJOR IN SPEECH, LANGUAGE, AND HEARING SCIENCES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

44 credits, including 9 credits in core courses, and 35 credits in a concentration.

Core Curriculum

Code	Title	Credits
Required		
SLHS 1071	Foundations of Human Communication	
SLHS 2101	Research Methods	
SLHS 2135	Language: Structure, Meaning, and Use	

Communication Sciences and Disorders Concentration

Code	Title	Credits
Required		
SLHS 2104W	Speech and Language Disorders	
or SLHS 2104W	Speech and Language Disorders	
SLHS 2105	Anatomy and Physiology for Speech and Hearing	
SLHS 2106	Neural Substrates of Speech, Language, and Hearing	
SLHS 2107	Acoustics	
SLHS 2108	Introduction to Audiology	
SLHS 2131	Language Acquisition and Development	
SLHS 2136	Phonetics	
SLHS 3109	Auditory Learning and Aural Rehabilitation	
SLHS 4118W	Senior Research Seminar in Communication Sciences and Disorders	
SLHS 4119	Principles and Methods in Speech-Language Pathology	

STAT 1053	Introduction to Statistics in Social Science
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Elective

One course selected from the following:

SLHS 1072	Multicultural Issues in Human Communication
SLHS 1082	American Sign Language II
SLHS 3132	Literacy
SLHS 3133	Autism
SLHS 3116	Brain and Language
SLHS 4201	Social Communication Development
SLHS 4221	Language and Communication in Aging

Neuroscience of Language and Communication Concentration

Code	Title	Credits
Required		
PSYC 2014	Cognitive Psychology	
SLHS 2106	Neural Substrates of Speech, Language, and Hearing	
SLHS 3117	Hearing and Perception	
SLHS 3116	Brain and Language	
SLHS 4201	Social Communication Development	
SLHS 4221	Language and Communication in Aging	
SLHS 4118W	Senior Research Seminar in Communication Sciences and Disorders	
STAT 1053	Introduction to Statistics in Social Science	

Electives

Three courses selected from the following:

SLHS 2104	Speech and Language Disorders
SLHS 2105	Anatomy and Physiology for Speech and Hearing
SLHS 2106	Neural Substrates of Speech, Language, and Hearing
SLHS 2107	Acoustics
SLHS 3132	Literacy

SLHS 3133	Autism
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One course selected from the following:

PSYC 2013	Developmental Psychology
PSYC 2015	Biological Psychology
PSYC 3118	Neuropsychology
PSYC 3121	Memory and Cognition

Language Across Cultures and the Life Span Concentration

Code	Title	Credits
Required		
SLHS 1072	Multicultural Issues in Human Communication	
SLHS 1082	American Sign Language II	
SLHS 1084	Perspectives in Deaf Culture	
SLHS 2131	Language Acquisition and Development	
SLHS 3132	Literacy	
SLHS 4201	Social Communication Development	
SLHS 4221	Language and Communication in Aging	
SLHS 4118W	Senior Research Seminar in Communication Sciences and Disorders	

Electives

Three courses selected from the following:

SLHS 2104	Speech and Language Disorders
SLHS 2105	Anatomy and Physiology for Speech and Hearing
SLHS 2106	Neural Substrates of Speech, Language, and Hearing
SLHS 2107	Acoustics
SLHS 3108	Introduction to Audiology
SLHS 3109	Auditory Learning and Aural Rehabilitation
SLHS 3116	Brain and Language
SLHS 3133	Autism
SLHS 3136	Phonetics

One course selected from the following:

ANTH 1004	Language in Culture and Society
ANTH 3601	Language, Culture, and Cognition
ANTH 3602	Ethnographic Analysis of Speech
ANTH 3603	Psycholinguistics
PSYC 2514	Adult Development and Aging

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one

course in this category required by the University General Education Requirement).

- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement.
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

To qualify for graduation with Special Honors, the student must fulfill the general requirements stated under University Regulations, submit an application to the department before the beginning of the senior year, register for at least 1 credit of SPHR 4196 Independent Study, and complete an independent study honors project with distinction. Students must confer with an advisor before beginning the work. A 3.75 grade-point average in the major and overall is required both for acceptance and for graduation with Special Honors.

DOCTOR OF PHILOSOPHY IN THE FIELD OF SPEECH, LANGUAGE, AND HEARING SCIENCE

As part of GW's nationally ranked speech-language pathology graduate program, students receive in-depth education on all aspects of communication and hands-on experience evaluating patients and administering therapy treatments. The program is fully accredited by the Council of Academic Programs in Speech-Language Pathology and Audiology. Part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the program provides full insight into communication, including the consequences and rehabilitation of communication disorders for individuals and society.

The doctoral program in Speech-Language-Hearing Sciences (SLHS) is an individualized, mentored, and interdisciplinary research degree aimed at educating future members of the SLHS professoriate, industry researchers, and clinical practitioners. The program's aim is to provide education and preparation in basic and translational research and teaching related to human speech, language, and hearing sciences. The translational nature of our research involves scientific

methods and lines of inquiry that address real-world problems SLHS domains. Under the guidance of a dissertation director and advisory committee, doctoral students will demonstrate depth and breadth of knowledge in their area of specialization, conduct and communicate scholarly research, and demonstrate competence in professional skills. Students develop expertise in working with the diverse populations of an ever-connected global society.

REQUIREMENTS

Program Requirements

Required

DNSC 6274	Statistical Modeling and Analysis
DNSC 6275	Advanced Statistical Modeling and Analysis
SLHS 8100	Communication Disorders Across the Lifespan
SLHS 8200	Research Methods and Ethics and Grant Writing
SLHS 8201	Research Rotation
SLHS 8202	Teaching Rotation
SLHS 8203	Doctoral Seminar Leadership
SLHS 8300	Statistical Applications for Translational Research
SLHS 8999	Dissertation Research

Electives

A minimum of 8 credits in elective courses selected from the following:

SPHR 6205	Professional and Clinical Issues in Speech and Hearing
SPHR 6207	Diagnostic Procedures in Speech and Hearing
SPHR 6210	Research in Communication Sciences and Disorders
SPHR 6220	Disorders of Articulation and Phonology
SPHR 6222	Acquired Neuromotor Disorders of Speech Production
SPHR 6230	Pediatric Language and Speech Disorders I
SPHR 6231	Pediatric Language and Speech Disorders II
SPHR 6240	Neurogenic Communication Disorders
SPHR 6241	Applied Neuroanatomy
SPHR 6251	Seminar: Speech Fluency Disorders
SPHR 6260	Voice Disorders: Evaluation and Treatment

SPHR 6276	Aural Rehabilitation
SPHR 6281	Dysphagia
SPHR 6282	Augmentative Communication and Computer Applications in Communication Disorders
SPHR 6284	Autism
SPHR 6295	Independent Research in Speech, Language, and Hearing
SPHR 6291	Selected Topics in Speech-Language Pathology (Aging)

MASTER OF ARTS IN THE FIELD OF SPEECH-LANGUAGE PATHOLOGY

As part of GW's nationally ranked speech-language pathology graduate program, students receive in-depth education on all aspects of communication and hands-on experience evaluating patients and administering therapy treatments. The program is fully accredited by the Council of Academic Programs in Speech-Language Pathology and Audiology. Part of the social and behavioral sciences discipline in the Columbian College of Arts and Sciences, the program provides full insight into communication, including the consequences and rehabilitation of communication disorders for individuals and society.

The master's program for students with a BA in speech-language pathology includes two years of intensive full-time study. Learning environments encompass traditional classroom instruction and clinical education with mentors in the GW Speech and Hearing Center.

REQUIREMENTS

The master of arts in the field of speech-language pathology degree program is for students with an undergraduate degree in speech-language pathology.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

42 credits: Non-thesis option—38 credits in required courses and 4 credits in elective courses; thesis option—36 credits in required courses and 6 credits of thesis. For all students, satisfactory completion of supervised practica and a master's summative assessment is required.

Code	Title	Credits
Required		
SLHS 6201	Clinical Practicum in Speech-Language Pathology (taken for five semesters for 1 credit each semester)	

SLHS 6205	Professional and Clinical Issues in Speech and Hearing
SLHS 6207	Diagnostic Procedures in Speech and Hearing
SLHS 6210	Research in Communication Sciences and Disorders *
SLHS 6220	Disorders of Articulation and Phonology
SLHS 6230	Pediatric Language and Speech Disorders I
SLHS 6231	Pediatric Language and Speech Disorders II
SLHS 6240	Neurogenic Communication Disorders
SLHS 6241	Applied Neuroanatomy
SLHS 6251	Speech Fluency Disorders Seminar
SLHS 6260	Voice Disorders: Evaluation and Treatment
SLHS 6276	Aural Rehabilitation
SLHS 6281	Dysphagia

Thesis students

Students selecting the thesis option complete 6 credits in thesis research from the following courses:

SLHS 6211	Preparing the Thesis Prospectus
SLHS 6998	Thesis Research
SLHS 6999	Thesis Research

Non-thesis students

Students selecting the non-thesis option take 4 credits in elective courses selected from the following:

SLHS 6222	Acquired Neuromotor Disorders of Speech Production
SLHS 6284	Autism
SLHS 6291	Special Topics in Speech-Language Pathology (Literacy)
SLHS 6291	Special Topics in Speech-Language Pathology (Bilingualism)
SLHS 6291	Special Topics in Speech-Language Pathology (Global Engagement)
SLHS 6291	Special Topics in Speech-Language Pathology (Aging)

Additional requirements

Satisfactory completion of supervised practica and a master's summative assessment.

*Non-thesis students take SLHS 6210 for 3 credits, thesis students take the course for 1 credit.

MINOR IN SPEECH, LANGUAGE, AND HEARING SCIENCES REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
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Required

SLHS 1071	Foundations of Human Communication	
or SLHS 1071W	Foundations of Human Communication	
SLHS 2105	Anatomy and Physiology for Speech and Hearing	
SLHS 2107	Acoustics	
SLHS 2135	Language: Structure, Meaning, and Use	

Electives

Two courses selected from the following:

SLHS 2104	Speech and Language Disorders	
or SLHS 2104W	Speech and Language Disorders	
SLHS 2106	Neural Substrates of Speech, Language, and Hearing	
SLHS 2108	Introduction to Audiology	
SLHS 3131	Language Acquisition and Development	
SLHS 3132	Literacy	
SLHS 3133	Autism	
SLHS 3108	Introduction to Audiology	
SLHS 3136	Phonetics	
SLHS 3116	Brain and Language	

SPEECH-LANGUAGE PATHOLOGY POST-BACCALAUREATE PROGRAM

To participate in the post-baccalaureate program, students apply to the MA in Speech-Language Pathology (<https://speechhearing2.drupal.gwu.edu/ma-speech-language-pathology/>) and may be granted conditional admission (<https://speechhearing2.drupal.gwu.edu/post-baccalaureate-program/#conditional>) to the master's program. In order to maintain conditional admission status, students must complete nine prerequisite courses (26 credits) in the post-baccalaureate program. Students must maintain a minimum cumulative GPA of 3.0 and earn a minimum grade of B- in each course. No other grades, including I (Incomplete), W (Authorized Withdraw), or Z (Unauthorized Withdraw), are acceptable.

Credits earned in courses taken for the post-baccalaureate program count toward the master's degree and grades earned in those courses are included in the student's cumulative GPA. Once the student successfully completes the required post-baccalaureate curriculum, they are guaranteed entry into the MA program. Applicants may be eligible to transfer prerequisite credits previously completed. Such cases will be reviewed on an individual basis during the admissions process.

In addition, all post-baccalaureate students perform 25 hours of clinical observation, as mandated by the American Speech-Language-Hearing Association (ASHA), before beginning clinical practica.

Code	Title	Credits
Required		
SLHS 2104	Speech and Language Disorders	
SLHS 2105	Anatomy and Physiology for Speech and Hearing	
SLHS 2106	Neural Substrates of Speech, Language, and Hearing	
SLHS 2107	Acoustics	
SLHS 2108	Introduction to Audiology	
SLHS 2131	Language Acquisition and Development	
SLHS 2135	Language: Structure, Meaning, and Use	
SLHS 3136	Phonetics	
SLHS 4119	Principles and Methods in Speech-Language Pathology	

STATISTICS

Statistics is one of the natural, mathematical, and biomedical sciences programs in the Columbian College of Arts and Sciences. The curriculum emphasizes the important role of statistics as it provides methodologies for making advances in medicine, genetics, and other research arenas and supports decision making in business and public policy. Students learn reasoning skills and methods for analyzing and understanding data and how these skills can be applied to develop new initiatives.

Visit the Department of Statistics website (<https://statistics.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in statistics (p. 491)

Minor

- Minor in statistics (p. 494)

GRADUATE

Master's programs

- Master of Science in the field of biostatistics (<http://bulletin.gwu.edu/public-health/epidemiology-biostatistics/ms-biostatistics/>)*
- Master of Science in the field of statistics (p. 493)

Combined program

- Dual Master of Science in the field of statistics and graduate certificate in the field of data science (p. 493)

Doctoral programs

- Doctor of Philosophy in the field of biostatistics (<http://bulletin.gwu.edu/public-health/epidemiology-biostatistics/phd-biostatistics/>)*
- Doctor of Philosophy in the field of statistics (p. 492)

*Jointly administered by the Department of Statistics in Columbian College of Arts and Sciences and the School of Public Health's Department of Biostatistics Bioinformatics.

FACULTY

Professors J.L. Gastwirth, F. Hu, J.M. Lachin III, Y. Lai (*Chair*), Z. Li, H. Liang, H.M. Mahmoud, R. Modarres, T.K. Nayak, H.J. Wang

Associate Professors T. Apanasovich, S. Bose, S. Kundu

Assistant Professors S. Balaji, A.E. Barut, J. Landon, L. Wang, X. Zhang

Adjunct Professors A. Amini, T. Vadakkeveetil

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: STAT 1051 Introduction to Business and Economic Statistics, STAT 1053 Introduction to Statistics in Social Science, STAT 1111 Business and Economic Statistics I, and STAT 1127 Statistics for the Biological Sciences are related in their subject matter, and credit for only one of these courses may be applied toward a degree. One entrance unit in algebra is prerequisite to all courses in statistics.

STAT 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

STAT 1051. Introduction to Business and Economic Statistics. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, probability distributions, sampling, estimation, tests of hypotheses, regression and correlation, with applications to business. Credit cannot be earned for this course and STAT 1053, STAT 1111, STAT 1127.

STAT 1053. Introduction to Statistics in Social Science. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences. Credit cannot be earned for this course and STAT 1051, STAT 1111, STAT 1127.

STAT 1099. Variable Topics. 1-36 Credits.

STAT 1111. Business and Economic Statistics I. 3 Credits.

Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression. Credit cannot be earned for this course and STAT 1051, STAT 1053, STAT 1127.

STAT 1127. Statistics for the Biological Sciences. 3 Credits.

Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal. Data analysis, inference, and experimental design. Credit cannot be earned for this course and STAT 1051, STAT 1053, STAT 1111.

STAT 1129. Introduction to Computing. 3 Credits.

Introduction to elements of computer programming and problem-solving using a computer programming language. Hands-on experience is acquired through computer programming projects, including some simple statistical applications.

STAT 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

STAT 2112. Business and Economic Statistics II. 3 Credits.

Continuation of STAT 1111. Emphasis on techniques of regression, chi-square, nonparametric inference, index numbers, time series, decision analysis, and other topics relevant to economics and business. Prerequisites: STAT 1051 or STAT 1053 or STAT 1111.

STAT 2118. Regression Analysis. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisites: STAT 1051, 1053 and STAT 1111.

STAT 2123. Introduction to Econometrics. 3 Credits.

Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231; and STAT 1051 or STAT 1053 or STAT 1111. Same As: ECON 2123.

STAT 2183. Intermediate Statistics Lab/Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisites: An introductory statistics course.

STAT 2183W. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: An introductory statistics course.

STAT 3099. Variable Topics. 1-12 Credits.

STAT 3119. Analysis of Variance. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: STAT 2118.

STAT 3187. Introduction to Sampling. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051 .

STAT 3187W. Introduction to Sampling. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: STAT 1051. Same As: STAT 3187.

STAT 4157. Introduction to Mathematical Statistics I. 3 Credits.

Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Prerequisite: MATH 1232 .

STAT 4158. Introduction to Mathematical Statistics II. 3 Credits.

Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisite: MATH 1232 .

STAT 4181. Applied Time Series Analysis. 3 Credits.

Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using statistical software. Prerequisites: STAT 4157 and STAT 4158 or STAT 2118.

STAT 4188. Nonparametric Statistics Inference. 3 Credits.

Statistical inference when the form of the underlying distribution is not fully specified. Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: STAT 1051.

STAT 4189. Mathematical Probability and Applications I. 3 Credits.

Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4190. Mathematical Probability and Applications II. 3 Credits.

Continuation of STAT 4189. Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4195. Reading and Research. 1-12 Credits.

May be repeated once for credit. Permission of the department chair required prior to enrollment.

STAT 4197. Fundamentals of SAS Programming for Data Management. 3 Credits.

Fundamentals of Statistical Analysis System (SAS) software for data management, statistical analysis, and report writing; data modification, programming, file handling, and macro writing. Students are expected to have knowledge of computer programming and to have completed an introductory statistics course. Credit cannot be earned for both STAT 4197 and STAT 6197.

STAT 4198. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

STAT 5099. Variable Topics. 1-99 Credits.**STAT 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.**

Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. May not be taken by graduate students in statistics.

STAT 6197. Fundamentals of SAS Programming for Data Management. 3 Credits.

Fundamentals of Statistical Analysis System (SAS) software for data management, statistical analysis, and report writing. Data modification, programming, file handling, and macro writing. Recommended background: An introductory statistics course and knowledge of computer programming. Credit cannot be earned for this course and STAT 4197.

STAT 6201. Mathematical Statistics I. 3 Credits.

Basic Probability theory, Random variables and transformations, Common families of distribution, Conditional expectations and distributions, Bivariate and Multivariate distributions and transformations, Sampling distributions. Prerequisites: MATH 2233 and MATH 2184.

STAT 6202. Mathematical Statistics II. 3 Credits.

Continuation of STAT 6201. Order Statistics, Convergence concepts, Sufficient and Complete statistics, Likelihood Principle, Point and Interval Estimation, Hypothesis Testing, Bayesian Tests and Intervals. Prerequisites: MATH 2233, MATH 2184 and STAT 6201.

STAT 6207. Methods of Statistical Computing I. 3 Credits.

Error analysis, computational aspects of linear models, sweep operator, random number generation, simulation, resampling. Optimization, numerical integration (Gaussian quadrature, Simpson's rule); E-M algorithm. Prerequisites: STAT 2118, STAT 4157 and STAT 4158; and MATH 2184; and knowledge of a programming language.

STAT 6208. Methods of Statistical Computing II. 3 Credits.

Numerical linear algebra, matrix decomposition and eigenvalue problems. Smoothing and density estimation. Graphics, interactive and dynamic techniques for data display. Object-oriented programming. Prerequisites: STAT 2118, STAT 4157 and STAT 4158; and MATH 2184; and knowledge of a programming language.

STAT 6210. Data Analysis. 3 Credits.

Review of statistical principles of data analysis, using computerized statistical procedures. Multiple regression and the general linear model, analysis of contingency tables and categorical data, logistic regression for qualitative responses. Prerequisites: STAT 2118 or STAT 4157 or STAT 6201; and STAT 2183.

STAT 6213. Intermediate Probability and Stochastic Processes. 3 Credits.

Discrete and continuous random variables and their distributions, conditional distributions and conditional expectation, generating functions and their applications, convergence of random variables; introduction to Brownian motion, homogeneous and nonhomogeneous Poisson processes and martingales. Prerequisites: STAT 6201 and STAT 6202.

STAT 6214. Applied Linear Models. 3 Credits.

Introduction to regression techniques for discrete and continuous response variables. The course includes a computing component using SAS and S> Prerequisite: MATH 2233 and MATH 2184.

STAT 6215. Applied Multivariate Analysis I. 3 Credits.

Statistical analysis of several variables, possibly dependent, following a joint normal distribution. matrix algebra and random vectors, multivariate sample geometry, multivariate normal distribution, inferences about a mean vector, and comparisons of several population means. Applications of multivariate techniques to the analysis of data from the behavioral, social, medical, and physical sciences. Prerequisites: STAT 4157 and STAT 4158; and MATH 2184.

STAT 6216. Applied Multivariate Analysis II. 3 Credits.

Continuation of STAT 6215. Statistical analysis of random vectors, following a multivariate normal distribution. multivariate linear regression models, principal components, factor analysis, inference for structured covariance matrices, canonical correlations, discrimination and classification, clustering and distance methods. Applications of multivariate techniques to the analysis of data from the behavioral, social, medical, and physical sciences. Prerequisites: STAT 3119, STAT 4157 and STAT 4158; and MATH 2184.

STAT 6217. Design of Experiments. 3 Credits.

Design and analysis of single- and multiple-factor experiments. Includes block designs, repeated measures, factorial and fractional factorial experiments, response surface experimentation. Prerequisites: STAT 4157 and STAT 4158; and MATH 2184.

STAT 6218. Linear Models. 3 Credits.

Theory of the general linear parametric model. Includes least squares estimation, multiple comparisons procedures, variance components estimation. Prerequisites: STAT 6201, STAT 6202, STAT 2118 and MATH 2184.

STAT 6223. Bayesian Statistics: Theory and Applications. 3 Credits.

An overview of Bayesian statistics, including its foundational issues, decision under uncertainty, linear models, expert opinion, and computational issues. Prerequisites: STAT 6201 and STAT 6202.

STAT 6225. Longitudinal Data Analysis. 3 Credits.

Introduction to the statistical models, estimation methods, and inferences for the analysis of longitudinal data; modern methods for the analysis of repeated measures as well as parametric and nonparametric regression models for longitudinal analysis. Restricted to master of science and doctoral program candidates. Prerequisites: Stat 2118, Stat 6201 and Stat 6202.

STAT 6227. Survival Analysis. 3 Credits.

Parametric and nonparametric methods for the analysis of events observed in time (survival data), including Kaplan-Meier estimate of survival functions, logrank and generalized Wilcoxon tests, the Cox proportional hazards model and an introduction to counting processes. Prerequisites: STAT 6201 and STAT 6202; or permission of the instructor.

STAT 6231. Categorical Data Analysis. 3 Credits.

A study of the theoretical bases underlying the analysis of categorical data. Measures and tests of association; Mantel-Haenszel procedure; weighted least squares and maximum likelihood estimators in linear models; generalized linear models including Poisson and logistic regression models, generalized estimating equations; random effects models. Prerequisites: Graduate level mathematical statistics courses - STAT 6201 and STAT 6202. Recommended background: Courses in Mathematical Statistics and Linear Models.

STAT 6233. Questionnaire Design. 3 Credits.

Questionnaire development from the perspective of cognitive techniques. Questionnaire issues range from choosing the mode of data collection (mail, telephone, or in-person) to selecting the respondent to the differences between asking attitude and factual questions. Pretesting the instrument chosen.

STAT 6234. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. This course is specifically designed for SDDA program. Prerequisites: An introductory statistics course.

STAT 6236. Applied Sampling Techniques. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051.

STAT 6238. Survey Management. 3 Credits.

Tools used in the management of a survey operation from the initial customer contacts through training, fieldwork, data processing, data analysis, report writing, and presentation of results. Issues in budgeting, staffing, and scheduling, with emphasis on quality management.

STAT 6240. Statistical Data Mining. 3 Credits.

Introduction to basic data mining concepts and techniques for discovering interesting patterns hidden in large-scale data sets, focusing on issues relating to effectiveness and efficiency. Students are expected to be familiar with R programming. Restricted to statistics majors or with the permission of the instructor. Prerequisites: STAT 6201, STAT 6202, and STAT 6214 or equivalents. Recommended background: coursework in mathematical statistics, applied linear models, and multivariate statistics.

STAT 6242. Modern Regression Analysis. 3 Credits.

Methodology, major software tools and applications of modern nonparametric methods. Regularized regression: shrinkage, ridge and lasso; nonparametric regression: kernels and splines; nonparametric classification: K-Nearest Neighbors and Decision Trees; resampling methods: bootstrap, boosting and bagging. Prerequisites: STAT 6201 or STAT 6202 or STAT 6214 or STAT 6218.

STAT 6245. Statistical Consulting. 3 Credits.

This course focuses on the following themes: (i) understanding the statistical consulting process; (ii) developing effective verbal and written communication skills; (iii) comprehending consulting environments in different industries; and (iv) obtaining consulting experience through case studies. Prerequisites: STAT 6201, STAT 6202, STAT 6214 and STAT 6215. Recommended background: second-year status in the graduate statistics or biostatistics program.

STAT 6252. Statistical Methods in Bioinformatics and Computational Biology. 3 Credits.**STAT 6253. Legal Statistics. 3 Credits.****STAT 6254. Statistical Genetics. 3 Credits.**

Theories of population genetics and Mendelian genetics, Hardy-Weinberg equilibrium and linkage disequilibrium, statistical software (R or SAS) for linkage analysis and association analysis, research in statistical genetics. Prerequisites: STAT 6201 and STAT 6202.

STAT 6255. Clinical Trials. 3 Credits.

Introduction to the design and analysis of clinical trials. Clinical trials as a tool for medical research; phases and endpoints; the role of randomization, power, and sample size; statistical analysis of data; interim analysis and data monitoring. Recommended background: Knowledge of basic design of experiments, mathematical statistics (probability and inference), and familiarity with R and SAS.

STAT 6287. Sample Surveys. 3 Credits.

Application of statistical theory to the sampling of finite populations. Simple, stratified, cluster, double and subsampling. Special topics, including super-populations and randomized response. Prerequisites: STAT 4157 and STAT 4158.

STAT 6289. Topics in Statistics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

STAT 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290.

STAT 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291.

STAT 6295. Reading and Research. 3 Credits.

May be repeated once for credit.

STAT 6298. Seminar: Special Topics. 3 Credits.**STAT 6998. Thesis Research. 3 Credits.****STAT 6999. Thesis Research. 3 Credits.****STAT 8226. Advanced Biostatistical Methods. 3 Credits.**

Statistical methods for the analysis of longitudinal data: nonparametric, fixed effects, mixed effects, generalized estimating equations. Methods for the analysis of emerging data: group sequential analysis, Brownian motion, Bayesian methods, and stochastic curtailment. Other advanced topics of current research in biostatistics. Prerequisites: STAT 6201 and STAT 6202; or permission of the instructor.

STAT 8257. Probability. 3 Credits.

Probabilistic foundations of statistics, probability distributions, random variables, moments, characteristic functions, modes of convergence, limit theorems, probability bounds. Prerequisites: STAT 6201 and STAT 6202; and knowledge of calculus through functions of several variables and series.

STAT 8258. Distribution Theory. 3 Credits.

Special distributions of statistics, small and large sample theory, order statistics, and spacings. Prerequisite: STAT 8257.

STAT 8259. Advanced Probability. 3 Credits.

Conditional expectation and martingales; weak convergence in general metric spaces and functional central limit theorems for i.i.d. random variables and martingales; applications to biostatistics. Prerequisite: STAT 8257 or an equivalent measure-theoretic introduction to probability.

STAT 8262. Nonparametric Inference. 3 Credits.

Inference when the form of the underlying distribution is unspecified. Prerequisites: STAT 6201 and STAT 6202.

STAT 8263. Advanced Statistical Theory I. 3 Credits.
Decision theoretic estimation, classical point estimation, hypothesis testing. Prerequisites: STAT 6201 and STAT 6202.

STAT 8264. Advanced Statistical Theory II. 3 Credits.
Asymptotic theory, hypothesis testing, confidence regions. Prerequisites: STAT 8257 and STAT 8263.

STAT 8265. Multivariate Analysis. 3 Credits.
Characterization and properties of the multivariate normal distribution, conditional distributions, multiple correlation, partial correlation, estimation of the mean vector and the covariance matrix, Wishart and Hotelling distributions and applications to hypothesis testing, discrimination, classification, and principle component analysis. Prerequisites: STAT 6201 and STAT 6202.

STAT 8266. Topics-Multivariate Analysis. 3 Credits.
Multivariate analysis of variance, principal component analysis, canonical correlation, factor analysis. Prerequisites: STAT 6201, STAT 6202 and STAT 8265.

STAT 8271. Foundational and Philosophical Issues in Statistics. 3 Credits.
Axiomatic underpinnings of Bayesian statistics, including subjective probability, belief, utility, decision and games, likelihood principle, and stopping rules. Examples from legal, forensic, biological, and engineering sciences. Students are expected to have a background in computer science, economics, mathematics, or operations research. Prerequisites: STAT 6201 and STAT 6202.

STAT 8273. Stochastic Processes I. 3 Credits.
Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201 and STAT 6202.

STAT 8274. Stochastic Processes II. 3 Credits.
Continuation of STAT 8273. Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201 and STAT 6202.

STAT 8281. Advanced Time Series Analysis. 3 Credits.
Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate and multivariate time series. Statespace or Kalman filter models, spectral analysis of multiple time series. Theory and applications using the University computer. Prerequisites: MATH 2233, STAT 6201 and STAT 6202.

STAT 8288. Topics in Sample Surveys. 3 Credits.
Advanced topics and research in sample surveys. Prerequisite: STAT 6287.

STAT 8289. Seminar. 3 Credits.
Admission by permission of instructor. May be repeated for credit provided the content differs.

STAT 8375. Econometrics I. 3 Credits.
Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as ECON 8375.

STAT 8376. Econometrics II. 3 Credits.
Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as ECON 8376. Prerequisite: STAT 8375.

STAT 8998. Advanced Reading and Research. 1-12 Credits.
May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

STAT 8999. Dissertation Research. 3-12 Credits.
May be repeated for credit. Restricted to doctoral candidates.

BACHELOR OF SCIENCE WITH A MAJOR IN STATISTICS

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum—all courses in the major, including prerequisites, must be completed with a minimum grade of C-:

Code	Title	Credits
Prerequisite courses:		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
STAT 1051	Introduction to Business and Economic Statistics (or equivalent)	
or STAT 1053	Introduction to Statistics in Social Science	
STAT 1129	Introduction to Computing (or equivalent)	
or CSCI 1121	Introduction to C Programming	
Code	Title	Credits
Required courses in the major:		
MATH 2184	Linear Algebra I	
or MATH 2185	Linear Algebra I for Math Majors	
STAT 2118	Regression Analysis	
STAT 3119	Analysis of Variance	

STAT 4157	Introduction to Mathematical Statistics I
STAT 4158	Introduction to Mathematical Statistics II
STAT 2183	Intermediate Statistics Lab/Packages
or STAT 4197	Fundamentals of SAS Programming for Data Management
Four approved upper-division courses, some of which, in special circumstances, may be taken in other departments. To assure a balanced program, departmental approval of electives is required for all majors. Some suggested electives are:	
STAT 2112	Business and Economic Statistics II
STAT 3187	Introduction to Sampling
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Statistics Inference
STAT 4189	Mathematical Probability and Applications I
STAT 4198	Special Topics

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.

- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students who seek Special Honors in statistics should check with the Department.

DOCTOR OF PHILOSOPHY IN THE FIELD OF STATISTICS

OVERVIEW

Statistics plays an important role throughout society, providing methodologies for advances in medicine, genetics and other research arenas, and for making decisions in business and public policy. Statistics is part of the natural, mathematical and biomedical sciences field in the Columbian College of Arts and Sciences.

The PhD program offers faculty expertise in statistical genetics, inference, Bayesian statistics, robust inference, computational

statistics, reliability, statistics in law and regulatory policy, and probabilistic analysis of algorithms.

To enter the PhD. program, graduate students typically have earned a master’s degree in statistics or a related discipline. Students need a strong background in mathematics, including courses in advanced calculus, linear algebra and mathematical statistics.

REQUIREMENTS

Prerequisite: a master’s degree in statistics or a related discipline. The main requirement is a strong background in mathematics, including courses in advanced calculus, linear algebra, probability and mathematical statistics. Some deficiencies may be made up concurrently during the student’s first year. In some instances, a student may enter the PhD program with a bachelor’s degree.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87)

Code	Title	Credits
Required		
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
STAT 6223	Bayesian Statistics: Theory and Applications	
STAT 8257	Probability	
STAT 8258	Distribution Theory	
STAT 8263	Advanced Statistical Theory I	
STAT 8264	Advanced Statistical Theory II	
At least two of the following:		
STAT 6218	Linear Models	
STAT 8226	Advanced Biostatistical Methods	
STAT 8259	Advanced Probability	
STAT 8262	Nonparametric Inference	
STAT 8265	Multivariate Analysis	
STAT 8273	Stochastic Processes I	
STAT 8274	Stochastic Processes II	

STAT 8281	Advanced Time Series Analysis
A minimum of 21 additional credits as determined by consultation with the departmental doctoral committee	
The General Examination, consisting of two parts:	
A. A written qualifying examination that must be taken within 24 months from the date of enrollment in the program and is based on:	
STAT 6201	Mathematical Statistics I
STAT 6202	Mathematical Statistics II
STAT 8257	Probability
STAT 8263	Advanced Statistical Theory I
B. An examination to determine the student’s readiness to carry out the proposed dissertation research	
A dissertation demonstrating the candidate’s ability to do original research in one area of probability or statistics.	

DUAL MASTER OF SCIENCE IN THE FIELD OF STATISTICS AND GRADUATE CERTIFICATE IN THE FIELD OF DATA SCIENCE

The Department of Statistics works in conjunction with the Department of Data Science to offer a dual master of science in the field of statistics and graduate certificate in data science (p. 211) degree program. The combined program allows students to take 6 graduate credits as part of master’s degree, thereby decreasing the number of credits normally required for the master's. All requirements for both programs must be fulfilled.

Visit the Department of Statistics website (<https://statistics.columbian.gwu.edu/>) for additional information.

MASTER OF SCIENCE IN THE FIELD OF STATISTICS

The Master of Science in Statistics program is ideal for students who are preparing for professional positions or doctoral programs in statistics and other quantitative fields.

Thesis and non-thesis options (<https://statistics.columbian.gwu.edu/ms-statistics/#thesis>) are available, and students may enroll full time or part time. Use of statistical software packages, available in all university computer labs, is required for most courses.

The MS is a STEM-designated degree program.

REQUIREMENTS

General prerequisite: coursework in multivariate calculus, matrix theory, and at least two undergraduate statistics courses.

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

30 credits. For non-thesis option—6 credits in required courses and 24 credits in elective courses. For thesis option—12 credits in required courses, including 6 credits in thesis, and 18 credits in elective courses.

Code	Title	Credits
Required		
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
Required for students pursuing the thesis option		
STAT 6998	Thesis Research	
STAT 6999	Thesis Research	

Electives

For non-thesis option: 24 credits in electives, at least 18 of which must be in STAT courses. For thesis option: 18 credits in electives, at least 12 of which must be in STAT courses.

Elective courses outside statistics may be taken in related fields, such as economics, mathematics, finance, management, computer science, engineering, public health, and data science.

*Students must have departmental approval in order to pursue the thesis option.

MINOR IN STATISTICS REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required:		
One of the following introductory courses:		
STAT 1051	Introduction to Business and Economic Statistics	
STAT 1053	Introduction to Statistics in Social Science	

STAT 1111	Business and Economic Statistics I
STAT 1127	Statistics for the Biological Sciences
Both of the following courses:	
STAT 2118	Regression Analysis
or STAT 2123	Introduction to Econometrics
STAT 2183	Intermediate Statistics Lab/Packages
or STAT 4197	Fundamentals of SAS Programming for Data Management

Electives

Three courses (9 credits) of approved Statistics (STAT) courses.

THEATRE AND DANCE

The Theatre and Dance Program, an interdisciplinary liberal arts program, offers instruction in how to acquire the tools and knowledge to fully appreciate the value of these performance art forms. Students strengthen their ability to apply critical thinking and discussion to the creation and understanding of theatre and dance, as well as the understanding of other peoples and cultures. The curriculum is supplemented as students create live performances and original productions that stimulate and involve the university community, as well as the community beyond the campus. Through creative endeavor and scholarly research, the program also develops the interests and talents of students seeking careers or advanced study in theatre and dance.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in theatre (p. 501)
- Bachelor of Arts with a major in dance (p. 499)

Minors

- Minor in theatre (p. 504)
- Minor in dance (p. 503)

GRADUATE

Master's programs

- Master of Fine Arts in the field of dance (p. 502)
- Master of Fine Arts in the field of production design (p. 503)

FACULTY

Professors D.T.S. Burgess, C.F. Gudenius, M.R. Withers

Associate Professors M.A. Buckley, S. Johannesdottir, J.I. Kanter, M.R. Wilson

Assistant Professors J. Traub, T.W. Wetenhall

Adjunct Professors T. Beckman, A.C. Stokes

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Courses in the 1000s series are primarily for nonmajors.

Departmental prerequisite: Prerequisite to all graduate TRDA courses: M.F.A. candidacy and permission of instructor.

TRDA 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details.

TRDA 1015. Understanding the Dance. 3 Credits.

The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society. Attendance at performances and presentations, and viewing video. Laboratory fee.

TRDA 1020. Women and the Creative Process. 3 Credits.

Consideration of questions of aesthetics and creativity through the study of art produced by women since the mid-twentieth century. The creation, meaning, and impact of work across the fields of visual art, dance, theatre, and music.

TRDA 1021W. The Artist-Activist. 3 Credits.

The modern and contemporary history of work by seminal artists who challenge political and societal structures and advocate for social change. Restricted to students enrolled in the women's leadership program. Prerequisites: TRDA 1020 or CTAD 1020. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 1025. Understanding the Theatre. 3 Credits.

The art of the theatre; its literature, history, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at assigned theatrical performances.

TRDA 1035. Theatre Production. 3 Credits.

Understanding of the basic elements of theatrical production and the collaborative artist/artisan process through discussion, observation, and practical application. Same As: CTAD 1035.

TRDA 1099. Variable Topics. 1-36 Credits.

TRDA 1151. Beginning/Intermediate Ballet. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1152. Beginning Modern/Postmodern Dance. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1153. Beginning/Intermediate Modern/Postmodern Dance. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1170. Intermediate Modern/Postmodern Dance I. 2-3 Credits.

Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee.

TRDA 1171. Intermediate Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 1170. Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee. Prerequisites: TRDA 1170 or permission of the instructor.

TRDA 1214. Beginning Acting. 3 Credits.

An introduction to the process of acting. Students learn to make choices using various acting techniques to create characters and learn about the process.

TRDA 1240. Performance Theory. 3 Credits.

Examination of the ways in which the practices and heuristics of performance have been used to understand a wide range of cultural activities; expansion of the notion of aesthetic performance proper to include sources, subjects, and forms historically considered non-dramatic; and underlying questions concerning what performance is, what it does, and what value it holds.

TRDA 1330. Basics of Production Design. 3 Credits.

Basic elements of production design and execution explored through discussion, observation, and practical application. Same As: CTAD 1330.

TRDA 2160. Intermediate Ballet. 2-3 Credits.

Training in movements and steps within the intermediate level ballet lexicon, emphasizing technical skills, stamina, mastery of longer dance sequences, presentation, musicality, and artistry. Permission of the instructor required prior to enrollment.

May be repeated for credit. Laboratory fee. Recommended background: mastery of low intermediate level ballet steps and vocabulary, ability to perform short combinations of dance steps, and competence in basic elements of ballet technique.

TRDA 2172. Intermediate/Advanced Modern/Postmodern Dance I. 2-3 Credits.

May be repeated for credit. Laboratory fee. Prerequisites: TRDA 1171 or permission of the instructor.

TRDA 2173. Intermediate/Advanced Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 2172. May be repeated for credit. Laboratory fee. Prerequisites: TRDA 2172 or permission of the instructor.

TRDA 2179. Contact Improvisation. 2 Credits.

A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play. Laboratory fee.

TRDA 2180. Movement Improvisation/Performance. 3 Credits.

Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit. Laboratory fee.

TRDA 2185. Trends in Performance. 3 Credits.

Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. Laboratory fee. Credit cannot be earned for this course and MUS 3175.

TRDA 2188. African Dance. 1 Credit.

African/Caribbean dance styles and techniques, with warm-ups and center floor work of long and short movement phrases. Basic/modern/jazz terminology and definitions appropriate to intermediate/advanced/African dance are used. Emphasis on alignment, execution, musical phrasing, and the importance of rhythmic timing and nuance.

TRDA 2189. World Dance. 3 Credits.**TRDA 2190. Gender/Indian Classical Dance. 3 Credits.****TRDA 2191. Dance History. 3 Credits.**

The history of Western theatrical dance from the late eighteenth century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2191W. Dance History. 3 Credits.

The history of Western theatrical dance from the late eighteenth century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 2192. Repertory/Performance. 1,2 Credit.

Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit. Laboratory fee.

TRDA 2193. Dance Styles I. 1-12 Credits.

Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2194. Dance Styles II. 1-12 Credits.

Continuation of TRDA 2193. Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2195. Global Dance History. 3 Credits.

The role of dance globally in relation to socio-cultural and artistic histories. Importance of certain artists and dance forms contextualized by major world events as seen through the geography of immigration. Perspectives from the Americas, Africa, the Middle East, and Asia.

TRDA 2215. Intermediate Acting. 3 Credits.

Students continue to develop acting techniques introduced in TRDA 1214 through scripted scene work. Students learn to make choices through text exploration, use various acting techniques to create characters and develop clear character relationships, and stage completed scenes. Prerequisite: TRDA 1214.

TRDA 2240. Play Analysis. 3 Credits.

Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as ENGL 2240.

TRDA 2250. Dramatic Writing. 3 Credits.

A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as ENGL 2250. Recommended preparation: ENGL 1210 and two semesters of literature courses.

TRDA 2339. Theatre Practicum. 1 Credit.

Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TRDA 1330. After two practicums have been completed, participation may also include performance positions, for which TRDA 1214 is prerequisite. May be repeated for a total of 6 credits. Laboratory fee.

TRDA 3099. Variable Topics. 1-12 Credits.

TRDA 3131W. Theatre of Social Change. 3 Credits.

Focuses on theatre of social change as practiced in the second half of the twentieth century and in the early twenty-first century; exploring additional case studies from South Africa, Europe, and the United States. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 3157. Career Strategies for the Dance Artist. 3 Credits.

Introduction to career opportunities in the performing arts, from performance to arts management. Students undertake a short-term, unpaid internship with a dance artist or dance organization in the greater Washington metropolitan area and design a project that supports advancement of their career goals.

TRDA 3174. Advanced Modern/Postmodern Dance I. 2-3 Credits.

May be repeated for credit. Laboratory fee. Prerequisites: TRDA 2173 or permission of the instructor.

TRDA 3175. Advanced Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 3174. May be repeated for credit. Laboratory fee. Prerequisites: TRDA 3174 or permission of the instructor.

TRDA 3182. Dance Composition I. 3 Credits.

Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. Laboratory fee. Prerequisite: TRDA 2180. Recommended background: TRDA 2185.

TRDA 3183. Dance Composition II. 3 Credits.

Continuation of TRDA 3182. Emphasis on intention and content in making dances. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3186. Embodied Kinesis for Dance. 3 Credits.

Exploration of bodies in movement through theoretical, experimental, and personal research; techniques for embodiment in the somatic arts. Laboratory fee.

TRDA 3222. Topics in Advanced Acting. 3 Credits.

The actor's approach to various styles and genres and to non-literary theatrical forms. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Studio fee. Prerequisite: TRDA 2215.

TRDA 3240. Introduction to Dramaturgy. 3 Credits.

Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as ENGL 3240.

TRDA 3245. History of the Theatre I. 3 Credits.

A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the seventeenth century.

TRDA 3245W. History of the Theatre I. 3 Credits.

A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the seventeenth century. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 3246. History of the Theatre II. 3 Credits.

Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The eighteenth century through the present.

TRDA 3246W. History of the Theatre II. 3 Credits.

Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The eighteenth century through the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 3250. Intermediate Dramatic Writing. 3 Credits.

A workshop developing scripts for both theatre and film. Same as ENGL 3250. Prerequisite: ENGL 2250 or equivalent. May be repeated for credit with departmental approval.

TRDA 3331. Introduction to Lighting. 3 Credits.

Theories and practical application of lighting for theatre and dance. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3332. Theatrical Makeup Design. 3 Credits.

Theory and practice in the art of stage makeup design, including latex and crepe hair. Materials fee. Prerequisite: TRDA 1330.

TRDA 3333. Stage Management. 3 Credits.

The role and function of the stage manager in theatrical production. The basic skills needed to begin work in stage management. Emphasis on organization, documentation, and dissemination of information. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3334. Introduction to Audio Design. 3 Credits.

The basic elements of audio design and production through discussion, observation, and practical application. Laboratory required. Laboratory fee. Prerequisites: TRDA 1330.

TRDA 3335. Introduction to Scene Design. 3 Credits.

Fundamental study of scenic design, including historic overview, basic drawing, and rendering techniques, through the use of various mediums and script analysis. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3336. Introduction to Costuming. 3 Credits.

History of fashion in Western civilization from ancient Greece to the twentieth century. Fundamental study of costume construction through specific projects. Costume construction. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3710W. Contemporary Drama. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 4184. Choreography and Performance. 1-3 Credits.

Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TRDA 3182; recommended: TRDA 1330, TRDA 2185. May be repeated for credit. Laboratory fee.

TRDA 4204. Personal Aesthetics II: The Environment. 3 Credits.

This course fosters individual investigation of movement research and studio practice in order to develop an individual dance aesthetic. TRDA 6204 Personal Aesthetics – Environment (2-3) engages the artist/student in creative activities general related to alternative spaces and events related to “live” art, performance art, dance and related arts with less formal production/presentation elements. Prerequisites: M.F.A. candidacy or permission of instructor. (Same as TRDA 6204).

TRDA 4275. Directing for the Theatre. 3 Credits.

Fundamentals of script analysis, staging, casting, and rehearsal techniques. Laboratory fee. Prerequisites: TRDA 1214 and TRDA 1330; and TRDA 2240/ ENGL 2240 or TRDA 3240/ ENGL 3240.

TRDA 4338. Scene Painting. 3 Credits.

The techniques and materials used in creating character in the various elements of set design. Methods include set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wallpapering. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 4595. Selected Topics. 1-3 Credits.

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

TRDA 4595W. Selected Topics. 1-3 Credits.

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee.

TRDA 4596. Independent Study. 1-6 Credits.

Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TRDA 4596, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

TRDA 4597. Senior Project. 3 Credits.

A capstone project related to the student's particular concentration. The project may be in the form of a performance, theoretical or realized design for the theatre, directorial project, playscript, stage management experience, dramaturgical project, choreographic project, or other approved area. Restricted to TRDA majors with senior standing.

TRDA 4598. Internship. 3-6 Credits.

Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved number of hours per week. May be taken for a maximum of 6 credits. Restricted to permission from the department.

TRDA 4599. Honors Thesis. 3 Credits.

Directed research and/or creative project. Open to qualified seniors by permission. Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year.

TRDA 5099. Variable Topics. 1-99 Credits.**TRDA 6200. Portfolio I: Performance. 1-5 Credits.**

Portfolio I: Performance Prerequisites: M.F.A. candidacy and permission of instructor.

TRDA 6201. Personal Aesthetics I: The Body. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6202. Contemporary Dance History and Criticism. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6203. Portfolio II: Choreography/Creativity. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6204. Personal Aesthetics II: The Environment. 2 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6205. Choreography. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6206. Dance Pedagogy. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6207. Portfolio III: Artistic Initiative. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6208. New Media and Dance. 5 Credits.

. Prerequisites: M.F.A. candidacy and permission of instructor.

TRDA 6209. Cultural Communities of Dance. 4 Credits.

Cultural Communities of Dance Prerequisites: M.F.A. candidacy and permission of instructor.

TRDA 6210. Personal Aesthetics III: Integration. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6211. Career Networks in Dance. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6212. Portfolio Review I: Performance. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6213. Portfolio Review II: Choreography/Creativity. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6214. Portfolio Review III: Artistic Initiatives. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6296. Research Project I. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6299. Research Project II. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6330. Materials and Methods. 3 Credits.

Fundamentals of building materials, tools, fabrication techniques, and methodology used in modern stagecraft. Restricted to students in the MFA in production design program or with the permission of the instructor. Recommended background: basic knowledge of theatre production; TRDA1330.

TRDA 6331. Intermediate Lighting Design. 3 Credits.

Theory and execution of lighting design for theatre and dance. May be repeated for credit. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6335. Intermediate Scene Design. 3 Credits.

Development of advanced skills of scenic design, including script analysis, needs assessment, research techniques, conceptual design development, drawing and rendering techniques, preparation of construction documentation and fabrication management. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6336. Intermediate Costume. 3 Credits.

Basic techniques of costume design through specific projects. Various rendering techniques consistent with the historical period concerned. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6338. Scene Painting. 3 Credits.

Development the painting skills needed for the reproductive craft of theatrical painting. Restricted to MFA candidacy or permission of instructor.

TRDA 6340. Period Styles. 3 Credits.

A broad perspective of major European and American cultures through analysis of the interiors, furniture, textiles, fashion, and architecture of major civilizations and historical periods from Egypt to the present. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6342. Pattern Making. 3 Credits.

Pattern drafting and draping methods based on contemporary and historical clothing. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6344. Production Drafting. 3 Credits.

Development of drafting skills for production. Ground plans and shop documents. Traditional hand drafting and computer assisted design. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6346. Advanced Studies in Design: Collaborative Studies. 3 Credits.

Development of the skills needed to design and work within a collaborative or team-based environment through visual and verbal communication, script analysis, concept development, and research techniques. Laboratory fee. Restricted to MFA candidates or instructor's permission.

TRDA 6348. Techniques in Design Presentation. 3 Credits.

The various techniques used in costume and scenic design presentations, such as rendering with paint, pencil, ink, and electronic media. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6595. Selected Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6596. Independent Research in TRDA. 1-12 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor. May be repeated for credit.

TRDA 6598. Internship. 1-12 Credits.

Internships with theatre companies or arts organizations, including conference and/or seminar. May be taken for a total of 9 credits. Prerequisites: M.F.A. candidacy and permission of the instructor.

TRDA 6997. Production Design Practicum. 1 Credit.

Guided advanced individual laboratory training and experience; planning and executing complex production assignments with an emphasis on the management of subordinate crew. MFA production design candidates enroll in this course each semester of their program. Restricted to MFA production design students or permission of the instructor.

TRDA 6998. Thesis Research. 3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6999. Thesis Research. 3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

BACHELOR OF ARTS WITH A MAJOR IN DANCE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
Production design		
3 credits from the following:		
TRDA 1330	Basics of Production Design	
Dance technique		
15 credits from the following:		
TRDA 1152	Beginning Modern/Postmodern Dance	

TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance
TRDA 1170	Intermediate Modern/Postmodern Dance I
TRDA 1171	Intermediate Modern/Postmodern Dance II
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II

Creative process, performance, and theory

17 credits from the following:

TRDA 2180	Movement Improvisation/Performance
TRDA 2185	Trends in Performance - Action into Art
TRDA 2192	Repertory/Performance
TRDA 3157	Career Strategies for the Dance Artist
TRDA 3182	Dance Composition I
TRDA 3183	Dance Composition II
TRDA 4184	Choreography and Performance

Electives

4 credits from the following:

TRDA 1000	Dean's Seminar
TRDA 1015	Understanding the Dance
TRDA 1151	Beginning/Intermediate Ballet
TRDA 2160	Intermediate Ballet
TRDA 2188	African Dance
TRDA 2189	World Dance
TRDA 2191	Dance History
or TRDA 2191\	Dance History
TRDA 2193	Dance Styles I
TRDA 2194	Dance Styles II
TRDA 2195	Global Dance History

TRDA 2339	Theatre Practicum
TRDA 3186	Embodied Kinesis for Dance
TRDA 3331	Introduction to Lighting
TRDA 4204	Personal Aesthetics II: The Environment
TRDA 4595	Selected Topics
or TRDA 4595\	Selected Topics
TRDA 4596	Independent Study
TRDA 4598	Internship
TRDA 4599	

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.

- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Theatre or Dance, students must have a grade-point average of 3.4 in the major and complete TRDA 4599 Honors Thesis with a grade of A. They must consult a faculty advisor at the beginning of the second semester of the junior year to determine eligibility, area of study, and the director of the research or creative project.

BACHELOR OF ARTS WITH A MAJOR IN THEATRE

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum (minimum of 39 credits):

Code	Title	Credits
Required		
TRDA 1214	Beginning Acting	
TRDA 1240	Performance Theory and Criticism	

TRDA 1330	Basics of Production Design
TRDA 2339	Theatre Practicum (taken six times for a total of 6 credits) *
TRDA 3131W	Performance, Identity, and Social Change
TRDA 3240	Introduction to Dramaturgy
TRDA 3245 or TRDA 3245W	History of the Theatre I History of the Theatre I
TRDA 3246 or TRDA 3246W	History of the Theatre II History of the Theatre II
TRDA 4275	Directing for the Theatre
3 credits in design/technical theatre courses selected from the following:	
TRDA 3331	Introduction to Lighting
TRDA 3332	Theatrical Makeup Design
TRDA 3333	Stage Management
TRDA 3334	Introduction to Audio Design
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming
TRDA 4338	Scene Painting
6 additional credits in the department selected from the following in consultation with the advisor:	
TRDA 2215	Intermediate Acting
TRDA 2240	Play Analysis
TRDA 2250 or ENGL 2250	Dramatic Writing Dramatic Writing
TRDA 3222	Topics in Advanced Acting
TRDA 4595	Selected Topics
TRDA 4596	Independent Study
TRDA 4598	Internship
TRDA 4597 or TRDA 4599	Senior Project

*The first three enrollments in TRDA 2339, totaling 3 credits, must be in production design.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement, G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors in Theatre, candidates must have a grade-point average of 3.4 in the major and complete TRDA 4599 Honors Thesis with a grade of A. They must consult with a faculty advisor at the beginning of the second semester of the junior year to determine eligibility, area of study, and the director of the research or creative project.

MASTER OF FINE ARTS IN THE FIELD OF DANCE REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

60 credits in required courses.

Code	Title	Credits
Required		
TRDA 6200	Portfolio I: Performance	
TRDA 6201	Personal Aesthetics I: The Body	
TRDA 6202	Contemporary Dance History and Criticism	
TRDA 6203	Portfolio II: Choreography/Creativity	
TRDA 6204	Personal Aesthetics II: The Environment	
TRDA 6205	Choreography	
TRDA 6206	Dance Pedagogy	
TRDA 6207	Portfolio III: Artistic Initiative	
TRDA 6208	New Media and Dance	
TRDA 6209	Cultural Communities of Dance	
TRDA 6210	Personal Aesthetics III: Integration	

TRDA 6211	Career Networks in Dance
TRDA 6296	Research Project I
TRDA 6299	Research Project II

Portfolio review

Up to 15 credits of accelerated placement for high-level work is possible through three portfolio review courses:

TRDA 6212	Portfolio Review I: Performance (for TRDA 6200)
TRDA 6213	Portfolio Review II: Choreography/Creativity (for TRDA 6203)
TRDA 6214	Portfolio Review III: Artistic Initiatives (for TRDA 6207)

A committee consisting of dance faculty and an outside professional administer the portfolio review, using a strict assessment rubric to assist students with tracking their growth and placement level. Students who qualify for the full 5 credits for any or all of the portfolio review courses (TRDA 6212 Portfolio Review I: Performance, TRDA 6213 Portfolio Review II: Choreography/Creativity, and TRDA 6214 Portfolio Review III: Artistic Initiatives) are not required to take the corresponding portfolio course (TRDA 6200 Portfolio I: Performance, TRDA 6203 Portfolio II: Choreography/Creativity, and TRDA 6207 Portfolio III: Artistic Initiative); students who receive fewer than 5 credits in any review courses must enroll for the remaining credits in the portfolio course(s). Visit the department website (<http://theatredance.gwu.edu>) for additional information.

MASTER OF FINE ARTS IN THE FIELD OF PRODUCTION DESIGN

The Theatre and Dance's production design program aims to unlock students' creativity and help them master the portfolio of practical skills essential for a career as a successful design professional. Part of the arts and humanities discipline in the Columbian College of Arts and Sciences, the program connects students directly to the vibrant arts community of Washington, D.C.

The MFA program offers courses that provide solid artistic training, experiential academic application and a direct opportunity to apply these skills in an intense professional environment. The faculty is composed of professionals with practical knowledge of how to develop a successful career in production design. Each MFA candidate works with the faculty to develop a customized three-year program that emphasizes production design for theater and dance as well as the related arts of film, television, exhibition design and special events. All programs include nine to 18 credits of full-time apprenticeship at a local professional theater, studies

in secondary design areas and cross-discipline training in the allied arts. Concentrations include costume, scenery and lighting design.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

60 credits planned in consultation with the advisor.

The program of study consists of 60 credits of graduate and upper-division undergraduate coursework in theatre and dance and in art, planned in consultation with the advisor, including a creative thesis (TRDA 6998 Thesis Research and TRDA 6999 Thesis Research). The program may emphasize scenery, lighting, costume, or other relevant production design concentrations. For listings of upper-division undergraduate courses, see the Undergraduate Programs Bulletin.

MINOR IN DANCE REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
Required		
Technique courses -- no more than 9 credits from the following:		
TRDA 1152	Beginning Modern/Postmodern Dance	
TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance	
TRDA 1170	Intermediate Modern/Postmodern Dance I	
TRDA 1171	Intermediate Modern/Postmodern Dance II	
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I	
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II	
TRDA 3174	Advanced Modern/Postmodern Dance I	
TRDA 3175	Advanced Modern/Postmodern Dance II	
9 or more credits from the following:		
TRDA 1000	Dean's Seminar	

TRDA 1015	Understanding the Dance
TRDA 1330	Basics of Production Design
TRDA 1151	Beginning/Intermediate Ballet
TRDA 2160	Intermediate Ballet
TRDA 2180	Movement Improvisation/Performance
TRDA 2185	Trends in Performance - Action into Art
TRDA 2188	African Dance
TRDA 2189	World Dance
TRDA 2191	Dance History
	or TRDA 2191WDance History
TRDA 2193	Dance Styles I
TRDA 2194	Dance Styles II
TRDA 2192	Repertory/Performance
TRDA 2195	Global Dance History
TRDA 2339	Theatre Practicum
TRDA 3157	Career Strategies for the Dance Artist
TRDA 3182	Dance Composition I
TRDA 3183	Dance Composition II
TRDA 3186	Embodied Kinesis for Dance
TRDA 3331	Introduction to Lighting
TRDA 4184	Choreography and Performance
TRDA 4204	Personal Aesthetics II: The Environment
TRDA 4595	Selected Topics
TRDA 4596	Independent Study
TRDA 4598	Internship

MINOR IN THEATRE REQUIREMENTS

The following requirements must be fulfilled: 21 credits in required and elective courses.

Code	Title	Credits
Required		
TRDA 1330	Basics of Production Design	

TRDA 2339 Theatre Practicum (taken three times for a total of 3 credits)

TRDA 3245 History of the Theatre I
or TRDA 3245W History of the Theatre I

TRDA 3246 History of the Theatre II
or TRDA 3246W History of the Theatre II

Three additional courses (9 credits), at least one of which must be numbered 2000 or above, from the following (Other Corcoran School courses may be accepted through advance petition):

TRDA 1035 Theatre Production

TRDA 1214 Beginning Acting

TRDA 1240 Performance Theory and Criticism

TRDA 2215 Intermediate Acting

TRDA 2240 Play Analysis

TRDA 2250 Dramatic Writing

or ENGL 2250 Dramatic Writing

TRDA 3131W Performance, Identity, and Social Change

TRDA 3222 Topics in Advanced Acting

TRDA 3240 Introduction to Dramaturgy

or ENGL 3240 Introduction to Dramaturgy

TRDA 3331 Introduction to Lighting

TRDA 3332 Theatrical Makeup Design

TRDA 3333 Stage Management

TRDA 3334 Introduction to Audio Design

TRDA 3335 Introduction to Scene Design

TRDA 3336 Introduction to Costuming

TRDA 4275 Directing for the Theatre

TRDA 4338 Scene Painting

TRDA 4596 Independent Study

TRDA 4598 Internship

UNIVERSITY WRITING

The University Writing Program (<https://writingprogram.gwu.edu/>) (UWP) provides comprehensive

writing instruction to and administers the writing requirement for all bachelor's degree-seeking students in all schools and colleges of the University. The UWP is staffed by a multi-disciplinary faculty and is organized into three divisions: First-Year Writing, Writing in the Disciplines, and the University Writing Center.

FACULTY

Professor R. Riedner

Associate Professors L. Abrams, J. Donovan, C. Gamber, G. Mantler (*Executive Director*), D. Malone-France, M. Mullen, P. Ryder, C. Smith, A. Wilkerson

Assistant Professors J. Barlow, S. Friedman, C. Hayes, R. Kristensen, J. McCaughey, K. Quave, H. Schell, M. Svoboda, P. Troutman, Z. Wolfe, C. Zink

Specialized Faculty W. Fletcher, K. Larsen, R. Marcus, D. Myers, P. Presser

Adjunct Professors L. Jacoby, L. McReynolds, R. Pollack, B. Tomlison

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

UW 1010. College Academic English. 3 Credits.

UW 1015. Writing Seminar Summer Scholars. 3 Credits.

UW 1020. University Writing. 4 Credits.

University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Developing strategies to draft and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. For topics see <https://writingprogram.gwu.edu/uw1020-courses>. Credit cannot be earned for this course and HONR 1015.

UW 1099. Variable Topics. 1-36 Credits.

UW 2020. Advanced Topics in Writing. 3 Credits.

For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2020W. Advanced Topics in Writing. 3 Credits.

For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

UW 2031. Equality and the Law. 3 Credits.

Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms.

UW 2031W. Equality and the Law. 3 Credits.

Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms. Include a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

UW 2111. Preparation for Peer Tutors in Writing. 3 Credits.

For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 2111W. Preparation for Peer Tutors in Writing. 3 Credits.

For undergraduate students accepted as tutors in the Writing Center. Study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Corequisite: UW 2112. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

UW 2112. Preparation for Peer Tutors in Writing Lab. 1 Credit.

Through required hours scheduled at the Writing Center, students observe and interview peer tutors and conduct peer tutoring sessions to gain experience working with a range of student texts from multiple disciplines across the University, assist peer writers working on a variety of genres, and develop writing consulting techniques from best practices in the field. Concurrent enrollment in UW 2111W is required. Restricted to undergraduate students accepted as tutors in the Writing Center.

UW 6213. Theory and Practice of Teaching Writing. 3 Credits.

WOMEN'S, GENDER, AND SEXUALITY STUDIES

Part of the Columbian College of Arts and Sciences's arts and humanities programs, the Women's, Gender, and Sexuality Studies program examines women's lives, literature, histories, and cultures through the lens of feminist theory and practice, establishing gender and sexuality as fundamental categories of analysis. Gender and sexuality are examined as they intersect with race, class, nationality, and ethnicity. The program strengthens a student's ability to gain knowledge of contemporary feminist theories and research methods, and provides interdisciplinary perspectives from which to study the diversity of the human experience. Classroom study is supplemented by the diverse resources of the nation's capital.

Visit the Women's, Gender, and Sexuality Studies Program website (<https://wgss.columbian.gwu.edu/>) for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in women's, gender, and sexuality studies (p. 510)

Combined programs

Dual bachelor's and master's programs in Women's, Gender, and Sexuality Studies (p. 513)

- Dual Bachelor of Arts with a major in women's, gender, and sexuality studies and Master of Arts in the field of women's, gender, and sexuality studies
- Dual Bachelor of Arts with a major in women's, gender, and sexuality studies and Master of Arts in the field of public policy with a concentration in women's, gender, and sexuality studies degree programs. (p. 513)

Minors

- Minor in LGBT and sexuality studies (p. 515)
- Minor in women's, gender, and sexuality studies (p. 516)

GRADUATE

Master's programs

- Master of Arts in the field of public policy with a concentration in women's, gender, and sexuality studies (p. 514)
- Master of Arts in the field of women's, gender, and sexuality studies (p. 515)

CERTIFICATE

Certificate program

- Graduate certificate in women's, gender, and sexuality studies (p. 513)

FACULTY

Professor R. Riedner

Associate Professors: K. Daiya (*Director*), C. Deitch, D. Moshenberg, K. Pemberton

Assistant Professors: S. Matthiesen, E. Strader

Executive Committee: A. Ahmad, N. Blyden, E. Chapman, K. Daiya, C. Deitch, I. Ken, S. Matthiesen, M. McAlister, K. Morgan, R. McRuer, D. Moshenberg, K. Pemberton, R. Riedner, E. Strader, G. Weiss.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: Excluding students enrolled in the Women's, Gender, and Sexuality Studies Program, completion of WGSS 2120 and WGSS 2125 or equivalent, or permission of instructor, is prerequisite to all graduate-level women's studies courses.

WGSS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details.

WGSS 1020. Approaches to Women's History. 3 Credits.

Introduction to major methodological and conceptual debates in women's and gender history, focusing on the United States. (Same as HIST 1020).

WGSS 1099. Variable Topics. 1-36 Credits.**WGSS 2120. Introduction to Women's, Gender, and Sexuality Studies. 3 Credits.**

Key concepts, theories, and perspectives in women's studies, placing women's experiences at the center of interpretation; historical and contemporary perspectives on women's lives, experiences, and thoughts and how gender interacts with race, class, religion, sexual orientation, culture, and politics. Same As: WGSS 2120W.

WGSS 2120W. Introduction to Women's, Gender, and Sexuality Studies. 3 Credits.

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women, gender and sexuality in different cultures. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: WGSS 2120.

WGSS 2121. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. (Same as ANTH 2501).

WGSS 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisites: WGSS 1020 or WGSS 2120. Same As: AMST 2125.

WGSS 2135. A Study of Women and Media. 3 Credits.

The role media plays in women's lives; limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film; how women have attempted to articulate a culture that serves their personal, political, and social interests.

WGSS 2145. Space, Place, and Gender Identity. 3 Credits.

Space and place as socially-constructed structures; politics of space and bodies from the perspective of gender and sexual minorities; analysis of gender relations through spatial practices; identity-based inequality in the use of space and place.

WGSS 2225. Philosophy of Race And Gender. 3 Credits.

Differing theoretical perspectives on how race, sexuality, gender, class, and ethnicity inform (and re-form) individual as well as group identities; consequences of being marginalized because one is associated with an allegedly inferior race, sex, and/or gender. (Same as PHIL 2125).

WGSS 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. (Same as AMST 2380, HIST 2380).

WGSS 2385. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Same As: AMST 2385.

WGSS 2385W. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same AMST 2385W. Same As: AMST 2385W.

WGSS 2710. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Same As: ENGL 2710.

WGSS 3099. Variable Topics. 1-12 Credits.**WGSS 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.**

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Conducted in English. (Same as CHIN 3136).

WGSS 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Taught in English. (Same as CHIN 3136W, WGSS 3136).

WGSS 3170. Special Topics in Women's, Gender, and Sexuality Studies. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

WGSS 3170W. Selected Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3195. Undergraduate Research. 1-3 Credits.

A written proposal approved by the faculty member who supervises the research is required prior to registration.

WGSS 3235. Women and the Law. 3 Credits.

Contemporary legal issues that affect women in the United States; theories and documents relevant to issues such as violence against women, marriage and divorce, employment, immigration, and reproductive rights.

WGSS 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

WGSS 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3353. U.S. Women's History II. 3 Credits.

Continuation of WGSS 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. (Same as AMST 3353, HIST 3353).

WGSS 3362. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. (Same as AMST 3362, AMST 3362W, HIST 3362, HIST 3362W, WGSS 3362W).

WGSS 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 3362W, AMST 3362W).

WGSS 3410. Lesbian History and Culture. 3 Credits.

Examination of lesbian identity, community, and legal rights from a scholarly feminist perspective.

WGSS 3435. Queer Politics. 3 Credits.

The history of lesbian, gay, bisexual, transgender, and queer (LGBTQ) politics in the United States; influences and intersections of race and ethnicity, class, gender identity and expression, sexuality, sex, and age; contemporary policy debates relevant to queer politics.

WGSS 3470. Sexuality and the Law. 3 Credits.

Exploration of the ways in which the law has affected individuals' ability to express their sexuality, with a primary focus on sexual orientation and issues such as marriage, adoption, voting rights, sexual harassment, and military service.

WGSS 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. (Same as REL 3481).

WGSS 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. (Same as WGSS 3530W, HIST 3530, HIST 3530W).

WGSS 3530W. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as WGSS 3530, HIST 3530, HIST 3530W).

WGSS 3730. Topics in Global Postcolonial Literature and Film. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: ENGL 3730.

WGSS 3820. Global Domestic Labor. 3 Credits.

Consideration of women's paid and unpaid domestic labor, including care work, in the context of global and globalizing political and cultural economies.

WGSS 3845. Global Women's Prison. 3 Credits.

Examination of women's confinement and incarceration in the context of global and globalizing political and cultural economies.

WGSS 3881. Women, Gender, and Religion in China. 3 Credits.

Historical introduction to women and men as gendered subjects and the construction of gender and power in Chinese religions. May be taken for graduate credit with extra work assigned. (Same as EALL 3881, REL 3881).

WGSS 3890W. Black Women in the Twenty-First Century. 3 Credits.

An interdisciplinary approach to critical inquiry into the scholarship on, and status of, Black women in North America, the Caribbean, Latin America, and Africa in the twenty-first century; historical, national, and transnational linkages between Black women; responses to intersectionality; analyses, strategies, and actions being deployed by and about Black women in action and scholarship. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3981. Women in Western Religion. 3 Credits.

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity. Special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. (Same as REL 2981).

WGSS 4183. Practicum in Women's, Gender, and Sexuality Studies. 3 Credits.

Study of the changing status of women, gender, sexuality and social change through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required.

WGSS 4199. Senior Seminar. 3 Credits.

Examination and analysis of the writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Restricted to juniors and seniors.

WGSS 5099. Variable Topics. 1-99 Credits.

WGSS 6220. Fundamentals of Feminist Theory. 3 Credits.

Historical theories significant to feminist thought, such as liberalism, socialism, evolution, psychoanalysis, and gendered spheres of social action; how these theories were revived and revised by the second wave of feminism since the 1960s; brief examination of postmodernist and third-wave feminist theorizing.

WGSS 6221. Research Issues in Women's, Gender, and Sexuality Studies. 3 Credits.

The contribution of feminist or gender-relations perspectives from humanities and social science disciplines to the issues and methods of social research, policy, and practice; feminist frameworks; critique and re-evaluation of traditional academic disciplines; and analysis of current research on women, gender, and sexuality.

WGSS 6225. Contemporary Feminist Theory. 3 Credits.

Recent developments in feminist theory, with a primary focus on feminism in the United States and its relationship to queer theory and sexuality studies.

WGSS 6230. Global Feminisms. 3 Credits.

The individuals, groups, and policies that shape global agenda for women; local and international fora in which global feminisms are forged.

WGSS 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Prerequisites: PHIL 2125 or PHIL 2131. (Same as PHIL 6238).

WGSS 6240. Gender and Public Policy. 3 Credits.

Analysis of gender-related policy issues, primarily in the United States, such as domestic violence, military service, abortion rights, equal employment opportunity, child and dependent care, welfare, social security, and international development assistance.

WGSS 6241. Gender, Law, and Politics. 3 Credits.

The treatment of gender in U.S. law and its implications for public policy; factors that influence the ways in which individuals view and encounter the law; discrimination in the workplace and educational institutions, single-sex education, domestic violence, same-sex marriage, and reproductive rights and responsibilities; legal analysis, and public policy writing. Restricted to graduate students; open to upper-level undergraduates on a case-by-case basis.

WGSS 6251. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture.

WGSS 6257. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender; postcolonialism, sexuality, and literary representations of gender. (Same as ANTH 6501).

WGSS 6265. Women, Welfare, and Poverty. 3 Credits.

How the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. (Same as SOC 6265).

WGSS 6266. Gender and Criminal Justice. 3 Credits.

How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. (Same as SOC 6266).

WGSS 6268. Race, Gender, and Class. 3 Credits.

How social structures are constructed through race, gender, and class and how they shape experience; the intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. (Same as SOC 6268).

WGSS 6270. Seminar: Selected Topics. 3 Credits.

Investigation of a current policy issue of particular concern to women, or consideration of women's status in a particular social system. Topics have included women and health; sexualities; women and Judaism; black women; gender, race, and class. May be repeated for credit. Credit cannot be earned for this course and AMST 6190, PSYC 8279.

WGSS 6271. Gender and Society. 3 Credits.

Current empirical and theoretical work on gender as an organizing principle of social relations; the relationship of gender to sex and sexuality. (Same as SOC 6271).

WGSS 6280. Independent Study. 3 Credits.

May be repeated for credit. Arrangements must be made with sponsoring faculty member prior to registration.

WGSS 6283. Practicum in Women's, Gender and Sexuality Studies. 3,6 Credits.

Study of the changing status of women, gender, sexuality, and social change through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Placement arrangements must be made the semester prior to registration; departmental permission is required. Graduate students may take the course for either 3 or 6 credits, with substantial additional research and writing of a case study required for 6 credits. (Same as WGSS 4183).

WGSS 6295. Independent Research in Women's Studies. 1-3 Credits.

Individual library or field research. Arrangements must be made with the sponsoring faculty member prior to registration; a written proposal is required.

WGSS 6299. Capstone Research Seminar. 3 Credits.

Designed primarily to ready students for their next pursuit, whether it is academic or non-academic. Assists students in making progress on theses and/or develops a case study related to practicum placement. Restricted to graduate students in the women's, gender, and sexuality studies program. Prerequisites: successful completion of all WGSS core courses and degree requirements.

WGSS 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

WGSS 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of WGSS 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ HIST 6431.

WGSS 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST6435/HIST 6435.

WGSS 6560. Postcolonialism. 3 Credits.

Exploration of aesthetics and politics through global and postcolonial literature and cinema, primarily from the twentieth and twenty-first centuries. Includes legal, theoretical, literary, and film texts. Restricted to graduate students and junior and senior undergraduate students. Same As: ENGL 6560.

WGSS 6998. Thesis Research. 3 Credits.

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WGSS 6999. Thesis Research. 3 Credits.

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WGSS 8275. Women and Health. 3 Credits.

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. (Same as PSYC 8275).

BACHELOR OF ARTS WITH A MAJOR IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Undergraduate Programs (p. 77).

Program-specific curriculum:

Code	Title	Credits
Required		
WGSS 2120	Introduction to Women's, Gender, and Sexuality Studies	
or WGSS 2120W	Introduction to Women's, Gender, and Sexuality Studies	
WGSS 2125	Varieties of Feminist Theory	
or AMST 2125	Varieties of Feminist Theory	
WGSS 4199	Senior Seminar	
One course from each of the following five groups:		
Race, ethnicity, and class		
AMST 2410	Twentieth Century U.S. Immigration	
or HIST 2410	Twentieth Century U.S. Immigration	

AMST 3360	African American History to 1865
or HIST 3360	African American History to 1865
AMST 3361	African American History Since 1865
or HIST 3361	African American History Since 1865
ENGL 2610	Introduction to Black Literature of America I
or ENGL 2610W	Introduction to Black Literature of America I
ENGL 2611	Introduction to Black Literature of America II
or ENGL 2611W	Introduction to Black Literature of America II
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
ENGL 3570	Nineteenth-Century Black Literature
ENGL 3960	Asian American Literature
or ENGL 3960W	Asian American Literature
PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
WGSS 3362	African American Women's History
or WGSS 3362W	African American Women's History
or AMST 3362	African American Women's History
or AMST 3362W	African American Women's History
or HIST 3362	African American Women's History
or HIST 3362W	African American Women's History

Global/transnational

ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 2712	Bollywood Cinema
or ENGL 2712W	Bollywood Cinema

ENGL 3730	Topics in Global Postcolonial Literature and Film
or ENGL 3730W	Topics in Global Postcolonial Literature and Film

SPAN 3570	Women Writers of Spain and Latin America
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WGSS 2121	The Anthropology of Gender: Cross-Cultural Perspectives
or ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives

WGSS 3136	Chinese Women in Myth, Literature, and Film
or WGSS 3136W	Chinese Women in Myth, Literature, and Film
or CHIN 3136W	Chinese Women in Myth, Literature, and Film

WGSS 3481	Women in Islam
or REL 3481	Women in Islam

WGSS 3530	Women in Africa
or HIST 3530	Women in Africa

WGSS 3820	Global Domestic Labor
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WGSS 3845	Global Women's Prison
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WGSS 3881	Women, Gender, and Religion in China
or EALL 3881	Women, Gender, and Religion in China
or REL 3881	Women, Gender, and Religion in China

Sexualities

ENGL 3910	Disability Studies
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ENGL 3980	Queer Studies
or ENGL 3980W	Queer Studies

WGSS 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History

WGSS 2385W	Sex and Citizenship
or AMST 2385W	Sex and Citizenship

WGSS 3410	Lesbian History and Culture
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WGSS 3435	Queer Politics
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WGSS 3470	Sexuality and the Law
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Humanities

ENGL 3730 Topics in Global Postcolonial Literature and Film
or ENGL 3730W Topics in Global Postcolonial Literature and Film

ENGL 3840 Gender and Literature
or ENGL 3840W Gender and Literature

ENGL 3980 Queer Studies
or ENGL 3980W Queer Studies

PHIL 2125 Philosophy of Race and Gender
or PHIL 2125W Philosophy of Race and Gender

SPAN 3570 Women Writers of Spain and Latin America

WGSS 1020 Approaches to Women's History
or HIST 1020 Approaches to Women's History

WGSS 2135 A Study of Women and Media

WGSS 2380 Sexuality in U.S. History
or AMST 2380 Sexuality in U.S. History
or HIST 2380 Sexuality in U.S. History

WGSS 3136 Chinese Women in Myth, Literature, and Film
or WGSS 3136W Chinese Women in Myth, Literature, and Film
or CHIN 3136W Chinese Women in Myth, Literature, and Film

WGSS 3352 U.S. Women's History to 1865
or WGSS 3352W U.S. Women's History to 1865
or AMST 3352 U.S. Women's History to 1865
or AMST 3352W U.S. Women's History to 1865
or HIST 3352 U.S. Women's History to 1865
or HIST 3352W U.S. Women's History to 1865

WGSS 3353 U.S. Women's History II
or AMST 3353 U.S. Women's History II
or HIST 3353 U.S. Women's History II

WGSS 3362 African American Women's History
or WGSS 3362W African American Women's History

or AMST 3362 African American Women's History
or AMST 3362W African American Women's History
or HIST 3362 African American Women's History
or HIST 3362W African American Women's History

WGSS 3481 Women in Islam
or REL 3481 Women in Islam

WGSS 3530 Women in Africa
or HIST 3530 Women in Africa

WGSS 3981 Women in Western Religion
or REL 2981 Women in Western Religion

Social science

ANTH 3504 Illness, Healing, and Culture

ANTH 3507 Kinship, Family, and Community

ANTH 3513 Anthropology of Human Rights
or ANTH 3513W Anthropology of Human Rights

PSC 2225 Women and Politics

PSYC 2550 Psychology of Sex Differences

SOC 2175 Sociology of Sex and Gender

WGSS 2121 The Anthropology of Gender: Cross-Cultural Perspectives

or ANTH 2501 The Anthropology of Gender: Cross-Cultural Perspectives

WGSS 4183 Practicum in Women's, Gender, and Sexuality Studies

Electives

Three additional courses (9 credits) from any of the above lists, any women's, gender, and sexuality studies (WGSS) course, or courses approved by an advisor.

No one course may count for more than one category.

At least 27 of the required 33 credits must be taken in courses at the 2000 level or above.

GENERAL EDUCATION

In addition to the University General Education Requirement (p. 42), undergraduate students in Columbian College must complete a further, College-specific general education curriculum—Perspective, Analysis, Communication, or G-PAC. Together with the University General Education Requirement,

G-PAC engages students in active intellectual inquiry across the liberal arts. Students achieve a set of learning outcomes that enhance their analytical skills, develop their communication competencies, and invite them to participate as responsible citizens who are attentive to issues of culture, diversity, and privilege.

G-PAC approved courses, Dean's Seminars, and Sophomore Colloquia that may be available for registration are listed on the CCAS Advising website (<https://advising.columbian.gwu.edu/general-education-courses/>).

Coursework for the University General Education Requirement is distributed as follows:

- Writing—one approved course in university writing and two approved writing in the disciplines (WID) courses.
- Humanities—one approved course in the humanities that involves critical or creative thinking skills.
- Mathematics or Statistics—one approved course in either mathematics or statistics.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry.
- Social Sciences—two approved courses in the social sciences.

Coursework for the Columbian College general education curriculum is distributed as follows:

- Arts—one approved course in the arts that involves the study or creation of artwork based on an understanding or interpretation of artistic traditions or knowledge of art in a contemporary context.
- Global or Cross-Cultural Perspective—one approved course that analyzes the ways in which institutions, practices, and problems transcend national and regional boundaries.
- Humanities—one approved course in the humanities that involves critical thinking skills (in addition to the one course in this category required by the University General Education Requirement).
- Local or Civic Engagement—one approved course that develops the values, ethics, disciplines, and commitment to pursue responsible public action.
- Natural or Physical Science—one approved laboratory course that employs the process of scientific inquiry (in addition to the one course in this category required by the University General Education Requirement).
- Oral Communication—one course in oral communication.

Certain courses are approved to fulfill the requirement in more than one of these categories.

Courses taken in fulfillment of G-PAC also may be counted toward majors or minors. Transfer courses taken prior to, but not after, admission to George Washington University may count toward the University General Education Requirement and G-PAC, if those transfer courses are equivalent to GW

courses that have been approved by the University and the College.

SPECIAL HONORS

In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, students must attain a minimum grade-point average of 3.7 in courses counted for the Women's, Gender, and Sexuality Studies major and 3.3 overall; receive a grade of A in WGSS 4199; and submit an honors paper to the Program. Upon faculty review of the honors paper, students may be recommended for graduation with Special Honors.

DUAL BACHELOR'S AND MASTER'S PROGRAMS IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

The Department of Women's, Gender, and Sexuality Studies offers two options for a dual bachelor's/master's degree:

- Bachelor of Arts with a major in women's, gender, and sexuality studies (p. 510) and Master of Arts in the field of women's, gender, and sexuality studies (p. 515)
- Bachelor of Arts with a major in women's, gender, and sexuality studies (p. 510) and Master of Arts in the field of public policy with a concentration in women's, gender, and sexuality studies

In both cases, the program allows students to take up to 12 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://wgss.columbian.gwu.edu/combined-degree-bama/>) for additional information.

GRADUATE CERTIFICATE IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

OVERVIEW

The graduate certificate in women's, gender, and sexuality studies is offered to students currently enrolled in MA and PhD degree programs at GW other than women's studies and to qualified non-degree students who have at least a bachelor's degree. The program provides students with an opportunity to think and learn about gender in a systematic and integrated manner from a variety of methodological approaches. The certificate is designed to provide an interdisciplinary course of

study on women and gender to enrich a student's disciplinary or professional training.

Visit the program website (<https://womensstudies.columbian.gwu.edu/graduate-certificate-womens-gender-and-sexuality-studies/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
WGSS 6220	Fundamentals of Feminist Theory	
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies	

Electives		
6 credits in elective courses selected from graduate-level Women's, Gender, and Sexuality Studies (WGSS) courses and/or courses from other departments in consultation with the advisor.		

MASTER OF ARTS IN THE FIELD OF PUBLIC POLICY WITH A CONCENTRATION IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

OVERVIEW

Along with courses in feminist theory and empirical knowledge about women, gender, and sexuality in the United States and around the world, students take at least four policy courses in the GW Trachtenberg School of Public Policy and Public Administration. Through the program's interdisciplinary curriculum, students learn to analyze policies and structures of power, particularly as they are grounded in gender, race, sexuality, ethnicity and nationality.

Graduates of the program apply their knowledge and skills to careers in government and as teachers, researchers, lobbyists, public affairs specialists, and advocacy organizations staff members; approximately one-third of program graduates go on to earn doctoral or other professional degrees. Credits earned in this program may be applied toward the PhD in public policy, gender and social policy (<https://womensstudies.columbian.gwu.edu/phd-public-policy-gender-and-social-policy/>) degree program.

Visit the program website (<https://womensstudies.columbian.gwu.edu/masters-program/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

36 credits. Students must complete either a thesis or practicum and a master's comprehensive examination.

Code	Title	Credits
Required (36 credits of coursework with or without a thesis)		
WGSS 6220	Fundamentals of Feminist Theory	
WGSS 6240	Gender and Public Policy	
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies	
Public Policy Core		
PPPA 6002	Research Methods and Applied Statistics	
PPPA 6003	Economics for Public Decision-Making	
PPPA 6006	Policy Analysis	

And one of the following: an additional PPPA course, PHIL 6230, PHIL 6242, WGSS 6265, or SOC 6265.

6 credits from one of the following options:		
WGSS 6283	Practicum in Women's, Gender and Sexuality Studies	
or		
WGSS 6283 & WGSS 6295	Practicum in Women's, Gender and Sexuality Studies and Independent Research in Women's, Gender, and Sexuality Studies	
or		
WGSS 6998 & WGSS 6999	Thesis Research and Thesis Research	

Electives (9 credits)		
All candidates are required to pass a Master's Comprehensive Examination		

This program is affiliated with the Trachtenberg School of Public Policy and Public Administration (<https://tspppa.gwu.edu/>).

MASTER OF ARTS IN THE FIELD OF WOMEN'S, GENDER, AND SEXUALITY STUDIES

OVERVIEW

The Master of Arts in the field of women's, gender, and sexuality studies program enables students to develop leadership and expertise in this growing field. The program's interdisciplinary curriculum focus on feminist theory, as well as social scientific and humanistic knowledge about women, gender, and sexuality in the United States and around the world. Students analyze discourses and structures of power, particularly as they are grounded in gender, race, sexuality, ethnicity, and nationality. The program may be tailored to meet a wide array of interests in either applied women's, gender, and sexuality studies or in advanced interdisciplinary or discipline-based scholarship.

Graduates of the program apply their knowledge and skills to careers in government and nonprofit organizations as teachers, researchers, public affairs specialists, and advocacy organization leaders. Some go on to earn doctoral or other advanced degrees.

Visit the program website (<https://womensstudies.columbian.gwu.edu/masters-program/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (<http://bulletin.gwu.edu/arts-sciences/#degreeregulationtext>).

The following requirements must be fulfilled: 36 credits, including 15 credits in required courses and 21 credits in elective courses. Successful completion of a comprehensive examination is also required.

Code	Title	Credits
Required		
WGSS 6220	Fundamentals of Feminist Theory	
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies	
WGSS 6225	Contemporary Feminist Theory	
WGSS 6299	Capstone Research Seminar	

One of the following:	
WGSS 6283	Practicum in Women's, Gender and Sexuality Studies
or WGSS 6998	Thesis Research

Electives
With the advisor's approval, students develop a four-course (12 credit) concentration. In addition, they take three elective courses (9 credits) that may or may not be related to their chosen concentration.

MINOR IN LGBT AND SEXUALITY STUDIES

REQUIREMENTS

The following requirement must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
Required		
At least two courses (6 credits) from the following:		
WGSS 2120	Introduction to Women's, Gender, and Sexuality Studies	
or WGSS 2120W	Introduction to Women's, Gender, and Sexuality Studies	
WGSS 2380	Sexuality in U.S. History	
or AMST 2380	Sexuality in U.S. History	
or HIST 2380	Sexuality in U.S. History	
ENGL 3830	Topics in Literary Theory and Cultural Studies	
or ENGL 3830W	Topics in Literary Theory and Cultural Studies	
ENGL 3980	Queer Studies	
or ENGL 3980W	Queer Studies	
Four additional courses (12 credits) chosen from the courses listed above or from the following:		
ENGL 3840	Gender and Literature	
or ENGL 3840W	Gender and Literature	
PHIL 2125	Philosophy of Race and Gender	
or PHIL 2125W	Philosophy of Race and Gender	
PSYC 2550	Psychology of Sex Differences	

SOC 2175	Sociology of Sex and Gender *
WSTU 2121	
or ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
WGSS 3410	Lesbian History and Culture
WGSS 3435	Queer Politics
WGSS 3470	Sexuality and the Law

PHIL 2125	Philosophy of Race and Gender
or PHIL 2125W	Philosophy of Race and Gender
PSC 2225	Women and Politics
PSYC 2550	Psychology of Sex Differences
SPAN 3570	Women Writers of Spain and Latin America
SOC 2175	Sociology of Sex and Gender

*Course requires prerequisites or permission of instructor.

Note: No more than two courses (6 credits) may count towards a student's major and the LGBT and sexuality studies minor.

MINOR IN WOMEN'S, GENDER, AND SEXUALITY STUDIES

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
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Required

WGSS 2120	Introduction to Women's, Gender, and Sexuality Studies	
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or WGSS 2120W	Introduction to Women's, Gender, and Sexuality Studies	
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WGSS 2125	Varieties of Feminist Theory	
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or AMST 2125	Varieties of Feminist Theory	
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Electives

Four additional courses (12 credits), which may include WGSS courses, any of the courses listed below, or courses approved by an advisor. At least three courses (9 credits) must be at the 2000-level or above.

ENGL 3560	American Realism	
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or ENGL 3560W	American Realism	
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ENGL 3730	Topics in Global Postcolonial Literature and Film	
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or ENGL 3730W	Topics in Global Postcolonial Literature and Film	
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ENGL 3840	Gender and Literature	
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or ENGL 3840W	Gender and Literature	
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SCHOOL OF BUSINESS

Dean A. Mehrotra

Associate Deans G. Jabbour, S. Kanungo, V. Perry, L. Riddle

The School of Business was founded in 1928 on the premise that business and government might become partners in promoting national prosperity and international development. Initially known as the School of Government, with degree programs that integrated business and politics at national and international levels, the School of Business has a history of professional development of individuals assuming leadership roles in society. The School has eight departments—Accountancy, Decision Sciences, Finance, Information Systems and Technology Management, International Business, Management, Marketing, and Strategic Management and Public Policy. The use of a multidisciplinary approach in educational programming helps prepare both the generalist and specialist for professional careers in today's complex organizational society.

The School of Business's undergraduate and graduate programs in business administration and accounting are accredited by AACSB International.

Mission Statement

The mission of the School of Business is to have a lasting intellectual impact by offering quality education through innovative programs that provide theoretical frameworks and real-world learning experiences; engaging in rigorous scholarship that advances knowledge in the management of organizations in the global environment; and contributing as a local, national, and global citizen. The School accomplishes this within a community built upon respect, integrity, and active engagement.

Vision

The School of Business sets itself apart as a thought leader at the nexus of the private, public, and nonprofit sectors. Recognized for advancing knowledge on the role of organizations in the global arena, its graduates possess the multidisciplinary knowledge, critical-thinking skills, and ethical standards to make a positive impact on economies and societies.

Strategic Goals

The School of Business's strategic goals address three themes; enhancing global focus, leveraging location, and creating multidisciplinary opportunities:

- The School seeks to enhance its global focus, encouraging prosperity globally by leveraging existing strengths and building on the School's significant global reputation and reach.
- The School leverages its location by developing competitive advantage and differentiation, building on the distinctive

capabilities associated with the School's unique position in the heart of the nation's capital.

- The School creates multidisciplinary opportunities, advancing innovation and the School's impact on economies and societies by being a catalyst for cross-functional programs and research that create new prospects for students and cutting-edge research.

Educational Goals

The School of Business offers a distinctive educational experience to prepare global business leaders through a portfolio of niche programs that emphasize academic rigor, learning outcomes, and teaching excellence in both delivery and content.

- **Intellectual contribution goal:** The School of Business engages in scholarly research that contributes to the body of knowledge related to improving the management and performance of organizations.
- **Service and outreach goal:** The School of Business engages as citizen-leaders in the communities of which it is a part.

REGULATIONS

Undergraduate Programs

At the undergraduate level, the GW School of Business (GWSB) offers a Bachelor of Science (BS) degree. The BS degree includes foundational knowledge for business in accounting, economics, mathematics, and statistics. Program curricula are designed to provide perspectives on ethical and global issues, the influence of political, social, legal and regulatory, environmental, and technological issues, and the impact of demographic diversity on organizations. Students must select to pursue a major in Accountancy, Business, Business Analytics, Finance, or Information Systems. GWSB students only, have the opportunity to concentrate in at least one of the following: accountancy; business analytics; business economics and public policy; finance; information systems and technology management; innovation and entrepreneurship; international business; marketing; real estate; sport, event, and hospitality management; or an individualized field of study.

Advising

The Undergraduate Advising Center (<https://business.gwu.edu/current-students/undergraduate/advising-center/>) operates under a team advising model, where students can schedule appointments with a professional advisor of their choice. Advisors empower students to take ownership of and responsibility for their educational experience. Students partner with advisors to successfully navigate their academic careers through conversations that range from understanding University and School requirements, exploring degree and

major possibilities, overcoming academic challenges, setting goals, and finding appropriate campus resources.

Students should meet with a GWSB advisor at least once a semester. To help ensure academic success, students also are encouraged to build a support system that includes professors, faculty mentors, professional advisors, tutors, and/or counselors. In addition, assistance is available through the Division of Student Affairs (<http://students.gwu.edu/>), the GW Library (<https://academiccommons.gwu.edu/>), Mental Health Services (<http://counselingcenter.gwu.edu/>), Multicultural Student Services Center (<https://mssc.gwu.edu/>), International Services Office (<http://internationalservices.gwu.edu/>), and Writing Center (<http://writingprogram.gwu.edu/writing-center/>).

Graduation Requirements

A student must achieve the following in order to graduate:

1. A minimum of 120 credits and satisfactory completion of degree requirements.
2. A minimum overall grade-point average of 2.0.
3. A minimum major grade-point average of 2.0.
4. A minimum concentration grade-point average of 2.0.
5. A minimum grade of C- is required for all GWSB major and concentration courses.

Academic Standing

Rules governing academic probation and suspension, described under University Regulations (<http://bulletin.gwu.edu/university-regulations/>), are applicable to GWSB undergraduate students. Students who do not meet these requirements are placed on academic probation and may be suspended from the University. Students on academic probation must meet with a GWSB Academic Success Coach at least three times in their academic probationary semester, failure to do so will result in a hold on the student account.

Undergraduate Policies

Concurrent Enrollment

Approval for concurrent enrollment is contingent upon a student's home school. GWSB students may only enroll concurrently at GW and another institution of higher learning during their final semester (fall or spring) at GW and only if they are a full-time student at GW. GWSB students may enroll concurrently in summer, regardless of student class year, and must speak with a GWSB academic advisor about this option.

Leave of Absence

A student is allowed two semesters of Leave of Absence (LOA) during their undergraduate enrollment. The only exception to this is for a student participating in home country military requirements.

Pass/No Pass Option

To take a course as *P* (Pass) or *NP* (No Pass) the following must be true:

1. Student has junior or senior standing with a cumulative grade-point average of 2.5 or better
2. Student has approval from both the instructor and the GWSB academic advisor prior to the end of the eighth week for full-term fall and spring courses, prior to the end of the fourth week for half term fall and spring courses, or prior to the end of the fourth week for summer courses
3. Course is applying only as an elective requirement and does not share with any other degree requirements

Under no circumstances may a student change from *P/NP* status to graded status in a course, or vice versa, after the eighth week for full term courses or after the fourth week for half term and summer courses. A transfer student may not choose this option until their second semester at GW.

Incomplete Grades

Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations (<http://bulletin.gwu.edu/university-regulations/>) in this Bulletin. Incomplete coursework must be completed no later than one calendar year from the last day of the examination period of the semester or summer session in which the indication of *I* was assigned. When work for the course is complete, the *I* will be replaced by the grade earned. An indication of *I* that is not changed within this period automatically becomes an *F*. The *I* cannot be changed by re-registering for the course at GW or by taking its equivalent elsewhere. Students are encouraged to complete an Incomplete Contract form with their instructor, which can be found at the Undergraduate Advising Center (<https://business.gwu.edu/current-students/undergraduate/advising-center/>).

Independent Study

A student may be permitted to complete an independent study with the personal direction of a regular, full-time member of the GWSB faculty. An independent study packet outlining the student's specific study plan, approved by the faculty member and their department chair, must be submitted to the Undergraduate Advising Center (<https://business.gwu.edu/current-students/undergraduate/advising-center/>) prior to beginning any independent study.

Concentration Regulations

Concentrations are restricted to GWSB students. Students who enter GWSB in Fall 2020 may pursue up to three concentrations under the Bachelor of Science degree in GWSB. Each concentration must have at least 9 credits taken in residence.

Concentration courses may not be applied toward any other degree requirements, with the exception of satisfying a WID requirement. All classes in each concentration must be completed with a minimum grade of C-.

Major Regulations

A GWSB student must declare one GWSB major and may pursue a second GWSB or non-GWSB major. A student is limited to a maximum of two majors. Each major must have at least 18 credits taken in residence. A major must include 15 unique credits that do not apply to any other requirement,

except for a WID requirement. All courses in each major must be completed with a minimum grade of C-.

Students who wish to earn a major in accountancy must declare the BS in accountancy as their first major; i.e., accountancy may not be listed as a second major. Students should reference the regulations in this Bulletin and consult a GWSB academic advisor for assistance and additional information.

Students seeking to declare a second major in business, business analytics, finance, information systems, or marketing should meet with a GWSB advisor to discuss specific requirements for the second major.

Minor Regulations

GWSB students pursuing the BS in Finance are required to complete a minor outside of the School of Business or they may pursue a second minor or a second major in lieu of the minor. Other GWSB students may elect to complete a minor outside of the School of Business.

GWSB students may pursue a maximum of two minors. Courses vary by minor and typically require a minimum of 18 credits.

If a student is completing a GWSB minor, all courses in the minor must be completed with a minimum grade of C- and at least 12 credits must be taken in residence. GWSB minor courses may not apply to any other major or concentration requirement. Students should reference this Bulletin and consult an academic advisor for assistance and additional information.

Non-GWSB Field of Study Regulations

If a student is completing a non-GWSB minor or second major, they are subject to the rules and regulations of the program's home department (i.e., curricular, minimum grade, and residency requirements). A student is responsible for working with the department advisor on their non-GWSB minor or second major.

Graduate Programs

At the graduate level, GWSB offers programs leading to the degrees of master of accountancy (MAccy), master of business administration (MBA), master of science in the field of applied finance (MS-AF), master of science in the field of business analytics (MS-BA), master of science in finance (MSF), master of human resource management (MHRM), master of science in the field of information systems technology (MS-IST), master of interdisciplinary business studies (MIBS), master of science in the field of international business (MS-IB), master in management (MiM), master of science in the field of project management (MS-PM), master of science in the field of sport management (MS-SM), master of tourism administration (MTA), and doctor of philosophy (PhD).

Entrance Requirements

To be considered for admission, applicants must hold a bachelor's degree from a regionally accredited college or university. Admission to master's programs is highly

competitive. Previous academic history, performance on the applicable entrance examination, letters of recommendation, demonstrated motivation and aptitude to undertake graduate-level work, and professional experience are all taken into consideration.

Applicants for admission to programs leading to the MAccy, MBA, MS-BA, and MSF degrees must submit scores on the Graduate Management Admission Test or the Graduate Record Examination. Test scores that are more than five years old are not accepted for admissions review.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English–Academic (PTE). Exemptions from this policy (<https://graduate.admissions.gwu.edu/international-student-application-requirements/>) may be possible.

Programs require a minimum score of 550 paper-based or 80 Internet-based on the TOEFL, or an overall band score of 6.0 on the IELTS with no individual band score below 5.5. In some instances, an interview is required of applicants.

Applicants for graduate teaching assistantships must have a minimum score of 600 paper-based or 100 Internet-based on the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; or a score of 68 on the PTE. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Transfer Within the School

Currently enrolled students wishing to transfer from one graduate degree program to another within the School must complete a new application for admission through the appropriate degree program office. Applicants for transfer are subject to requirements in effect at the time of transfer. In addition, students must submit all required credentials by posted application deadlines for the program of application. Students must be in good academic standing (3.0 grade-point average) for transfer consideration.

Readmission

A student who withdraws, is suspended, or otherwise is absent without authorization from the University for one semester or more must make formal application for readmission to the director of the student's degree program and resubmit all supporting credentials including transcripts from previous schools attended, including George Washington University, and entrance examination scores. If readmitted, the student is subject to the rules and regulations in force at the time of return. If the student has attended one or more regionally accredited colleges or universities during absence from the University, complete official transcripts must accompany the application for readmission.

The application fee is waived (<https://graduate.admissions.gwu.edu/step-step-application-process/>) for a student applying for readmission who was registered as a degree candidate at the time of last registration at the University and has not since registered at another college or university.

General Requirements

All students must complete the prescribed minimum number of credits of graduate coursework. A maximum of 6 credits of graduate coursework may be approved for transfer to the School of Business from enrollment at GW in non-degree status or from another degree-granting school of this University or another regionally accredited college or university under the following conditions: the coursework must be approved as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree; it must be at the graduate level; it must have been taken within the three years prior to acceptance into the program; and the student must have received a minimum grade of *B*.

A transcript and description of the coursework must be on file before the petition can be considered. Should transfer credit be granted, the credit for a course will count but not the grade.

Although work counted toward a bachelor's degree may not be counted toward a master's degree, a student who has completed the equivalent of a Master of Accountancy prerequisite course with a minimum grade of *B* as part of the bachelor's degree may request a waiver of that course. A minimum grade of *B* is required to waive remaining prerequisite courses on the basis of equivalent graduate-level courses completed at GW or another AACSB-accredited college or university prior to admission to the program. In addition, a student who has completed the equivalent of a required core course with a minimum grade of *B* as part of the bachelor's degree at GW may request a waiver of that course. If waived, the required core course must be substituted with a graduate-level course with the same course prefix. All courses presented for waiver consideration must have been taken within five years prior to the first semester of enrollment in the graduate program. Students should contact their degree

program director for specific waiver criteria and deadlines for requesting waivers.

MBA students may register for a maximum of 18 credits each semester. All work for a master's degree must be completed within five years.

Students who expect to continue studies for a doctoral degree after receiving the master's degree should consult with the advisor to plan their program of study.

No credit is granted for work done in absentia or without formal instruction, except for supervised field experience, independent study, and the thesis, which may be completed in absentia with the permission of the department, designated faculty advisor, or committee concerned.

Independent Study Plan

A graduate student of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of an instructor, in accordance with the rules of the appropriate department or degree program. A petition outlining the student's specific study plan must be submitted to the student's degree program director prior to beginning any independent study. The student may petition to complete a maximum of two independent studies in two separate semesters.

Students from Other Schools Within the University

Degree candidates from other schools of the University cannot register for more than a total 12 credits in GWSB courses.

Academic Standing

A graduate student who is not on academic probation or suspension for poor scholarship is considered to be in good standing. The University's general scholarship requirements, including information on grades and computing the grade-point average, appear under University Regulations (p. 27) in this Bulletin. A minimum grade-point average of 3.0 must be maintained and is required for award of a graduate degree. All graduate courses and undergraduate courses taken for graduate credit after matriculation as a degree candidate (except those audited or taken for the grade of *CR*) will be used in the calculation of the grade-point average.

Academic Probation

Students whose GPA falls below 3.0 at any point after completing 9 credits are placed on academic probation.

While on academic probation, a student:

1. Must achieve at least a 3.0 (term) GPA in each subsequent semester.
2. Must be continuously enrolled or on an approved Leave of Absence or Continuous Enrollment.
3. Must not receive a grade of *F* (Failure) in any course.

4. Must not receive the designation Incomplete (*I*) in any course.

A student who fails to meet the above four conditions will be suspended from their program.

A student may request reinstatement from a suspension by completing and submitting the Request for Reinstatement form to their academic advisor. The request should offer a clear explanation of changed circumstances and how the student plans to raise their cumulative GPA to 3.0. The request must be submitted within one semester of the suspension. Thus, a student suspended in the fall semester must request reinstatement no later than the last day of the spring semester immediately following their suspension and a student suspended in the spring semester or during a summer session must request reinstatement no later than the last day of the fall semester immediately following their suspension.

In order to achieve the 3.0 minimum cumulative GPA, the student will be allowed to take up to 6 credits of graduate-level coursework beyond the program requirement.

A student who is below a 3.0 cumulative GPA and does not have enough credits remaining in their program to achieve the minimum GPA—including the additional 6 credits referenced above—will be dismissed. There is no appeal possible following a dismissal.

Grades of F

A master's degree candidate who receives a grade of *F* in a core, required, or elective course must repeat the course and earn a passing grade on the next attempt. Students should refer to the requirements of their degree program for additional minimum grade requirements. Once a grade of *F* is earned in a core, required, or elective course, it remains a part of the student's permanent record and is calculated into the grade-point average.

Incompletes

Conditions under which the symbol *I* (Incomplete) may be assigned and changed are described under University Regulations (p. 27). The symbol *I* must be changed by a date agreed on by the instructor and the student but usually no later than the last day of the examination period within one calendar year for the fall or spring semester or summer session in which the symbol *I* is assigned. An Incomplete that is not changed within this period automatically becomes an *F*. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the director of the student's degree program for additional time in which to complete the work of the course. Such petitions should be submitted within the same period. The symbol of *I* cannot be changed by re-registering for the course here or by taking its equivalent elsewhere. Upon submission of the assigned grade, the *I* is removed from the transcript.

Withdrawing From a Course

The School of Business requires that students requesting to withdraw from a course after the eighth week of classes (or after the fourth week for modules) must present a petition to the Dean and receive written permission. If approved, the symbol *W* (Authorized Withdrawal) will appear on the transcript. Tuition will not be refunded.

Thesis

Students contemplating doctoral study are strongly encouraged to include the thesis as an elective in their master's program. The thesis subject should be selected as early as possible to permit effective integration with the coursework. The subject must be approved by the professor in charge of the student's field. The thesis in its final form must have the approval of the professor in charge. All theses must be submitted electronically and meet the formatting and other requirements set forth on line at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds/>)

Payment of tuition for the thesis entitles the candidate, during the semesters in which registered for thesis seminar and/or thesis research, to the advice and direction of the member of the faculty under whom the thesis is to be written. In case a thesis is unfinished, additional time is granted. The student must, however, be enrolled continuously in the program. If the preparation of the thesis extends more than three semesters beyond the date of registration for thesis research, the student must register for the total required thesis credits again and pay additional tuition.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in accountancy (p. 551)
- Bachelor of Science with a major in business (p. 553)
 - concentration in accountancy (p. 554)
 - concentration in business analytics (p. 555)
 - concentration in business economics and public policy (p. 556)
 - concentration in finance (p. 556)
 - concentration in information systems and technology management (p. 557)
 - concentration in innovation and entrepreneurship (p. 558)
 - concentration in international business (p. 558)
 - concentration in marketing strategy and analytics (p. 559)
 - concentration in real estate (p. 560)
 - concentration in sport, event, and hospitality management (p. 560)
 - individualized concentration (p. 561)
- Bachelor of Science with a major in business analytics (STEM) (p. 561)

- Bachelor of Science with a major in finance (p. 563)
- Bachelor of Science with a major in information systems (STEM) (p. 564)
- Bachelor of Science with a major in marketing (p. 566)

Combined programs

- Dual Bachelor of science with a major in accountancy and Master of Accountancy (<http://bulletin.gwu.edu/business/accountancy/dual-ba-ma/>)
- Dual Bachelor of Science with a major in finance and Master of Science in Finance (p. 567)

Minors

- Minor in accountancy (p. 568)
- Minor in business (p. 568)
- Minor in business analytics (p. 569)
- Minor in creativity, innovation, and entrepreneurship (p. 569)
- Minor in management and leadership (p. 570)
- Minor in marketing (p. 571)
- Minor in real estate (p. 571)

MASTER'S

Master's programs

- Master in Management (p. 572)
- Master of Accountancy (p. 573)
- Master of Human Resource Management (p. 578)
- Master of Interdisciplinary Business Studies (p. 579)
- Master of Interdisciplinary Business Studies (STEM) (p. 579)
- Master of Science in Finance (p. 580)
- Master of Science in the field of applied finance (p. 580)
- Master of Science in the field of business analytics (p. 581)
- Master of Science in the field of information systems technology (p. 581)
- Master of Science in the field of international business (p. 582)
- Master of Science in the field of project management (p. 583)
- Master of Science in the field of sport management (p. 583)
- Master of Tourism Administration (p. 584)

Master of Business Administration program

MBA offered in the following formats:

- Global MBA (<http://bulletin.gwu.edu/business/global-business-administration-ma/#requirementstext>)
- Accelerated MBA (p. 574)
- Professional MBA (p. 574)

- Online MBA (p. 574)
- Healthcare MBA (p. 574)

STEM MBA offered in the following formats and concentration:

- Global MBA, STEM (p. 575)
- STEM MBA, Accelerated (p. 575)
- STEM MBA, Security Technology Transition Concentration (p. 577)

Combined programs

- Dual Master of Business Administration and Master of Arts in Education and Human Development in the field of Higher Education Administration (p. 585)
- Dual Master of Business Administration and Master of Human Resource Management (p. 586)
- Dual Master of Business Administration and Master of Science in the field of applied finance (p. 586)
- Dual Master of Business Administration and Master of Science in the field of business analytics (p. 586)
- Dual Master of Business Administration and Master of Science in Finance (p. 586)
- Dual Master of Business Administration and Master of Science in the field of information systems technology (p. 586)
- Dual Master of Business Administration and Master of Science in the field of project management (p. 586)
- Dual Master of Business Administration and Master of Science in the field of sport management (p. 586)
- Dual Master of Business Administration and Master of Tourism Administration (p. 586)
- Joint Master of Arts in the field of international affairs and Master of Business Administration (p. 587)
- Joint Master of Business Administration and Juris Doctor (p. 587)

DOCTORAL

Doctoral program

- Doctor of Philosophy in the field of business administration (p. 587)

CERTIFICATES

Graduate Certificate Programs

- Accountancy (p. 588)
- Analytics for managers (p. 589)
- Artificial intelligence (p. 589)
- Business analytics (p. 590)
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- Cloud, applications, and information technology (p. 591)
- Corporate responsibility (p. 591)
- Creativity, innovation, and entrepreneurship (p. 592)

- Digital marketing and analytics (p. 592)
- Financial management (p. 593)
- Global management (p. 593)
- Governmental and nonprofit accounting (p. 593)
- Hospitality management (p. 594)
- Human capital (p. 594)
- Investments and portfolio management (p. 595)
- Management leadership (p. 595)
- Management of technology and innovation (p. 595)
- Managing the digital organization (p. 596)
- Marketing and brand management (p. 596)
- Project management (p. 597)
- Quantitative business foundations (p. 597)
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- Strategic management (p. 598)
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- Walkable urban real estate development (p. 599)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Accountancy (ACCY) (p. 1398)
- Business Administration (BADM) (p. 1443)
- Decision Sciences (DNSC) (p. 1532)
- Government Contracts (GCON) (p. 1613)
- Finance (FINA) (p. 1593)
- Information Systems and Technology Management (ISTM) (p. 1653)
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- Management (MGT) (p. 1679)
- Marketing (MKTG) (p. 1682)
- Master of Business Administration (MBAD) (p. 1684)
- Strategic Management and Public Policy (SMPP) (p. 1847)
- Tourism Studies (TSTD) (p. 1850)

ACCOUNTANCY

The bachelor of science with a major in accountancy and master of accountancy degree programs prepare students to make significant contributions to both private and public organizations in the global economy. In addition to a rigorous

program of study, students gain practical experience through internships and the opportunity to study the stock market in a classroom outfitted like a Wall Street trading venue. The faculty coordinates access to executives in high-profile firms and agencies and government officials to help students further their exposure to, and training in, the discipline.

Visit the department website (<https://business.gwu.edu/academics/departments/department-of-accountancy/>) for more information.

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in accountancy (p. 551)
- Bachelor of Science with a major in business, accountancy concentration (p. 554)

Combined program

- Dual Bachelor of Science with a major in accountancy and Master of Accountancy (<http://bulletin.gwu.edu/business/accountancy/dual-ba-ma/>)

Minor

- Minor in accountancy (p. 568)

GRADUATE

Master's program

- Master of Accountancy (p. 573)

CERTIFICATES

Graduate Certificate

- Graduate Certificate in accountancy (p. 588)
- Graduate Certificate in government and nonprofit accounting (p. 593)

FACULTY

Professors A. Gore, S.H. Kang, S. Kulp, C. Linsley (*Teaching*), A. Lusardi

Associate Professors C.L. Jones (*Teaching*), L.C. Moersen, R.L. Tarpley (*Chair*), Y. Xue, Y. Zhang

Assistant Professors R. Basu, J. Potepa, O. Rozenbaum, W. Stromsem (*Teaching*), E. Sul, K. Welch, J. Zha Giedt, Y. Zou

Teaching Instructors S. Lancaster

COURSES

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACCY 1099. Variable Topics. 1-36 Credits.

ACCY 2001. Introduction to Financial Accounting. 3 Credits.

Fundamental concepts underlying financial statements and the informed use of accounting information; analysis and recording of business transactions; preparation and understanding of financial statements; measurement of the profitability and financial position of a business.

ACCY 2002. Introductory Managerial Accounting. 3 Credits.

The use of accounting information to plan and control the activities of a business. Several widely used methods of determining the cost of business activities for use in making business decisions. Prerequisite: ACCY 2001.

ACCY 3101. Intermediate Accounting I. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Prerequisite: ACCY 2001.

ACCY 3102. Intermediate Accounting II. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements; accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, accounting changes, statements of cash flows, financial statement analysis, and disclosure. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Prerequisites: ACCY 3101 or permission of instructor.

ACCY 3106. Financial Statement Analysis. 3 Credits.

Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors. Students cannot earn credit for both this course and ACCY 4801. Prerequisite: ACCY 2002. Credit cannot be earned for this course and ACCY 4801.

ACCY 3401. Federal Income Tax: Individuals. 3 Credits.

Taxation of individuals, including tax planning strategies as well as compliance requirements. Introduction to tax principals and to tax planning for compensation, investment and business income of individuals, and major life events. Credit cannot be earned for this course and ACCY 6401.

ACCY 3403. Advanced Tax. 3 Credits.

Taxation of all major types of businesses with an emphasis on strategic planning opportunities to improve business profits as well as compliance requirements; principals of business taxation and basic tax rules for businesses from sole proprietorships to multinational corporations. Prerequisites: ACCY 2001 and ACCY 3401.

ACCY 3601. Business Law: Contracts, Torts, and Property. 3 Credits.

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code.

ACCY 4107. Advanced Accounting. 3 Credits.

Accounting for corporate combinations, foreign currency financial statements, and derivative financial instruments. Governmental and not-for-profit accounting. Prerequisites: ACCY 3101 and ACCY 3102.

ACCY 4301. Auditing. 3 Credits.

A study of generally accepted auditing standards and accepted professional auditing practices and procedures, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4501. Accounting Systems. 3 Credits.

Introduction to the design and operation of accounting systems and data management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4601. Business Law: Enterprise Organization. 3 Credits.

Legal aspects of organizing, financing, and operating an enterprise, including agency, partnerships, corporations, securities regulation, insurance, and secured credit financing. Credit cannot be earned for this course and ACCY 6602.

ACCY 4801. Financial Accounting Capstone. 3 Credits.

Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Students cannot earn credit for both this course and ACCY 3106. Restricted to seniors. Credit cannot be earned for this course and ACCY 3106.

ACCY 4900. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more information.

ACCY 4995. Independent Study. 3 Credits.

Assigned topics. Admission by permission of the department chair.

ACCY 5099. Variable Topics. 1-99 Credits.**ACCY 6101. Financial Accounting. 3 Credits.**

Basic concepts and methods used in financial reporting to understand content, context, and related processes. Income statement, balance sheet, and statement of cash flows. Detailed accounting procedures, calculations, and choices. Same As: IAFF 6191, MBAD 6211.

ACCY 6104. Intermediate Accounting I. 3 Credits.

Accounting principles and concepts for financial accounting and reporting. Emphasis on the preparation of general-purpose financial statements. Restricted to GWSB graduate degree students. Prerequisites: ACCY 6101 or MBAD 6211.

ACCY 6105. Intermediate Accounting II. 3 Credits.

Revenue recognition, employee compensation and pension plans, income tax expense, and earnings per share. Prerequisites: ACCY 6101 and ACCY 6104. Same As: ACCY 3102.

ACCY 6106. Financial Statement Analysis. 3 Credits.

Analysis and interpretation of financial statements for managers, stockholders, creditors, and financial analysts. Prerequisites: ACCY 6101 or MBAD 6211. Credit cannot be earned for this course and ACCY 3106.

ACCY 6110. International Reporting and Control. 1.5 Credit.

International comparisons of forces that shape financial management, such as corporate governance mechanisms, tax policies, economic development, and privatization. Same as IBUS 6308.

ACCY 6112. International Financial Reporting Standards. 1.5 Credit.

Financial reporting standards that are used throughout most of the world other than the United States. Comparisons of these standards with those of the United States. Prerequisites: ACCY 6101 and MBAD 6211. (Same as IBUS 6310).

ACCY 6113. Financial Decision Making by Consumers and Professionals. 3 Credits.

Tools and applications necessary to evaluate the wide range of financial decisions individuals, both consumers and professionals, make throughout their lifetime. Also intended for those interested in becoming financial advisors and/or CPAs.

ACCY 6201. Accounting for Internal Decision Making. 1.5 Credit.

Effective use of internal generation, communication and interpretation of information for both operational and strategic decision-making purposes. Restricted to students in the MBA program. Prerequisites: MBAD 6211. Same As: MBAD 6213.

ACCY 6202. Advanced Strategic Cost Management. 1.5 Credit.

Advanced topics in the application of concepts of control and decision analysis to optimize the financial management of organizations. Prerequisites: ACCY 6201 or MBAD 6213.

ACCY 6203. Controls, Alignment, and the Organization. 3 Credits.

The role accounting plays in planning and control issues within organizations. High-level view of planning and control, with a focus on the need for controls to deal with the agency problems. Prerequisites: ACCY 2002 or equivalent.

ACCY 6204. Managerial Accounting for Government and Nonprofits. 1.5 Credit.

Builds on basic understanding of managerial accounting concepts and examines issues in the government and nonprofit realm; leveraging core concepts to analyze and report on real world scenarios. Prerequisite: None.

ACCY 6301. Contemporary Auditing Theory. 3 Credits.

Survey of contemporary auditing as practiced by internal and external auditors; generally accepted auditing standards and government auditing standards; planning, directing, and reporting on various audits. Corequisite: ACCY 6104. Prerequisites: ACCY 6101 or MBAD 6211. Credit cannot be earned for this course and ACCY 4301.

ACCY 6302. Fraud Examination and Forensic Accounting. 3 Credits.

Financial statement fraud, misappropriation of assets, and methods of deterrence, prevention, detection, and investigation. Prerequisites: ACCY 6101 and MBAD 6211. Recommended background: One auditing course.

ACCY 6401. Federal Income Taxation. 3 Credits.

Taxation of individuals, including tax planning strategies as well as compliance requirements; tax principals and to tax planning for compensation, investment and business income of individuals, and major life events. Credit cannot be earned for this course and ACCY 3401.

ACCY 6402. Federal Income Taxation of Partnerships. 3 Credits.

Tax planning for business income from partnerships, including formation and operation, distribution to partners, liquidation, transfer of partnership interests, and financial accounting for partnership transactions. S corporations also considered. Prerequisite: ACCY 6401.

ACCY 6403. Federal Income Taxation of Corporations. 3 Credits.

Federal income taxation of C corporations, covering formation, capital structure, nonliquidating distributions, complete liquidations, corporate accumulations, and the alternative minimum tax. Credit cannot be earned for this course and ACCY 3403.

ACCY 6404. Taxation of Financial Instruments. 3 Credits.

Overview of the economics and taxation of financial instruments; transactions in stock, debt instruments, commodities, options, short sales, wash sales, straddles, futures, foreign currency transactions, swaps, hedging, mark to market tax accounting, and time value of money. An equivalent course may be substituted for prerequisite ACCY 6101. Prerequisites: ACCY 6101 and ACCY 6401.

ACCY 6500. Technology and Analytics Applications. 1 Credit.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to business administration students.

ACCY 6501. Accounting Information Systems and Electronic Data Processing. 3 Credits.

Development and application of accounting system theory, including analysis, design, control concepts, and implementation; integration of electronic data processing, accounting systems, and management information systems. Prerequisites: ACCY 6101 or MBAD 6211. Credit cannot be earned for this course and ACCY 4501.

ACCY 6601. Business Law: Contracts, Torts, and Property. 3 Credits.

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code. Credit cannot be earned for this course and ACCY 3601.

ACCY 6602. Business Law: Enterprise Organization. 3 Credits.

Legal aspects of organizing, financing, and operating an enterprise, including agency, partnerships, corporations, securities regulation, insurance, and secured credit financing. Credit cannot be earned for this course and ACCY 4601.

ACCY 6701. Government Accounting. 3 Credits.

Budgeting, accounting, financial reporting, and auditing required of local, state, and federal governments; financial practices and requirements applicable to organizations receiving government financial assistance and those subject to government audits. Prerequisites: ACCY 6101 or MBAD 6211.

ACCY 6705. Nonprofit Accounting. 1.5 Credit.

Development and use of financial information as it relates to not-for-profit entities. Identifying and applying appropriate accounting and reporting standards, preparing financial statements, use of non-financial performance measures, auditing. Prerequisites: ACCY 3101.

ACCY 6801. Corporate Governance and Ethics. 3 Credits.

The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as SMPP 6215.

ACCY 6900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Same As: SMPP 6290.

ACCY 6998. Directed Readings and Research. 1-3 Credits.

ACCY 8001. Doctoral Seminar. 1-12 Credits.

Reasoning and research in technical areas of accounting; theoretical issues and their application to practice; conceptual themes in professional literature; comparative accounting research analyses.

ACCY 8009. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

ACCY 8999. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

DECISION SCIENCES

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in business analytics (STEM) (p. 561)
- Bachelor of Science with a major in business, business analytics concentration (p. 555)

Minor Program

- Minor in business analytics (p. 569)

GRADUATE

Master's programs

- Master of Science in the field of business analytics (p. 581)
- Master of Science in the field of project management (p. 583)

Combined programs

- Dual Master of Business Administration and Master of Science in the field of business analytics (p. 586)
- Dual Master of Business Administration and Master of Science in the field of project management (p. 586)

CERTIFICATES

Certificate programs

- Graduate Certificate in analytics for managers (p. 589)
- Graduate Certificate in business analytics (p. 590)
- Graduate Certificate in project management (p. 597)

FACULTY

Professors E.H. Forman, M.A. Lejeune, T.A. Mazzuchi, R. Soyer, M.M. Tarimcilar (Chair), J.R. van Dorp, P.W. Wirtz

Associate Professors P. Delquie (*Teaching*), S. Jain (*Teaching*), A. Jarrah, S. Kanungo, J. S. Kettunen, H. Khamooshi (*Teaching*), Y.H. Kwak, S.Y. Prasad

Assistant Professors M.E. Matta (*Teaching*), J. Qi

COURSES

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DNSC 1001. Business Analytics I: Statistics for Descriptive and Predictive Analytics. 3 Credits.

Foundations of probability and statistical methodologies used in business analytics; probability laws, probability models, univariate and bivariate models and their applications, sampling, hypothesis testing, contingency table analysis, simple and multiple linear regression models. Credit cannot be earned for this course and STAT 1051, STAT 1053, STAT 1111.

DNSC 1051. Introduction to Business Analytics. 3 Credits.

Business analytics fundamentals; the information it provides, how and when it is used, and how it affects decision making. Uncertainty; using data of all sizes; making decisions with incomplete data. Simulation of real-life scenarios to support optimal decision making. Students must have achieved a minimum score of 61 on the ALEKS placement examination in order to enroll.

DNSC 1099. Variable Topics. 1-36 Credits.

DNSC 2001. Business Analytics II: Predictive and Prescriptive Analytics. 3 Credits.

Builds on the foundations of probability and statistical methodologies covered in DNSC 1001. Categorical data analysis; design of experiments and analysis of variants (ANOVA); multiple regression; parameter estimation and testing; residual analysis; indicator variables; model selection procedures; logistic regression; and applications of optimization models. Prerequisites: DNSC 1001 or STAT 1051 or STAT 1053 or STAT 1111. Credit cannot be earned for this course and STAT 2112.

DNSC 3288. Big Data, Predictive Analytics, and Ethics. 3 Credits.

How data is collected, stored, analyzed, and acted upon. Safeguards in place (or not in place) to protect individual freedoms. Ethical quandaries posed by the advent of recent technological advances. Same As: DNSC 3288W.

DNSC 3288W. Big Data, Predictive Analytics, and Ethics. 3 Credits.

How data is collected, stored, analyzed, and acted upon. Safeguards in place (or not in place) to protect individual freedoms. Ethical quandaries posed by the advent of recent technological advances. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: DNSC 3288.

DNSC 3401. Introduction to Business Analytics. 3 Credits.

Fundamentals of business analytics: what information it provides, how and when that information is used, and how it affects decision making. Working with uncertainty; understanding the dynamic nature of decision making; using data, regardless of its size; and making decisions with incomplete data. The simulation of real-life scenarios to support optimal decision making. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111.

DNSC 3402. Data Mining. 3 Credits.

The practice of exploring and discovering actionable business intelligence from large amounts of data; concepts, methods, and tools; supervised and unsupervised data mining techniques for discovering relationships in large data sets and building predictive models; regression models, decision trees, neural networks, clustering, and association analysis. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111; Math 1231 or Math 1252.

DNSC 3403. Decision Models. 3 Credits.

Designing and developing decision models using Microsoft Excel and specialized decision support add-ins; interpreting the models' outputs. Equivalent courses may be substituted for the prerequisites. Prerequisites: DNSC 2001 or STAT 2112 or STAT 2118 or ECON 2123 or STAT 2123.

DNSC 4211. Programming for Analytics. 3 Credits.

Handling and preparing data for business analytics; descriptive, predictive and prescriptive analytics; creating data stories in collaboration with and for end users and information consumers; scripting, publishing, and collaborating for data products. Prerequisites: DNSC 1001 and DNSC 2001. Recommended background: Some prior knowledge of a programming. Credit cannot be earned for this course and DNSC 6211.

DNSC 4219. Forecasting Analytics. 3 Credits.

Predictive analysis and use of black-box models for time-series forecasting. Emphasis on identifying hidden patterns and structures in univariate and multivariate time-series data and using these for forecasting. Prerequisites: DNSC 4211; and DNSC 2001 or ECON 2123 or STAT 2112 or STAT 2118 or STAT 2123; and MATH 1221 or MATH 1231 or MATH 1252.

DNSC 4233. Social Network Analytics. 3 Credits.

Introduction to the theories, methods, and procedures of network analysis with emphasis on applications to organizations and management.

DNSC 4279. Data Mining. 3 Credits.

The practice of exploring and discovering actionable business intelligence from large amounts of data. Prerequisites: DNSC 2001 or ECON 2123 or STAT 2112 or STAT 2118 or STAT 2123; and DNSC 4211; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and DNSC 6279.

DNSC 4280. Machine Learning. 3 Credits.

Machine learning techniques. Topics include supervised learning (classification, regression), unsupervised learning (clustering, dimensionality reduction) and techniques associated with both types of learning. Restricted to students in the BS in business analytics program. Prerequisites: DNSC 4279.

DNSC 4281. Revenue Management Analytics. 3 Credits.

Methodologies used in pricing and revenue management. Tactical optimization of pricing and capacity allocation decisions to ensure the right prices are in place for all products, to all customers, through all channels, at all times. Prerequisites: DNSC 3403. Recommended background: A basic understanding of probability, probability distributions, expected value calculations, and basic optimization, and some knowledge of spreadsheet modeling.

DNSC 4282. Supply Chain Analytics. 3 Credits.

Mathematical modeling techniques used to design, analyze, execute, and integrate supply chains.

DNSC 4289. Capstone in Business Analytics. 3 Credits.

Designed to apply the knowledge gained in the classroom to real world problems by working in teams on an industry project. Students develop significant expertise in a set of analytical tools. Prior completion of all courses in the major is required. Restricted to students in the BS in business analytics program.

DNSC 4403. Decision Models. 3 Credits.

Design and development of decision models using spreadsheet software with decision support add-ins; interpreting decision model outputs; commonly used classes of models; decision analysis spanning business disciplines. Restricted to juniors and seniors.

DNSC 4404. Essentials of Project Management. 3 Credits.

Theoretical foundations of and practical insights into project management; the role of project management in contemporary business and government organizations; the link between projects and strategy. Project design and development.

DNSC 4900. Special Topics. 3 Credits.**DNSC 4995. Independent Study. 6 Credits.**

Students undertake research in an area of particular interest under the direction of a School of Business faculty member.

DNSC 5099. Variable Topics. 1-99 Credits.**DNSC 6201. Introduction to Business Analytics. 1.5 Credit.**

An introduction to business analytic concepts, methods, and tools with concrete examples from industry applications; Big Data and the opportunities it has created for businesses to store, organize, and analyze vast amounts of information. Completion of a basic course in statistics prior to enrollment is recommended.

DNSC 6202. Statistics for Managers. 3 Credits.

Mathematical and statistical concepts employed in the solution of managerial problems. Applications of functions, elements of calculus, and linear algebra. Introduction to probability, frequency distributions, statistical inference, and regression and correlation. Credit cannot be earned for this course and MBAD 6221, MBAD 6222, MBAD 6224.

DNSC 6203. Statistics for Analytics I. 1.5 Credit.

Foundations of statistical methodologies in business analytics; statistical inference and probability models; estimation, hypothesis testing, contingency table analysis, analysis of regression models; logit and probit analysis. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission. Corequisites: DNSC 6206.

DNSC 6206. Stochastic Foundation: Probability Models. 1.5 Credit.

Introduces the foundations of probability, along with the commonly used probability models (binomial, normal, and poisson) in predictive analytics. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission.

DNSC 6207. Applied Probability Models. 1.5 Credit.**DNSC 6208. Computational Optimization. 3 Credits.****DNSC 6209. Forecasting for Analytics. 1.5 Credit.**

Predictive analysis and use of blackbox models for time-series forecasting. Identifying hidden patterns and structures in the data and exploiting these for forecasting. Prerequisites: DNSC 6202 or MBAD 6224.

DNSC 6210. Decision and Risk Analytics. 1.5 Credit.

Concepts, methods, and practical tools to analyze managerial decisions involving risk and uncertainty. Restricted to students in the master of science in business analytics degree program or with program approval. Prerequisites: DNSC 6206 and DNSC 6203.

DNSC 6211. Programming for Analytics. 3 Credits.

Accessing, preparation, handling, and processing data that differ in variety, volume, and velocity. Development of a theoretical grounding in emerging paradigms like schema-less data. Python and R typically used. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission. Credit cannot be earned for this course and DNSC 4211.

DNSC 6212. Optimization Methods and Applications. 3 Credits.

Linear, network, integer, and nonlinear models and their fundamental underlying analytic concepts and solution methods; model development, formulation, solution and interpretation of results using powerful commercial software; intuitive understanding of solution methods and their underpinning theoretical paradigms for effective use of optimization models. Restricted to students in the master of science in business analytics degree program or with the permission of the instructor.

DNSC 6213. Statistics for Analytics II. 1.5 Credit.

Statistical methodologies for business analytics in real world scenarios; introduction of high-level analytical techniques such as hierarchical linear modeling and mixed-effects modeling. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with permission of the department. Prerequisite: DNSC 6203.

DNSC 6214. Pricing and Revenue Management. 1.5 Credit.

Methodologies for addressing pricing issues; tactical optimization of pricing and capacity allocation decisions; quantitative models of consumer behavior and constrained optimization. For the prerequisites, DNSC 6206 must be taken before DNSC 6203. Prerequisites: DNSC 6206 and DNSC 6203; and DNSC 6202 or MBAD 6224.

DNSC 6215. Social Network Analytics. 1.5 Credit.

Concepts, methods, and applications of network science; analyzing real networks and related phenomena such as organizational analysis, social power, fraud detection, and disease propagation. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224 (note that DNSC 6206 must be taken before DNSC 6203). Recommended background: Prior exposure to Python and R scripts.

DNSC 6216. Business Analytics Skills Workshops. 1.5 Credit.

Practical workshop designed to develop the student's application-related skills for the analytics realm. Programming skills, computing environments (e.g. cloud or enterprise computing), and data ethics and security. Restricted to students in the master of science in business analytics degree program.

DNSC 6217. Business Analytics Practicum. 1.5 Credit.

Working in small teams, students apply their analytics skills to projects sponsored by public or private institutions. Each team is advised by a faculty member, and the practicum sponsor designates a mentor to provide guidance to the team for the duration of the project. Prerequisite: MSBA degree candidacy.

DNSC 6219. Time Series Forecasting for Analytics. 3 Credits.

Predictive analysis and blackbox models for time series and econometric forecasting. If chosen for the prerequisite, DNSC 6206 must be taken before DNSC 6203. Restricted to students in the master of science in business analytics degree program or with the permission of the department. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224.

DNSC 6225. Business Process Simulation. 1.5 Credit.

Approaches and issues involved in business process design; basic tools used to analyze and improve processes; process modelings using a powerful discrete-event simulation tool. If DNSC 6206 and DNSC 6203 are taken as prerequisites, they must be completed in that order. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202 or MBAD 6224.

DNSC 6231. Consulting for Analytics. 1.5 Credit.

Practical tools used by analysts and managing analysts, within an organization or for an external consulting-focused organization, for integrating analytical skills into problem solving. Prerequisites: DNSC 6203, DNSC 6206, and DNSC 6211 or permission of the instructor.

DNSC 6233. Social Network Analysis for Managers. 3 Credits.

Concepts, theories, and applications associated with network data; concepts at micro, meso, and macro levels, including connectedness, homophily, transitivity, and clustering. Power, roles, social position, and social capital.

DNSC 6234. Procurement and Contracting. 3 Credits.

Principles and concepts essential to effecting large procurement programs. Planning, sourcing, and contractual design for diverse acquisitions. Emphasis on federal government policy with comparison of buying at other governmental levels and the private sector.

DNSC 6235. Communication Strategies in Project Management. 3 Credits.

Communication leadership and management practices that facilitate successful project management; strategies and practices related to communication, change management, and performance reporting.

DNSC 6236. Project Quality Management. 3 Credits.

Current theories and practices regarding quality management as applied to manufacturing and the service industry, the application to project systems, and the application to individual projects. Prerequisite: None.

DNSC 6237. International Project Management. 1.5 Credit.

Augments the basics of project management with theory, practice, and methodology related to global project environment; practical investigation of the cultural environment in the context of managing global projects.

DNSC 6238. Project Management and Organizational Context. 1.5 Credit.

Organizational influences on project management practices; definition and classification of organizations; organizational culture; organizational strategy; project management practices that take place during initiation, planning, execution, monitoring and controlling, and closing processes.

DNSC 6239. Project Governance. 1.5 Credit.

An overview of project governance; models, practices and case studies.

DNSC 6247. Organization, Management, and Leadership. 3 Credits.

Fundamentals of human resource management for project managers. Tools and techniques for success in managing and leading people in a project environment. Prerequisites: None.

DNSC 6250. Project Management Finance. 3 Credits.

DNSC 6251. Optimization Models for Decision Making. 1.5 Credit.

Optimization modeling techniques, including linear programming, sensitivity analysis, networks, integer programming, multiple objective optimization, and nonlinear and evolutionary programming. Prerequisites: DNSC 6202 or MBAD 6224.

DNSC 6252. Risk Analysis for Decision Making. 1.5 Credit.

Probabilistic modeling techniques with spreadsheet implementation. The concept of risk and methods for its analysis; risk attitudes, risk measures, decision trees, simulation models, game theory, real options approach, and risk communication. Recommended background: Working knowledge of basic statistics.

DNSC 6254. Risk Management. 1.5 Credit.

Basic principles of risk management practices. Developing a risk management plan, including identifying, analyzing, mitigating, and monitoring projects risks. Prerequisites: DNSC 6202 or MBAD 6224; or MBAD 6221 and MBAD 6222.

DNSC 6257. Cost Estimation and Control. 1.5 Credit.

Methods of developing project estimates during the planning stages and updating the estimates throughout the life of the project; monitoring, reporting, controlling, and managing project cost; relationships between project cost and other parameters, including scope, time, quality, reliability and procurement risk. Prerequisites: DNSC 6202 and DNSC 6261.

DNSC 6258. Executive Decision Making. 1.5 Credit.

Concepts and methods for making complex decisions in business and government. Identifying objectives and alternatives, setting priorities, and making collaborative decisions.

DNSC 6259. Project Portfolio Management. 1.5 Credit.

Management of an organization's portfolio of projects for the overall success of the enterprise; alignment of projects with an organization's strategy and goals and consistency with values and culture. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6261. Introduction to Project and Program Management. 3 Credits.

Comprehensive overview of project and program management. Culture, principles, and basic techniques of project management.

DNSC 6262. Directed Computational Project Management. 3 Credits.

Practical examination of project management concepts by quantitative application using various software tools. Research in real cost data to support project calculations. Prerequisite: DNSC 6254, DNSC 6257, DNSC 6261, DNSC 6267.

DNSC 6263. Managing External Projects. 3 Credits.

Fundamentals of contract management from a project manager's perspective. The outsourcing process, associated project strategies, and legal elements. Acquisition planning, vendor selection, contract formulation, and performance control.

DNSC 6267. Planning and Scheduling. 3 Credits.

Integrated planning, scheduling, and control systems for planning the scope of a project; optimizing time, cost, and resources; and monitoring and controlling schedules, including those for delayed projects. Prerequisites: DNSC 6261; and DNSC 6202 or MBAD 6221; and MBAD 6222 or MBAD 6224.

DNSC 6269. Project Management Application. 3 Credits.

Students are expected to demonstrate integration of the knowledge accumulated in their study plan and apply integrated knowledge and experience to best practices, a project case history, and a handbook. Prerequisites: MSPM candidacy or permission of instructor/advisor.

DNSC 6274. Statistical Modeling and Analysis. 3 Credits.

The process of specifying, analyzing, and testing models of human and systemic behavior. Formalization of models; statistical test comparison and selection; computer implementation of univariate, bivariate, and multivariate tests. General linear model: linear regression, analysis of variance, and analysis of covariance. Prerequisite: MBAD 6221 and MBAD 6222 .

DNSC 6275. Advanced Statistical Modeling and Analysis. 3 Credits.

Advanced topics associated with the general linear model. Testing for and remediation of assumption violations. Detection of outliers, influential observations, and multicollinearity. Alternative design strategies in the analysis of variance; latent growth analysis; hierarchical linear modeling; testing for interactions and parallelism. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6276. Exploratory and Multivariate Data Analysis. 3 Credits.

Methods for exploratory and multivariate data analysis. Application and comparison of advanced multivariate analytical procedures. Multivariate and discriminant analysis, LISREL analysis, and canonical correlation. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6277. Applied Forecasting and Time-Series Analysis for Managers. 3 Credits.

Introduction to various forecasting techniques, including time-series regression models, cyclical trends, exponential smoothing methods, seasonal and nonseasonal ARIMA processes, and the Box-Jenkins approach. Application of forecasting methods in economics, finance, and marketing. Prerequisite: MBAD 6222 or permission of instructor.

DNSC 6278. Big Data Analytics. 3 Credits.

Practical workshop-style course using cloud computing resources to analyze and manipulate data too large to fit on a single machine and/or analyze with traditional tools. Spark, MapReduce, the Hadoop Ecosystem, and other tools. Prerequisites: DNSC 6211 and ISTM 6212. Recommended background: Understanding of and experience with Linux/OSX; programming concepts; R, Python, SQL, or other programming language; remote computing via SSH; shell executables; version control tools such as Git/GitHub.

DNSC 6279. Data Mining. 3 Credits.

How organizations make better use of increasing amounts of collected data and convert that data into information to support managerial decision making; data mining and data analysis methods and tools for exploring and analyzing data sets; state-of-the-art software tools for developing novel applications. Note that the prerequisite courses must be taken in the order listed. Restricted to students in the master of science in business analytics and graduate certificate in business analytics programs. Prerequisites: DNSC 6203 and DNSC 6206. Credit cannot be earned for this course and DNSC 4279.

DNSC 6280. Supply Chain Analytics. 3 Credits.

Analytical framework for how supply chains function for decision making. Decision models studied include inventory management, integrated transportation, risk pooling, network coordination, and supplier management. Prerequisites: DNSC 6202; or DNSC 6203 and DNSC 6206; or MBAD 6224.

DNSC 6290. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

DNSC 6298. Directed Readings and Research. 3 Credits.**DNSC 6300. Thesis Seminar. 3 Credits.****DNSC 6401. Sustainable Supply Chains. 1.5 Credit.**

Introduction to integrating environmental management and sustainability concepts into the operations and supply chain management fields.

DNSC 6403. Visualization for Analytics. 1.5 Credit.

Use of data visualization software technology in the context of exploratory and reporting capabilities. SAS Visual Analytics/Statistics and other methodologies. Various graphical approaches to preparing and visualizing data. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224 (if chosen for the prerequisite, DNSC 6206 must be completed before taking DNSC 6203).

DNSC 6404. Sports Analytics. 1.5 Credit.

Analyzing and leveraging information throughout a sports organization. Strategies for gaining competitive advantage on the field of play; player analysis; and business operations. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224 (note that DNSC 6206 must be completed before taking DNSC 6203).

DNSC 6500. Analytic Skills for Managers. 1 Credit.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to students in the MBA program.

DNSC 8328. Special Topics in Decision Making. 3 Credits.

Special topics and advanced applications, such as catastrophe theory, Markovian decision processes, and Bayesian statistics. May be repeated once for credit.

DNSC 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

DNSC 8392. Computational Optimization. 3 Credits.

The description, design, and programming of efficient computational methods for large-scale optimization problems; introduction to software, optimization solvers, and programming languages used by professionals to code and model industry-size optimization problems.

DNSC 8393. Applied Stochastic Models for Business. 3 Credits.

In-depth coverage of stochastic models and their applications in business and industry; applications to marketing, call center modeling, finance, queuing systems, and operations.

DNSC 8394. Stochastic Programming. 3 Credits.

The intersection of probability theory and statistics with mathematical programming for modeling optimization problems that involve uncertainty. Basic knowledge of linear programming, elementary analysis and probability. Emphasis on algorithmic methods to solve stochastic programming instances.

DNSC 8397. Advanced Special Topics. 1-3 Credits.

Current research and scholarly issues in management science.

DNSC 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

DNSC 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

FINANCE

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in business, finance concentration (p. 556)

- Bachelor of Science with a major in business, real estate concentration (p. 560)
- Bachelor of Science with a major in finance (p. 563)

Combined Program

- Dual Bachelor of Science with a major in finance and Master of Science in Finance (p. 567)

Minor

- Minor in real estate (p. 571)

GRADUATE

Master's programs

- Master of Science in Finance (p. 580)
- Master of Science in the field of applied finance (p. 580)

Combined programs

- Dual Master of Business Administration and Master of Science in the field of applied finance (p. 586)
- Joint Master of Business Administration and Master of Science in Finance (p. 586)

CERTIFICATES

Graduate certificates

- Graduate Certificate in financial management (p. 593)
- Graduate Certificate in investments and portfolio management (p. 595)
- Graduate Certificate in walkable urban real estate development (p. 599)

FACULTY

Professors W. Handorf, G.M. Jabbour, G. Jostova, M.S. Klock, R. Van Order (*Chair*)

Associate Professors S. Agca, A. Baptista, N.G. Cohen, T. Geurts (*Teaching*), B.J. Henderson, M. Hwang, R. Savickas, A.J. Wilson

Assistant Professors V. Bhagwat, Rodney Lake (*Teaching*), J. Lee, M. Medlej (*Teaching*), B.K. Renganatharaja

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MBAD 6234 Financial Management is prerequisite to FINA 6221 Financial Decision Making through FINA 6248 Real Estate Development Cases.

FINA 1099. Variable Topics. 1-36 Credits.

FINA 3001. Intermediate Finance. 3 Credits.

Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. Prerequisite: BADM 3501.

FINA 3101. Investment and Portfolio Management. 3 Credits.

Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk-reward and computer-aided analysis. Prerequisite: BADM 3501.

FINA 3201. Exploring Finance with Simulation. 3 Credits.

Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Prerequisite: BADM 3501.

FINA 3201W. Exploring Finance with Simulation. 3 Credits.

Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BADM 3501.

FINA 3301. Money and Capital Markets. 3 Credits.

The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. Prerequisite: BADM 3501.

FINA 3401. A Brief History of Finance. 3 Credits.

History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Same As: FINA 3401W.

FINA 3401W. A Brief History of Finance. 3 Credits.

History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: FINA 3401.

FINA 4001. Advanced Financial Management. 3 Credits.

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Prerequisite courses may be taken concurrently. Prerequisites: BADM 3501; and FINA 3301 or FINA 3001. Same As: FINA 4001W.

FINA 4001W. Advanced Financial Management. 3 Credits.

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite courses may be taken concurrently. Prerequisites: BADM 3501; and FINA 3301 or FINA 3001.

FINA 4101. Applied Financial Securities Analysis. 3 Credits.

Practical security analysis techniques and investing approaches employed by professional investment managers. Prerequisite: BADM 3501.

FINA 4121W. Exploring Finance with Simulation. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4201. Real Estate Investment. 3 Credits.

Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. Prerequisite: BADM 3501.

FINA 4301. Financial Derivatives. 3 Credits.

The defining properties of and uses for financial derivatives. Institutional features; forward and futures contracts, option contracts, and swap agreements; and valuation methodologies. The proper use of financial derivatives and the potential for unintended consequences. Prerequisites: BADM 3501. Recommended background: undergraduate students in finance with exposure to another discipline such as mathematics, physics, computer science, economics, or statistics.

FINA 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: BADM 3501.

FINA 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4995. Independent Study. 1-15 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3501.

FINA 5099. Variable Topics. 1-99 Credits.**FINA 6220. Business Financial Management. 3 Credits.****FINA 6221. Financial Decision Making. 3 Credits.**

Theory and practice of business finance, emphasizing the impacts of long- and short-term uses and sources of funds on the firm's market value. Prerequisite: MBAD 6234 or MBAD 6235.

FINA 6222. Capital Formation. 3 Credits.

Determinants of saving and investment and resultant funds flow are evaluated. Special emphasis on the level and risk structure and term structure of interest rates. The role and management of financial institutions is stressed. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6223. Investment Analysis and Portfolio Management. 3 Credits.

Risk-reward analysis of security investments, including analysis of national economy, industry, company, and market; introduction to portfolio management; emphasis on theory and computer methods. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6224. Financial Management. 3 Credits.

Advanced case studies in domestic and international financial management; working capital policy, capital budgeting, financing with debt and equity, dividend policy, valuation, project finance, venture capital, and mergers and acquisitions. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6230. Urban Development Economics. 3 Credits.**FINA 6231. Seminar: Investment and Portfolio Management. 3 Credits.****FINA 6234. New Venture Financing: Due Diligence and Valuation Issues. 3 Credits.**

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Prerequisites: MBAD 6234 or MBAD 6235. (Same as MGT 6293).

FINA 6235. Futures Markets: Trading and Hedging. 3 Credits.

Organization and regulation of futures markets. Alternative strategies for trading of futures contracts for possible hedging uses. High risk-high return investment alternatives. The use of futures markets to manage risks. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6236. Options. 3 Credits.

Pricing of options on financial instruments. Role of options in risk management, trading strategies, hedging implications for national and international investors, financial engineering, and structure and regulation of option markets. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6237. Private Wealth Management and Personal Financial Advising. 3 Credits.

Income and estate taxation, retirement plans and pensions, life and disability insurance, investment portfolio management, and personal finances. Prerequisites: MBAD 6234 or MBAD 6235. Recommended background: ACCY 6401 and knowledge of Excel.

FINA 6238. Financial Engineering. 3 Credits.

Valuation and risk management theory for bonds, forward contracts, swaps, options, exotic options, and interest rate options. Development of financial software, including Monte Carlo simulation modeling. Case studies of innovative solutions to investment, corporate finance, and financial institution management problems. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6239. Applied Portfolio Management. 3 Credits.

Synthesis of the theoretical concepts of securities analysis and portfolio management with the application of analyzing securities and building an actual portfolio. Prerequisites: (MBAD 6234 or MBAD 6235) and permission of instructor.

FINA 6240. Real Estate Development. 3 Credits.

Examination of the forces that shape real estate development; market analysis methods and techniques to evaluate project feasibility; the institutional and legal framework within which real estate development occurs and that influences controls, land value, and development potential. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6241. Financing Real Estate. 3 Credits.

Principles of real estate finance; evaluating different methods of financing real estate; sources of real estate funding with emphasis on securitization. Incentives provided by governments. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6242. Real Estate Valuation and Investment. 3 Credits.

Understanding the valuation of different types of real estate from different viewpoints. Analysis of the risks and opportunities of investing. Solid theoretical framework is augmented with practical examples and applications. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6243. Strategic Planning for Walkable Urban Real Estate Companies. 3 Credits.

Introduction to the various facets of the real estate industry. Students gain practical training in strategic planning by conducting a consulting assignment for a DC-based real estate company.

FINA 6245. Land Development Law. 3 Credits.

FINA 6247. Urban Development Economics. 3 Credits.

FINA 6248. Real Estate Development Cases. 3 Credits.

Case study analysis of large-scale commercial real estate developments to gain comprehension of financial, political, legal, and technical complexities and constraints inherent in the real estate development process. Prerequisite: FINA 6221 or permission of instructor.

FINA 6250. Securities Regulation and Financial Scandals. 3 Credits.

Philosophy and framework of laws governing the sale of securities, including stocks, bonds, and investment contracts; financial scandals and the role that changes in securities law and housing policy has played in such events.

FINA 6271. Financial Modeling and Econometrics. 4 Credits.

Applied statistical and econometric analysis and modeling in finance. Methodologies include descriptive and inferential statistics, multivariate regression, and time series analysis. Empirical studies are reviewed, and a series of research projects are undertaken. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6272. Global Financial Markets. 4 Credits.

Theories explaining domestic and international interest rate and exchange rate structures. Roles of financial institutions and markets are investigated and forecasting methodologies are applied. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6273. Cases in Financial Management and Investment Banking. 4 Credits.

Computer modeling for analysis and forecasting of a firm's financial statements to reflect possible future performance. Application and integration of financial accounting and financial analysis, using a different case study each week. Financial issues faced by companies and their commercial and investment bankers as tactical and strategic decisions are made about organic growth, growth through merger and acquisition, and corporate reorganization. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6274. Corporate Financial Management and Modeling. 4 Credits.

Causal connections between decisions made by business firms, their expected performance, and the resulting current valuation of the firm's common stock. Factors affecting the level and structure of interest rates, which are incorporated by many financial models, theories, and decisions. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6275. Investment Analysis and Global Portfolio Management. 4 Credits.

Financial markets and instruments viewed from the investor's perspective. Analysis of the value of equity and fixed-income securities and the construction of efficient portfolios in a global financial market. Issues of market efficiency, tax structures, and investment funds; computer-based models. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6276. Financial Engineering and Derivative Securities. 4 Credits.

Mathematical and theoretical foundations to value-derivative securities, including options, futures, and swaps; hedging and trading applications of these contracts. Arbitrage trading across cash and derivative markets and its role in maintaining equilibrium prices. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6277. Comparative Financial Market Regulation and Development. 4 Credits.

Theory and current status of comparative regulation of domestic and international financial institutions and markets. Effects on country economic development and international trade. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6278. Financial Theory and Research. 4 Credits.

Theoretical constructs of business investment and financing decisions and of financial asset pricing structures in domestic and international environments. Analytical and numerical models are developed, and empirical studies are evaluated. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6279. Real Estate Finance and Fixed-Income Security Valuation. 4 Credits.

Application of financial theory to real estate investment: the housing market, mortgage valuation and securitization, commercial properties, CMBS, and REITs. Fixed-income security valuation with focus on theory and data applications on interest rate movements, fixed-income security and derivative pricing, and credit risk. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6280. Financial Institution Management and Modeling. 4 Credits.

Analysis of the financial performance and condition of a bank, toward understanding of the financial environment in which banks operate and regulation of the banking system. Application of asset/liability management principles and statistical and mathematical models employed in bank risk management. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6281. Cases in Financial Modeling and Engineering. 4 Credits.

Through the use of real-world examples from various aspects of finance, students are exposed to the modeling of complex financial instruments and techniques used in market and credit risk management. Underlying mathematics and theoretical constructs are explored and solidified through modeling exercises that make use of analytical solutions and numerical methods. As a practical course, students are asked to implement models. Examples may be motivated by corporate finance, corporate and investment banking, asset management, or other activities. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6282. Advanced Financial Econometrics and Modeling. 4 Credits.

Testing of several types of applied financial econometric models typically used in practice. Advanced quantitative techniques applied to aspects of financial markets, the behavior of agents, and market and credit risk management. Various software packages used to implement and program models. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6290. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

FINA 6297. International Management Experience. 3 Credits.

Same as IBUS 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

FINA 6298. Directed Readings and Research. 2-4 Credits.

FINA 6299. Thesis Seminar. 3 Credits.

FINA 6999. Thesis Research. 3 Credits.

FINA 8311. Seminar: Public and Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

FINA 8321. Seminar: Financial Markets Research. 3 Credits.

Market efficiency, utility testing, the capital asset pricing model, the arbitrage pricing theory, the option pricing model, and aggregate market volatility.

FINA 8322. Seminar: Corporate Finance Research. 3 Credits.

Capital budgeting, capital structure issues, dividend policy, microeconomic foundations, mergers, and agency theory.

FINA 8323. Seminar: Continuous-Time Finance. 3 Credits.

Review of the stochastic calculus methods needed for continuous-time pricing models. The most important continuous-time models, including pricing of derivative securities, consumption-portfolio selection models, continuous-time capital asset pricing models, consumption-based capital asset pricing models, continuous-time arbitrage pricing theory, and different yield curve models.

FINA 8324. Seminar: Financial Markets and Institutions. 3 Credits.

Multi-period asset pricing, term structure of interest rates, market imperfections and institutional factors, auctions, manipulation, derivative markets, market microstructure, and financial institutions.

FINA 8397. Doctoral Seminar. 1-3 Credits.

FINA 8998. Advanced Reading and Research. 1-12 Credits.
Doctoral candidates preparing for general examination.

FINA 8999. Dissertation Research. 1-12 Credits.

Doctoral candidates performing research. Restricted to doctoral candidates.

INFORMATION SYSTEMS AND TECHNOLOGY MANAGEMENT

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in Information Systems (p. 564)
- Bachelor of Science with a major in business, information systems technology management concentration (p. 557)

GRADUATE

Master's program

- Master of Science in the field of information systems technology (p. 581)

Combined program

- Dual Master of Business Administration and Master of Science in the field of information systems technology (p. 586)

CERTIFICATES

Certificate programs

- Graduate Certificate in artificial intelligence (p. 589)
- Graduate Certificate in cloud, applications, and information systems (p. 591)
- Graduate Certificate in m (p. 595)anagement of technology and innovation
- Graduate Certificate in managing the digital organization (p. 596)

FACULTY

Professors E.G. Carayannis, V. Choudhury, M.J. Granger

Associate Professors J. Artz, S. Dasgupta, R.G. Donnelly (Chair), W. Duan, R.A. Lumley

Assistant Professors Y.C. Ho, Y. Lu, Y. Park, Z. Sun

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MSIST candidacy or departmental approval is prerequisite to ISTM 6201 Information Systems Development and Applications-ISTM 6225 Cloud Foundations.

ISTM 3119. Introduction to Programming. 3 Credits.

Introductory course in writing simple computer programs using Python; data-analytic thinking and business applications through hands-on practices. No prior knowledge or experience in programming is required.

ISTM 4120. Business Systems Development. 3 Credits.

Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development process. Computer-aided software engineering tools. May be taken for graduate credit with permission of the program director and instructor and extra assigned work.

ISTM 4121. Database Principles and Applications. 3 Credits.

Theory, architecture, and implementation of database management systems in corporate and organization information systems; fundamental concepts of database management and processing; hands-on experience with database management packages.

ISTM 4123. Business Data Communications. 3 Credits.

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4123W. Business Data Communications. 3 Credits.

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BADM 2301.

ISTM 4130W. Writing On The Ethics of Technology. 3 Credits.

Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ISTM 4205. Web Applications Development. 3 Credits.

Concepts and practice necessary for creating Internet content. Technical overview of the Internet environment and the structure of the World Wide Web. Recommended background: Prior completion of ISTM 3119.

ISTM 4206. Foundations of Information Systems Security and Ethics. 3 Credits.

Computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from design and planning to implementation. Risk assessment strategies. Recommended background: ISTM 4120.

ISTM 4209. Foundations of Web Analytics. 3 Credits.

Concepts, techniques and tools of reporting and analyzing web data to derive actionable customer intelligence, develop digital strategies and evaluate their impacts.

ISTM 4210. Information Systems Capstone. 3 Credits.

Application of conceptual and technical knowledge to analyzing, planning, and designing an online information system. Culminates with a system proposal and design presentations. Restricted to eligible students in their final semester. Prerequisites: ISTM 3119, ISTM 4120, ISTM 4121, ISTM 4205, ISTM 4206, and ISTM 4209.

ISTM 4212. Data Management for Analytics. 3 Credits.

Traditional and contemporary tools for data wrangling, databases, data warehousing. Focus on schema design and dimensional modeling; hands-on experience using these tools and other contemporary methods for managing and analyzing data at scale.

ISTM 4213. Foundations of Cloud Applications. 3 Credits.

Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The Internet as a major resource for globally distributed applications using grid and utility computing. Prerequisites: ISTM 3119.

ISTM 4214. Foundations of Artificial Intelligence. 3 Credits.

A comprehensive introduction to the recent developments in AI through the coverage of fundamental AI concepts, practical business applications and the hands-on experiences with modern deep learning frameworks such as Keras. Prerequisites: ISTM 3119.

ISTM 4215. Human-Computer Interaction. 3 Credits.

An introduction to and overview of the field of human-computer interaction (HCI), an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and other areas. Readings cover current theory and practice in interface specification, design, and evaluation, and include current and classic research papers in the field.

ISTM 4216. Mobile Application Development. 3 Credits.

The creation of mobile solutions for various modern platforms, including major mobile operating systems, and how to program using Java and apply this knowledge to Android Platform in smart phones. Recommended background: prior completion of one of the following: ISTM 3119, ISTM 6200, or ISTM 6205.

ISTM 4217. Internet of Things Management. 3 Credits.

Apache Spark technology skills to analyze huge data sets. Taught in Python, continuing on to learning to use Spark DataFrames with the latest Spark 2.0 syntax; the MLlib Machine Library with the DataFrame syntax and Spark.

ISTM 4223. Innovation Ventures. 3 Credits.

Process of innovation entrepreneurship used to launch and build new ventures; technology ventures; organizing for innovation, raising venture capital, wealth creation, managing the growing innovation venture, marketing technology products and services. Students enrolled at the graduate level are expected to do additional work. (Same as ISTM 6223).

ISTM 4233. Emerging Technologies. 3 Credits.

New developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space; forecasting technological advances and assessing their economic and social effects. Students enrolled at the graduate level are expected to do additional work. (Same as ISTM 6233).

ISTM 4900. Special Topics. 3 Credits.

Topics vary by semester. May be repeated once for credit provided the topic differs. Consult the Schedule of Classes for additional information.

ISTM 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ISTM 4995. Independent Study. 3 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

ISTM 5099. Variable Topics. 1-99 Credits.

ISTM 6200. Python Program Database Applications. 3 Credits.

Introduction to Python programming language, Structured Query Language (SQL), relational database design, data wrangling, and rudimentary data analysis.

ISTM 6201. Information Systems Development and Applications. 3 Credits.

The information systems life cycle evaluated in terms of technologies, impact, and management. Structured and object-oriented analysis, prototyping, software reuse, testing, life-cycle costs, software development environments, and organizational and behavioral aspects of development projects. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6202. Relational Databases. 3 Credits.

Introduction to the theory of relational databases and commences an in-depth discussion of Relational database theory and design at the conceptual, logical, and physical levels. Structured query language (SQL) is covered in depth. Restricted to Students in the MS in Information Systems Technology program or with permission of the department.

ISTM 6203. Managing Cloud Security. 3 Credits.

Enterprise data and telecommunications networks with emphasis on operations and security on the cloud; functional characteristics of network technologies, gateways, and configurations; operational best practices to enhance the security of data and systems.

ISTM 6204. Information Technology Project Management. 3 Credits.

Project and program management practices with an emphasis on information technology projects. The basic tools of project management: work breakdown structure, cost, schedule and performance goal setting, and risk analysis. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6205. Web Application Development. 3 Credits.

Concepts and practice for creating Internet content. Technical overview of the Internet environment and the structure of the World Wide Web. Design and implementation of an effective web site with HTML, CSS, and JavaScript. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 3119 or ISTM 6200.

ISTM 6206. Information Systems Security. 3 Credits.

Comprehensive examination of computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from the design and planning stages to multi-level system implementation. Design of risk assessment strategies to achieve security goals. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6207. Information Resources Management. 3 Credits.

Information resources management strategically assesses and exploits information technology assets for competitive advantage. The CIO role in information resources management, planning, security, information integration, enterprise model development, and data administration.

ISTM 6209. Web and Social Analytics. 3 Credits.

Concepts, techniques, and tools of collecting, analyzing, and reporting digital data concerning how users interact with organizations through the Internet and social media; business intelligence; key performance indicators; new business models. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6210. Integrated Information Systems Capstone. 3 Credits.

Students apply conceptual and technical knowledge in analyzing, planning, and designing an online information system. Culminates with system proposal/design presentations. Restricted to students in their final semester in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 6201, ISTM 6202, ISTM 6204, ISTM 6205, ISTM 6206 and ISTM 6209.

ISTM 6211. Data Warehousing and Online Analytical Processing. 3 Credits.

Introduction to the theory of data warehousing, dimensional data modeling, and online analytical processing (OLAP) through case studies, technology, and a design project. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisite: ISTM 6202.

ISTM 6212. Data Management for Analytics. 3 Credits.

Relational databases, data warehousing, and dimensional modeling. Practical experience with these and other traditional and contemporary methods for managing and analyzing data at scale, including Unix command line and Apache Spark. Restricted to students in the MS in business analytics program.

ISTM 6213. Cloud Applications. 3 Credits.

Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The internet as a major resource for globally distributed applications. Prerequisites: ISTM 3119 OR ISTM 6200.

ISTM 6214. Foundations of Artificial Intelligence. 3 Credits.

Foundations of artificial intelligence. Introduction to advanced programming design and development of solutions to automate business processes. Prerequisites: ISTM 3119 OR ISTM 6200.

ISTM 6215. Human-Computer Interaction. 3 Credits.

Human-computer interaction as an interdisciplinary endeavor integrating theories and methodologies from computer science, cognitive psychology, design, and many other areas. Theory and practice in interface specification design and evaluation, and research.

ISTM 6216. Mobile Application Development. 3 Credits.

Creation of mobile solutions for various modern platforms, including major mobile operating systems. Programming using Java and applying this knowledge to Android platform in smart phones. Recommended background: Prior completion of one of the following: ISTM 3119, ISTM 6200, or ISTM 6205.

ISTM 6217. Internet of Things Management. 3 Credits.

Technology skills to analyze huge data sets using Apache Spark. Taught in Python, continuing on to learning to use Spark DataFrames. Using the MLlib machine learning library with the DataFrame syntax and Spark. Prerequisites: ISTM 3119. Recommended background: Prior completion of ISTM 6214.

ISTM 6218. Business Applications of Artificial Intelligence. 3 Credits.

Comprehensive introduction to recent developments in artificial intelligence (AI) through the coverage of fundamental AI concepts, practical business applications, and hands-on experiences with modern deep learning frameworks. Prerequisites: ISTM 3119 and ISTM 6214.

ISTM 6222. IS/IT Strategy and Implementation. 3 Credits.

The development and implementation of information systems and technology strategies designed to align with and maximize business strategy applications and approaches in a challenging and increasingly global business environment.

ISTM 6223. Technology Entrepreneurship. 3 Credits.

Case studies on the innovation-entrepreneurship processes used to launch and build new ventures based on information technology and on technology more broadly. Organizing for innovation, raising venture capital, managing the small technology-based venture, marketing technology products and services, intellectual property considerations, and new venture proposal development.

ISTM 6224. Management of Technology and Innovation. 3 Credits.

Business, technological, economic, and political factors that influence the development and deployment of new technology products, processes, and services. Managing technology, corporate innovation, alternatives, new approaches, sources of competitive advantages.

ISTM 6225. Cloud Foundations. 3 Credits.

Concepts of cloud managed enterprise architecture as a management tool to align information technology assets, people, operations, and projects with operational characteristics.

ISTM 6233. Emerging Technologies. 3 Credits.

Developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space. Forecasting technological advances and assessing their economic and social effects.

ISTM 6234. New Venture Financing. 3 Credits.

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as FINA 6234.

ISTM 6239. Seminar: Competitiveness/Technology. 3 Credits.

Capstone course integrating the field of management of science, technology, and innovation. Commercialization of technology in the private sector and the impact on competitiveness. Implementation of technology in the public sector. Technology development, from new product concept to utilization. Prerequisites: ISTM 6224 or MBAD 6253; and ISTM 6232 or ISTM 6233; or permission of the instructor.

ISTM 6243. Human Factors in Information Systems. 3 Credits.

The user-computer interaction, human factors of online dialogues, interfacing, and various approaches to user-system interaction; development and evaluation of user-computer interfaces.

ISTM 6290. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

ISTM 6298. Directed Readings and Research. 1-3 Credits.**ISTM 6500. Technology Skills for Managers. 1 Credit.**

Introduction to information technologies in multiple business domains for oversight by managers. The topics may vary. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more information. Restricted to MBA students.

ISTM 6502. Working with Databases Using SQL. 1 Credit.

Training in core SQL, especially data query language (DQL) and data manipulation language (DML). Concepts of SQL, including writing SQL statements and understanding of database operations.

ISTM 6514. Introduction to Artificial Intelligence. 1 Credit.

Decision making using artificial intelligence. Real-world examples from finance, health care, marketing, and operations illustrate applications of machine learning methods. Includes hands-on exercises with programming software (R and RStudio).

ISTM 6519. Health Care Analytics and Applications. 1 Credit.

Introduction to the basic analytics techniques and applications in health care and overview of the state of practice of the health care analytics ecosystem.

ISTM 6522. Digital Transformation. 1 Credit.

Use of information and digital technologies to restructure organizations and business processes and survive and thrive in an intensively digitized business world.

ISTM 8300. Thesis Seminar. 3 Credits.**ISTM 8333. Seminar: Management of Science, Technology, and Innovation. 3 Credits.****ISTM 8340. Philosophical Issues in Information Systems. 3 Credits.**

Seminar for doctoral students interested in information systems. Various philosophical traditions and insights from those traditions applied to problems in information systems.

ISTM 8341. Advanced Topics in MIS Research. 3 Credits.

For information systems doctoral students. Seminal papers and leading methods and instruments as applied to MIS research.

ISTM 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

ISTM 8390. Philosophical Foundations of Administrative Research. 3 Credits.

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

ISTM 8391. Advanced Problems in Research Methodology. 3 Credits.

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

ISTM 8397. Doctoral Seminar. 1-3 Credits.

Current research and scholarly issues in management science.

ISTM 8398. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ISTM 8399. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

INTERNATIONAL BUSINESS

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in business, international business concentration (p. 558)

Combined program

- Dual Bachelor of Science in Business, international business concentration and Master of Science in the field of international business

GRADUATE

Master's program

- Master of Science in the field of international business (p. 582)

CERTIFICATES

Certificate programs

- Graduate Certificate in capital markets (p. 590)
- Graduate Certificate in global management (p. 593)

FACULTY

Professors M. Ayyagari, H. Berry, D. Leipziger, A. Phene, P.A. Rau, S. Rehman, J.W. Spencer, R. J. Weiner, J. Yang (*Chair*)

Associate Professors R. Click, A. Helm, N. Maurer

Assistant Professors L. Ballesteros, J.H. Kim, L. D'Antonio, A. Weinberger

Visiting Lecturer B. Pierce

Emeritus Professors H. Askari, F. Robles, Y.S. Park

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IBUS 1099. Variable Topics. 1-36 Credits.

IBUS 3001. Introduction to International Business. 3 Credits.

The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Same As: IBUS 3001W.

IBUS 3001W. Introduction to International Business. 3 Credits.

The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Same As: IBUS 3001.

IBUS 3101. Global Financial Environment. 3 Credits.

The international economic, trade, and financial environment in which global business operates and how developments in these areas affect business activity. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044.

IBUS 3201. International Marketing Management. 3 Credits.

Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of strategies at the entry and global stages. Prerequisites: IBUS 3001.

IBUS 3301. International Business Finance. 3 Credits.

Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisites: IBUS 3101 and BADM 3501.

IBUS 4202. Regional Strategy for Multinationals. 3 Credits.

The business, economic, investment, and market environments in different regions of the world; regional strategy framework for responding to business opportunities in regional markets. Prerequisites: IBUS 3001.

IBUS 4203. Foreign Market Analysis. 3 Credits.

Project course involving market research for target market selection, market entry strategy, in-country marketing plan, and recommendations for strategy implementation in the target country. Focus on consulting process as ancillary component. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3201.

IBUS 4302. International Banking. 3 Credits.

Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3301.

IBUS 4303. International Monetary and Financial Issues. 3 Credits.

Risks facing the global financial and the international monetary systems and their macro-economic framework; role of financial oversight institutions, the dollar and of central banks; old and new economic players in the global system. Prerequisites: ECON 1012 or permission of the instructor.

IBUS 4401. Managing the Multinational Enterprise. 3 Credits.

The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4402. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries; cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Prerequisites: IBUS 3001 or IBUS 3101. Credit cannot be earned for this course and IBUS 6402.

IBUS 4402W. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: IBUS 3001 or IBUS 3002; or permission of the instructor.

IBUS 4403. Oil: Industry, Economy, and Society. 3 Credits.

Multidisciplinary approach, related primarily to political economy and management, to oil and its effects on business, nation-states, and the world economy. Restricted to juniors and seniors who are familiar with economics measures and concepts at the level of ECON 1011 and ECON 1012.

IBUS 4404. Global Energy. 3 Credits.

Fundamental economics and politics of the energy business; effects on business decisions and strategies; conventional energy generation technologies and alternative technologies. Course equivalent or permission of the instructor may be substituted for the prerequisite. Restricted to juniors and seniors. Prerequisite: ECON 1012.

IBUS 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor. Credit cannot be earned for this course and IAFF 6378.

IBUS 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: IBUS 3001, except by permission of instructor.

IBUS 4995. Independent Study. 1-12 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 5099. Variable Topics. 1-99 Credits.**IBUS 6201. International Marketing. 3 Credits.**

Methods and tools for analyzing world markets and their respective consumers and environments to develop marketing strategies for a global market. Selecting new international markets for entry and establishing a brand and strong regional presence. Prerequisites: MBAD 6245. Credit cannot be earned for this course and IBUS 3201.

IBUS 6202. Regional Strategy for Multinationals. 3 Credits.

Development of a framework to understand dynamic business, cultural, and economic environments in Asia and Latin America. Regional business strategies of multinational companies from outside and within Asia and Latin America that respond to business opportunities and challenges in these regions.

IBUS 6290. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: ACCY 6900. Credit cannot be earned for this course and IAFF 6378.

IBUS 6297. International Management Experience. 1-6 Credits.

May be repeated for credit. Same As: FINA 6297, MGT 6297, MKTG 6297, SMPP 6297.

IBUS 6301. International Business Finance. 3 Credits.

Analysis of major issues and developments in the international financial environment and their impact on multinational corporations and financial institutions. Credit cannot be earned for this course and IBUS 3301.

IBUS 6302. Seminar: International Banking. 3 Credits.

Evolution in international banking and other international financial institutions. Functioning of international banking operations, public policy issues and regulatory issues in international banking, and the effect of international banks on national monetary policies.

IBUS 6303. External Development Financing. 3 Credits.

Institutions, instruments, and theory of external development financing; financial flows to developing countries; development finance and the role of international and regional development banks; policies, methods, and practices of the World Bank, the IMF, and others; technical assistance, training, capacity building, and role of institutions in sustained development. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6304. Financial Crises and the Global Economy. 3 Credits.

The causes of a financial crisis and how various countries have responded to their specific crises; the relationship between financial crises and other economic developments, particularly in emerging market and developing economies; how global financial arrangements have evolved to help manage the risks of contagion. Recommended background: graduate-level study in macroeconomics.

IBUS 6305. Global Investment Banking. 3 Credits.

Examination of investment banking as practiced in a global context from a strategic perspective using case studies and readings. Topics covered include securities underwriting and derivatives instruments, risk management, and business development strategies. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6307. International Portfolio Management. 3 Credits.

Theory and practice of international investment. Portfolio construction and optimization. Effects of exchange rate changes on portfolio risk and return. International asset pricing models and trading institutions. Prerequisites: MBAD 6234; and MBAD 6243 or ECON 6284.

IBUS 6308. International Reporting and Control. 1.5 Credit.

. Credit cannot be earned for this course and ACCY 6110.

IBUS 6309. International Accounting. 1.5 Credit.**IBUS 6310. International Financial Reporting Standards. 1.5 Credit.**

. Same As: ACCY 6112.

IBUS 6400. Oil: Industry, Economy, and Society. 3 Credits.

Multidisciplinary approach to the study of oil and its effects on business, nation-states, and the world economy, based primarily on political economy and management perspectives. Topics include the oil industry, the global oil environment, and the potential effects of oil on a society. (Same as IAFF 6378).

IBUS 6401. International Business Strategy. 3 Credits.

The changing nature of the international environment and the resulting impact on strategy of both U.S. and foreign multinational corporations. Marketing, production, and financial strategy. Focus of discussion is at the company level. Prerequisites: MBAD 6245. Credit cannot be earned for this course and IBUS 4401.

IBUS 6402. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Credit cannot be earned for this course and IBUS 4402.

IBUS 6403. International Business Negotiations. 3 Credits.

Theories and application in International Business Negotiations (IBN). Formulation of concepts and frameworks; development of systematic approaches to planning for and conducting IBN. Integration of functional, environmental, and institutional contexts facing negotiators internationally. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6404. New Global Competitive Framework. 3 Credits.

How industries develop sustained competitive advantages within the global framework. The European Union's "single market" and the Economic-Monetary Union; the transformation of formerly centrally planned economies; the changing Japanese economy and emerging Pacific Basin, with implications for the U.S. economy, industries, and firms. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6405. Legal Aspects of International and Multinational Business. 3 Credits.

Legal environment of international and multinational business including legal systems, antitrust laws, regulation of direct investment, international arbitration and expropriation; topics of current interest. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6500. Global Currency and Stock Trading. 1.5-3 Credits.

Linkages of global events and risks and their impact on financial markets; foreign exchange market trading philosophies, techniques, strategies, and rules. Real-time practical training in trading major currencies, stocks, and managing an emerging markets portfolio in the GWSB Capital Markets Trading Room.

IBUS 6995. Directed Readings and Research. 3 Credits.

Supervised readings or research in selected fields within business administration. Permission of the instructor required prior to enrollment. May be repeated once for credit.

IBUS 6999. Thesis Seminar. 3 Credits.

No fixed content.

IBUS 8311. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

IBUS 8361. Colloquium on International Business. 3 Credits.

Examination of selected topics in international business, with emphasis on major new theoretical and empirical developments. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

IBUS 8397. Doctoral Seminar. 1-3 Credits.

No fixed content.

IBUS 8900. Thesis Research. 3 Credits.

No fixed content.

IBUS 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

IBUS 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

MANAGEMENT

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with major in business, innovation and entrepreneurship concentration (p. 558)
- Bachelor of Science with a major in business, sport, event, and hospitality management concentration (p. 560)

Minor

- Minor in management and leadership (p. 570)

GRADUATE

Masters program

- Master of Human Resource Management (p. 578)
- Masters in Management (p. 572)
- Master of Science in the field of sport management (p. 583)

CERTIFICATES

Graduate Certificate

- Graduate Certificate in creativity, innovation, and entrepreneurship (p. 592)
- Graduate Certificate in hospitality management (p. 594)

- Graduate Certificate in human capital (p. 594)
- Graduate Certificate in management leadership (p. 595)
- Graduate Certificate in sports management (p. 597)
- Graduate Certificate in tourism management (p. 598)

FACULTY

Professors H. Aquinis (*Chair*), J. Bailey, D.C. Kayes, G.T. Solomon, C. Tosun, L. Yu

Associate Professors L. Delpy Neirotti, N.S. Hill, S. Levy (*Teaching*), P. McHugh, A. El Tarabishy (*Teaching, Deputy Chair*), M. Ormiston

Assistant Professors K. Sawyer, N.A. Cohen (*Visiting*), J. Suh (*Visiting*)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MGT 1099. Variable Topics. 1-36 Credits.**MGT 3201. Leadership in Action. 3 Credits.**

Leadership in organizations and society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation-specific. Modern and historical examples; issues of leadership in popular contexts.

MGT 3202. Managerial Negotiations. 3 Credits.

Negotiation concepts, strategies, and tactics as applied to managerial situations. The nature of interdependencies; competitive and collaborative negotiations; negotiations involving third-party dynamics, such as mediation and arbitration. Employee relations, including employee rights; the impact of unions and collective bargaining on management practices.

MGT 3203. Advanced Human Resource Management. 3 Credits.

The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BADM 3101.

MGT 3204. Contemporary Topics in Management. 3 Credits.

Contemporary practice in human resource planning, recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and international human resource management. Interaction with practitioners through actual situations, case analyses, and presentations. Prerequisite: BADM 3101.

MGT 3300. Entrepreneurship. 3 Credits.

Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios.

MGT 3300W. Entrepreneurship. 3 Credits.

Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: MGT 3300.

MGT 3301. Small Business Management. 3 Credits.

Theory and practice of entrepreneurship. How to start or acquire a new business; effective management, including the essentials of planning, organizing, financing, marketing, and controlling the smaller enterprise. Students consult with a small DC-area company as part of a team research project. Prerequisites: MGT 3300W or permission of the instructor.

MGT 3302. e-Entrepreneurship. 3 Credits.

The process of turning a web, mobile, or wearable business idea into a validated, repeatable, and scalable business model using lean startup methodologies; testing and user feedback, technology basics, promotions, and tracking core metrics. Permission of the instructor may be substituted for the prerequisite. Prerequisites: MGT 3300 or MGT 3300W.

MGT 3303. Women's Entrepreneurial Leadership. 3 Credits.

Students create and execute a business plan while developing essential skills, mentoring relationships, and self-confidence and self-insight.

MGT 3305. Human Capital Sustainability. 3 Credits.

Managerial challenges associated with creating sustainable employment relationships using concepts from human resource management, labor relations, organizational behavior, and entrepreneurship; how markets, management practices, collective bargaining, and public policy affect human capital sustainability.

MGT 4003. Management of the Growing Entrepreneurial Venture. 3 Credits.

Examination of the data, dilemmas, and decisions that can confront leaders of post-startup entrepreneurial ventures.

MGT 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 4900W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MGT 4995. Independent Research. 1-6 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit.

MGT 5099. Variable Topics. 1-99 Credits.

MGT 6210. Leading Teams. 3 Credits.

Knowledge and skills for effectively leading teams. Setting up teams for success, promoting effective team dynamics, and other leadership issues for contemporary teams that operate in a global, digital environment.

MGT 6213. Change Management. 3 Credits.

Behavioral and organizational components of individual, team, and firm-wide change. The dynamics that often accompany the change process.

MGT 6215. Conflict Management and Negotiations. 3 Credits.

The nature and sources of conflict and interdependence in social and organizational dynamics. Various means of resolving conflict, including the use of competitive and collaborative negotiations and mediation. Case discussion, exercises, role-playing, and simulation. Managers as mediators and negotiators.

MGT 6216. Cross-Cultural Management. 3 Credits.

The cultural foundations of organizations and institutions, with an emphasis on managerial behavior. Cross-cultural differences as they affect work-related behaviors, such as communication, attitude, teamwork, negotiation, and decision making.

MGT 6252. Strategic Human Resource Management. 3 Credits.

Strategic International and domestic applications of human resource management functions. Selection, preparation, compensation of managers and executives to think critically about HR in a global environment.

MGT 6253. Leadership and Executive Development. 3 Credits.

The required skills, knowledge, and abilities for effective executive leadership in organizations. Contemporary and classical leadership theories and research approaches.

MGT 6254. Negotiations and Labor Relations. 3 Credits.

Negotiation theory and practice in the context of labor-management relations in both union and nonunion settings. Emphasis on negotiation and conflict resolution skills, arbitration and grievance procedures, public-sector labor relations, labor laws and public policy, and global labor relations issues.

MGT 6257. Performance Management and Development. 3 Credits.

The design and implementation of effective and successful performance management systems; measuring and developing the performance of individuals and groups and aligning performance with an organization's strategic objectives.

MGT 6258. Applied Organization Leadership. 3 Credits.

In-depth studies of theories of leadership. Legal and ethical obligations of leadership. The leader in the process of assuming responsibility. Experiential exercises designed to develop the students' interpersonal abilities and leadership capacities.

MGT 6259. Employment Law and Ethics. 3 Credits.

An examination of the interaction of legal requirements and personal ethics and their influence on managerial decisions affecting the employment exchange. Special emphasis on equal employment opportunity and civil rights, workers' compensation, occupational health and safety, collective bargaining, and wrongful discharge.

MGT 6270. Consulting Processes. 3 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process.

MGT 6271. Consulting Practicum. 3 Credits.

Instruction in and application of integrative problem solving, team work, client relationship, and communications skills required to be a successful management consultant. Students gain practical experience through a team-based assignment consulting for a client. Prerequisite: MGT 6270.

MGT 6277. Critical Thinking Skills for Executive Leadership. 3 Credits.

Theory and practice of critical thinking; how it differs from other types of thinking and other executive leadership competencies; approaches known to improve thinking skills.

MGT 6280. Entrepreneurship. 3 Credits.

The entrepreneur as a phenomenon. Theory and experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large, small, public, and private.

MGT 6281. Small Business Management. 3 Credits.

The start-up process and management of small firms. Field projects involve student teams as consultants to local businesses. Case studies. Emphasis on total customer service, international opportunities, and minority and women's issues.

MGT 6282. New Venture Initiation. 3 Credits.

Essentials of planning a new business venture. Sources of financing, evaluation of alternative new business ventures, and analysis of business functions. Creating and analyzing the business plan.

MGT 6283. Strategic Entrepreneurship. 3 Credits.

Capstone course for the small business/entrepreneurship concentration. Student teams assist companies in upgrading strategies. Prerequisites: MBAD 6265, MGT 6281, MGT 6282 and/or permission of instructor.

MGT 6284. Family Business Management. 3 Credits.

Challenges of managing a family business: risk strategies; successor development and succession planning; stages of family business growth; family motivations and goals. Field projects provide hands-on experience.

MGT 6285. Social Entrepreneurship. 3 Credits.

Theory and practice of social entrepreneurship. The power and limits of social entrepreneurship as a tool for creating sustainable and scalable social impact.

MGT 6286. Creativity and Innovation. 3 Credits.

How organizational culture encourages or discourages creativity in individuals and teams and how organizational policies support or undercut innovation. Methods for developing and strengthening creative ideas and innovative action. Factors such as breakthrough design that encourage creativity and support innovation. Students examine and assess, on both personal and organizational levels, the bases of and propensity for creativity and innovation.

MGT 6287. Women's Entrepreneurial Leadership. 3 Credits.

Students create and execute a business plan while developing essential skills, tools and mentoring relationships.

MGT 6290. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 6297. International Management Experience. 3 Credits.

Same as FINA 6297/ IBUS 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

MGT 6298. Directed Readings and Research. 1-6 Credits.

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MGT 6299. Thesis Seminar. 3 Credits.

MGT 6301. Negotiations. 1.5 Credit.

Major concepts and theories of negotiation; the dynamics of interpersonal and intergroup conflict and its resolution; skill development relevant to a broad range of applied contexts; reflective posture about negotiations specifically and social influence broadly. Restricted to students in the World Executive MBA program.

MGT 6999. Thesis Research. 3 Credits.

MGT 8382. Foundations of Organizational Behavior and Development. 3 Credits.

The individuals and institutions central to the field of organizational behavior and development. Students read about, meet with, and discuss the work of persons central to the development of the field. Restricted to candidates in the PhD in organizational behavior and development program or with permission of the instructor.

MGT 8383. Field Research in Organizational Settings. 3 Credits.

Applications of field research techniques in formal organizational settings. Examination of the logic of inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized. Credit cannot be earned for this course and SOC 6240.

MGT 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

MGT 8386. Management Ideas in Progress. 3 Credits.

Doctoral students work with a variety of faculty members as they develop new ideas, research projects, and engage in seminal inquiry. The content and structure of the course depends based on the instructor. Restricted to students in the PhD in organizational behavior and development program or with permission of the instructor.

MGT 8390. Philosophical Foundations in Administration Research. 3 Credits.

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

MGT 8391. Adv Prob-Research Methodology. 3 Credits.

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. Restricted to doctoral candidates who have completed the general examination and all courses, and are preparing for their dissertation.

MGT 8397. Advanced Special Topics. 1-3 Credits.

Current research and scholarly issues in management science.

MGT 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

MGT 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

MARKETING

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in marketing (p. 566)
- Bachelor of Science with a major in business, marketing strategy and analytics concentration (p. 559)

Minor program

- Minor in marketing (p. 571)

CERTIFICATES

Certificate programs

- Graduate Certificate in digital marketing and analytics (p. 592)
- Graduate Certificate in marketing and brand management (p. 596)

FACULTY

Professors R.S. Achrol, S.S. Hassan, D. Hoffman, L.M. Maddox, T. Novak, V.G. Perry (Chair), P.A. Rau

Associate Professors S. Elliott (*Teaching*), M.L. Liebrezn-Himes

Assistant Professor S. Ham, L. Jiang

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Departmental prerequisite: BADM 3401 Contemporary Marketing Management is prerequisite to all courses in the Marketing Department; additional prerequisites are listed with the courses.

MKTG 1099. Variable Topics. 16 Credits.

MKTG 3142. Consumer Behavior. 3 Credits.

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Same As: MKTG 3142W.

MKTG 3142W. Consumer Behavior. 3 Credits.

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: MKTG 3142.

MKTG 3143. Marketing Research. 3 Credits.

Basic methods and techniques of market research; designing a marketing research project, including research questions, secondary and syndicated data, primary data collection approaches, data analysis, and report presentation; focus group interviews, questionnaire construction, and statistical software packages. Prerequisites: DNSC 1001 or equivalent approved by the instructor or department chair. Corequisites: MKTG 3142.

MKTG 4148. Advertising and Marketing Communications. 3 Credits.

Executing and measuring the effectiveness of advertising and integrated marketing communications campaigns. Methods for gathering research for a customer-based campaign, defining key target personas, developing a singular message strategy, and reaching consumers through media typically used in marketing communications.

MKTG 4149. Advanced Advertising Campaigns. 3 Credits.

Students conceptualize, support, and execute a marketing communications campaign for entry in the American Advertising Federation's National Student Advertising Competition. Interview and permission of the instructor required prior to enrollment. Prerequisites: MKTG 4148 or permission of the instructor.

MKTG 4150. Salesmanship and Sales Management. 3 Credits.

Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs.

MKTG 4151W. Marketing Communications Planning. 3 Credits.

Components of a marketing communications plan; writing, development, and presentation, including executive summary, situation analysis (company, consumer, competitor), target market segmentation, consumer behavior analysis, positioning strategy, and tactics for implementation. Permission of the instructor is required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BADM 3401, MKTG 3142 and 3143.

MKTG 4152. Retailing Management. 3 Credits.

A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory management, and non-store and service retailing. Industry executive and student presentations; case analyses. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4154. Digital Marketing. 3 Credits.

Using the social Web to leverage a firm's marketing strategy; developing and improving a company's electronic marketing strategy for the next evolution in Web commerce. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4156. Integrated Marketing Communications. 3 Credits.

The ubiquity of advertising and promotion; fundamental shifts in how consumers get information and from whom, and how much trust they place in different sources; strategies to address a rapidly changing media environment; concepts, analyses, and activities that comprise advertising; assessing and solving advertising challenges. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4159. Marketing Strategy. 3 Credits.

The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisites: BADM 3401 or BADM 3401W; and MKTG 3142 and MKTG 3143.

MKTG 4161. Pricing Strategy: Competitive and Dynamic Pricing. 3 Credits.

Pricing decisions confronting marketers. Equips students with a comprehensive approach to managing pricing decisions. Prerequisites: BADM 3401; MKTG 3142 or MKTG 3142W; and MKTG 3143. Credit cannot be earned for this course and MKTG 6261.

MKTG 4162. Digital Marketing Analytics. 3 Credits.

Measuring, analyzing, and interpreting key behavioral and performance indices for digital marketing. Hands on experience working with data sets, and applying a range of techniques to extract insights from data used primarily in digital marketing. Credit cannot be earned for this course and MKTG 6262.

MKTG 4163. Applied Marketing Decision Analytics. 3 Credits.

Merging marketing and analytics using various tools, including statistical software, to analyze primary and secondary qualitative and quantitative data to support marketing decisions. Credit cannot be earned for this course and MKTG 6263.

MKTG 4164. Artificial Intelligence and Automated Marketing. 3 Credits.

Applying data collection, management, and analysis to address marketing problems from an artificial intelligence/machine learning (AI/ML) perspective and to automate models. Prerequisites: BADM 2301, BADM 3401, MKTG 3143, and MKTG 3142 or MKTG 3142W. Credit cannot be earned for this course and MKTG 6264.

MKTG 4165. Customer Relationship Management and Relational Databases. 3 Credits.

The development and implementation of methods and strategies for doing business on a more personalized, one-to-one basis. Devising targeted communications and promotions to individual customers based on their purchasing behaviors. Credit cannot be earned for this course and MKTG 6265.

MKTG 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4995. Independent Study. 1-12 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit. Prerequisite: BADM 3401.

MKTG 5099. Variable Topics. 1-99 Credits.**MKTG 6241. Advanced Marketing Management. 3 Credits.****MKTG 6242. Buyer Behavior. 3 Credits.**

The buyer decision process model and how and why products and services are purchased; synthesis of behavioral sciences applied to understanding individual, family, and organizational decision processes; the impact of consumer decisions on the marketing strategies of business and public organizations; consumer marketing applications in high-tech and services industries and on a global scale.

MKTG 6243. Marketing Research. 3 Credits.

The marketing research process: designing, conducting, and using market research studies. Managing the market research project; qualitative research; survey and experimental designs; data analysis with statistical software packages. Prerequisite: MBAD 6221.

MKTG 6246. Marketing of Services. 3 Credits.

Services in a marketing context from the viewpoint of the customer; service quality, marketing analysis, consumer behavior, product analysis, channel distribution, pricing, and promotional decision making; business strategies examined in service trends, benefits of relationships for firms and for customers, service failure and recovery.

MKTG 6248. Advertising and Marketing Communications Strategy. 3 Credits.

Practical instruction in executing an advertising and integrated marketing communications campaign; strategic planning, communication theory, planning from a consumer attitudes and behavioral perspective, and campaign execution. Prerequisite: MBAD 6274. Recommended background: MKTG 6242.

MKTG 6250. Selling/Sales Management. 3 Credits.**MKTG 6251. Product Management. 3 Credits.****MKTG 6252. Digital Marketing. 3 Credits.**

The impact of technology on sales and marketing strategy; e-branding, customer relationship management, permission e-mail, sales force technology enhancement, mobile commerce, online marketing research, and electronic channels of distributions. Prerequisite: MBAD 6274.

MKTG 6255. Strategic Brand Management. 3 Credits.

Theoretical foundation for branding and brand management and practical application of these concepts in marketing management. Prerequisite: MBAD 6274.

MKTG 6256. Integrated Marketing Communication. 3 Credits.

The ubiquitous nature of advertising and promotion; how and from whom consumers get information and their level of trust in different information sources; concepts, analyses, and activities related to advertising; assessing and solving challenges. Prerequisite: MBAD 6274.

MKTG 6259. Marketing Strategy. 3 Credits.

Required capstone course for marketing students. Analysis of complex marketing problems involving policy and operational decisions; emphasis on creative marketing strategy.

MKTG 6261. Dynamic Pricing Strategy. 3 Credits.

Fundamental theories and concepts that constitute the principles of pricing in marketing. Examples of topics covered include pricing and price promotions in distribution channels, product line pricing, and online pricing. Recommended background: Prior completion of a course in basic microeconomics. Credit cannot be earned for this course and MKTG 4161.

MKTG 6262. Digital Marketing Analytics. 3 Credits.

Applied data and analytics in the digital marketing space with hands on experience working with data sets, and applying a range of techniques to extract insights from data primarily used in digital marketing. Credit cannot be earned for this course and MKTG 4162.

MKTG 6263. Marketing Decision Analytics. 3 Credits.

Transforming data into actionable information, using various statistics tools and software to analyze primary and secondary data; identifying data nuances; and weaving qualitative and quantitative data into a story. Prerequisites: MKTG 6243. Credit cannot be earned for this course and MKTG 4163.

MKTG 6264. Artificial Intelligence and Machine Learning for Marketing Automation. 3 Credits.

Application of machine learning and artificial intelligence models to marketing-related data. Focus on automating procedures and communicating findings in a business environment. Recommended background: Basic statistics and some knowledge of R and Python. Credit cannot be earned for this course and MKTG 4164.

MKTG 6265. Marketing Relational Databases and Customer Relationship Management. 3 Credits.

Customer-centric concepts, metrics; and strategies; basic customer database organization and analytics; and predictive modelling of customer responses. Credit cannot be earned for this course and MKTG 4165.

MKTG 6290. Special Topics. 3 Credits.

Same As: FINA 6290, MBAD 6290.

MKTG 6297. International Management Experience. 3 Credits.

Same as FINA 6297/ IBUS 6297/ MGT 6297/ SMPP 6297. May be repeated for credit.

MKTG 6298. Directed Readings and Research. 1-3 Credits.

MKTG 6299. Thesis Seminar. 3 Credits.

MKTG 6999. Thesis Research. 3 Credits.

MKTG 8341. Seminar: Marketing. 3 Credits.

MKTG 8397. Doctoral Seminar. 3 Credits.

MKTG 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

MKTG 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

STRATEGIC MANAGEMENT AND PUBLIC POLICY

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in business, business economics and public policy concentration (p. 556)
- Bachelor of Science with a major in business, information systems and technology management concentration (p. 557)

CERTIFICATES

Graduate certificates

- Graduate Certificate in corporate responsibility (p. 591)
- Graduate Certificate in strategic management (p. 598)

FACULTY

Professors J.H. Beales III, H.J. Davis, J. Rivera, J.B. Wade, J. Walter

Associate Professors E.J. Englander, J. Forrer (*Research*), K. Martin (*Chair*)

Assistant Professors S. Patnaik, T. Radin (*Teaching*), G. de los Reyes, D. Halliday (*Teaching*), V. Pamphile

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPP 1099. Variable Topics. 1-36 Credits.

SMPP 4900. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods.

SMPP 4900W. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPP 4995. Independent Study. 1-12 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit.

SMPP 5099. Variable Topics. 1-99 Credits.

SMPP 6201. Business and Public Policy. 3 Credits.

SMPP 6202. Business-Government Relations. 3 Credits.

Historical and philosophical foundations of the business-government relationship. Regulation, international trade, and corporate political activities. Public policy issues facing business and the business community's political response.

SMPP 6203. Federal Government Regulation in Society. 3 Credits.

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SMPP 6205. Business Representation and Lobbying. 3 Credits.

Strategies, tactics, and techniques used by business in representing itself to the legislative and executive branches and regulatory agencies of the federal government. Legal and practical constraints. Ethical considerations.

SMPP 6206. Applied Microeconomics. 3 Credits.

Applications of economic theory to public and private decisions with emphasis on public policy analysis. Focus on market structure and its implications. Imperfect information, common property, public goods and externalities. Economic analysis of government behavior and legal institutions. Prerequisites: ECON 6217 or ECON 6219; and MBAD 6222.

SMPP 6207. Environment, Energy, Technology, and Society. 3 Credits.

The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as PPPA 6067.

SMPP 6208. Macroeconomic Policy and Business. 3 Credits.

Determination of national income, employment, inflation, and interest rates. The role of expectations in the economy. Impact of government purchases, tax policy, and deficits. Monetary policy institutions. The global economy and exchange rates. Prerequisites: ECON 6218 or ECON 6219; and MBAD 6222.

SMPP 6209. Seminar: Business Economics and Public Policy. 3 Credits.

Analysis and discussion of selected issues by students and representatives of government and business. Prerequisite: SMPP 6202 or MBAD 6284.

SMPP 6210. Strategic Environmental Management. 3 Credits.

Examination and analysis of the orientation and actions of private, public, and nonprofit sectors in relation to their natural environments. Emphasis on organizational interaction and effectiveness, particularly regarding business firms and industry, on issues of environmental quality and sustainability.

SMPP 6211. Corporate Environmental Management in Developing Nations. 3 Credits.**SMPP 6212. Business Law: Enterprise Org. 3 Credits.****SMPP 6213. Management of Strategic Issues. 3 Credits.**

The body of management theory and practice that has evolved to identify, analyze, and resolve strategic organizational issues. Methodology of the field; applications to critical issues in labor relations, energy and pollution, marketing and consumerism, business-government relations, and the global economy.

SMPP 6214. Consultative Processes. 3 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as TSTD 6214.

SMPP 6215. Corporate Governance and Ethics. 3 Credits.

The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as ACCY 6801.

SMPP 6216. Public Policy, Governance, and the Global Market. 3 Credits.

The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets and globalization. The evolution of national, transatlantic and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization and industry standards. (Same as PPPA 6018).

SMPP 6218. Topics in Business and Society. 3 Credits.

Business engagement in policy making bodies through business organizations. Topics vary by semester. See department for more details.

SMPP 6241. Global Corporate Responsibility. 3 Credits.**SMPP 6271. Corporate Environmental Management and Policy. 1.5 Credit.****SMPP 6290. Special Topics. 3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Same As: ACCY 6900.

SMPP 6291. Ethics and Business. 3 Credits.

An in-depth, comprehensive exploration, analysis, and evaluation of specific for profit and nonprofit organization values, approaches, and outcomes related to multiple ethical ideals, systems, and practices.

SMPP 6292. Co-Curricular Activities in Responsible Management. 0 Credits.

Required for students in the graduate certificate in responsible management program. Students complete a project or case study on a relevant topic with an organization or faculty member; attend and submit written reports on a series of seminars, panel discussions, or other pre-approved events related to responsible management; and complete designated community service hours. Restricted to students in the graduate certificate in responsible management program.

SMPP 6293. American Business History. 3 Credits.

The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention is given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. (Same as HIST 6322).

SMPP 6295. Intern Qual&Quant Analysis. 3 Credits.**SMPP 6297. International Management Experience. 1.5-4.5 Credits.**

Same as FINA/IBUS/Mgt/Mktg 6297. May be repeated for credit.

SMPP 6298. Directed Readings and Research. 1-6 Credits.

Supervised readings or research. Admission by prior permission of instructor. May be repeated once for credit.

SMPP 6299. Thesis Seminar. 3 Credits.

SMPP 6999. Thesis Research. 3 Credits.

SMPP 8311. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Restricted to doctoral candidates. Credit cannot be earned for this course and PPPA 8111.

SMPP 8321. Seminar in Strategic Management. 3 Credits.

Develops understanding of the major research streams in strategic management; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8331. Doctoral Seminar. 3 Credits.

Designing sound theory-based, empirical research projects for the study of questions relevant to the field of strategic management.

SMPP 8391. Seminar: Business Management. 3 Credits.

Examination of major current issues, both theoretical and empirical, affecting the development of the business enterprise. Topics to be announced. Emphasis on policy and strategic issues affecting the total enterprise. (Offered as the demand warrants).

SMPP 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

SMPP 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Science with a major in accountancy (p. 551)
- Bachelor of Science with a major in business (p. 553)
 - concentration in accountancy (p. 554)
 - concentration in business analytics (p. 555)
 - concentration in business economics and public policy (p. 556)
 - concentration in finance (p. 556)
 - concentration in information systems and technology management (p. 557)
 - concentration in innovation and entrepreneurship (p. 558)
 - concentration in international business (p. 558)
 - concentration in marketing strategy and analytics (p. 559)
 - concentration in real estate (p. 560)

- concentration in sport, event, and hospitality management (p. 560)
- individualized concentration (p. 561)
- Bachelor of Science with a major in business analytics (STEM) (p. 561)
- Bachelor of Science with a major in finance (p. 563)
- Bachelor of Science with a major in information systems (STEM) (p. 564)
- Bachelor of Science with a major in marketing (p. 566)

Combined programs

- Dual Bachelor of science with a major in accountancy and Master of Accountancy (<http://bulletin.gwu.edu/business/accountancy/dual-ba-ma/>)
- Dual Bachelor of Science with a major in finance and Master of Science in Finance (p. 567)

Minors

- Minor in accountancy (p. 568)
- Minor in business (p. 568)
- Minor in business analytics (p. 569)
- Minor in creativity, innovation, and entrepreneurship (p. 569)
- Minor in management and leadership (p. 570)
- Minor in marketing (p. 571)
- Minor in real estate (p. 571)

BACHELOR OF SCIENCE WITH A MAJOR IN ACCOUNTANCY

The bachelor science with a major in accountancy degree program offers both specialized knowledge in accounting and a general education leading to a broad understanding of the business world. The program is designed to prepare students for a professional career in accounting in the public or private sector as well as for graduate study in business, finance, information systems, or law. Students are provided with multiple opportunities to gain practical experience, such as the ability to study the stock market in a classroom resembling a Wall Street trading venue.

Visit the program website (<http://business.gwu.edu/undergraduate/baccy/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including general education, pre-business, and business core courses.

Code	Title	Credits
Required		
General Education courses		

UW 1020	University Writing
One critical analysis course in the humanities. ¹	
One scientific reasoning with lab course. ¹	
Pre-business courses	
BADM 1001 & BADM 1002	First-Year Development Course I and First-Year Development Course II ²
or BADM 1003	Transfer Student Development Course
BADM 3001	Career Management Strategy ³
BADM 4001	Leadership and Career Launch ⁴
DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics
or STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
or APSC 3115	Engineering Analysis III
DNSC 2001	Business Analytics II: Predictive and Prescriptive Analytics
or STAT 2112	Business and Economic Statistics II
or STAT 2118	Regression Analysis
or STAT 2123	Introduction to Econometrics
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
A sequence of mathematics courses from the following: ⁵	
MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences
or MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II
Business core courses	
ACCY 2001	Introduction to Financial Accounting
ACCY 2002	Introductory Managerial Accounting
BADM 2001	Markets and Politics
or BADM 2001W	Markets and Politics

BADM 2301	Management Information Systems Technology
BADM 3103	Human Capital in Organizations
BADM 3401 or BADM 3401W	Contemporary Marketing Management Contemporary Marketing Management
BADM 3501	Financial Management and Markets
BADM 4801	Strategy Formulation and Implementation
IBUS 3001	Introduction to International Business
Accountancy major courses	
ACCY 3101	Intermediate Accounting I
ACCY 3102	Intermediate Accounting II
ACCY 3401	Federal Income Tax: Individuals
ACCY 3403	Advanced Tax
ACCY 3601	Business Law: Contracts, Torts, and Property
ACCY 4107	Advanced Accounting
ACCY 4301	Auditing
ACCY 4501	Accounting Systems
ACCY 4601	Business Law: Enterprise Organization
ACCY 4801	Financial Accounting Capstone

Electives

Students take sufficient credits in elective courses to reach the 120 credits required for the degree. Elective courses may be numbered from 1000 to 4999. Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses. They may include one HLWL (Health and Wellness) course.

Elective courses may be applied to a minor, a GWSB concentration, or a GWSB or non-GWSB second major.

¹See University General Education Requirement (p. 42) for a list of approved courses.

²Freshmen are required to take BADM 1001 and BADM 1002, transfer students are required to take BADM 1003.

³BADM 3001 is offered with accounting-specific sections and should be completed during the sophomore year, following successful completion of BADM 1001 and BADM 1002, or BADM 1003.

⁴BADM 4001 is offered with experiential-specific sections and should be completed in the senior year.

⁵Students should meet with a GWSB academic advisor to discuss other options for fulfilling the mathematics requirement.

Note: Students who intend to take the CPA examination should be aware that the coursework required for admission to the examination varies from state to state. Students are advised to consult the Board of Accountancy (<https://nasba.org/stateboards/>) for the state in which they plan to take the examination and choose courses that meet that state's requirements.

Double majors

Students in the BS in accountancy program who wish to pursue a double major must declare accountancy as their first major. Each major must include 15 unique credits that do not apply to any other degree requirement, with the exception of a WID requirement. All courses in both majors must be completed with a minimum grade of C-. Students should reference the regulations in this Bulletin and consult their academic advisor for assistance and additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including general education and pre-business courses, and business core courses and, and all courses in one concentration.

Code	Title	Credits
General education		
UW 1020	University Writing	
One critical analysis in the humanities course. ¹		
One scientific reasoning with lab course. ¹		
One of the following two-course sequences in mathematics: ²		
MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences	
or MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
Pre-business courses		

BADM 1001 & BADM 1002	First-Year Development Course I and First-Year Development Course II ³
or BADM 1003	Transfer Student Development Course
BADM 3001	Career Management Strategy ⁴
BADM 4001	Leadership and Career Launch ⁵
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics
or STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
or APSC 3115	Engineering Analysis III
DNSC 2001	Business Analytics II: Predictive and Prescriptive Analytics ⁶
or STAT 2112	Business and Economic Statistics II
or STAT 2118	Regression Analysis
or ECON 2123	Introduction to Econometrics
or STAT 2123	Introduction to Econometrics

Code	Title	Credits
Business core courses		
ACCY 2001	Introduction to Financial Accounting	
ACCY 2002	Introductory Managerial Accounting	
BADM 1004	The Age of Globalization	
BADM 2001W	Markets and Politics	
BADM 2301	Management Information Systems Technology	
BADM 3103	Human Capital in Organizations	
BADM 3401	Contemporary Marketing Management	
or BADM 3401W	Contemporary Marketing Management	
BADM 3501	Financial Management and Markets	
BADM 3601	Operations Management	
BADM 4101	Business Ethics and the Legal Environment	

or BADM 4101W Business Ethics and the Legal Environment

BADM 4801	Strategy Formulation and Implementation
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IBUS 3001	Introduction to International Business
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Electives

In general, students complete 37 credits in electives courses, or the minimum necessary to reach 120 credits for the degree. 18 of those credits must be taken outside of GWSB. Elective courses may be numbered 1000 to 4999. Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses and may include a maximum of one HLWL (Health and Wellness) course. Students may use electives for an additional concentration, a second GWSB or non-GWSB major, or a minor.

¹See University General Education Requirement (p. 42) for a list of approved courses.

²Students should meet with a GWSB academic advisor to discuss other options for fulfilling the mathematics requirement.

³Freshmen are required to take BADM 1001 and BADM 1002; transfer students are required to take BADM 1003.

⁴BADM 3001 is offered with subject-specific sections and should be completed during the sophomore year, following successful completion of BADM 1001 and BADM 1002, or BADM 1003.

⁵BADM 4001 is offered with experiential-specific sections and should be completed in the senior year.

⁶Students should meet with a GWSB academic advisor to discuss which advanced statistics requirement is appropriate for your concentration.

Concentration requirement

A business concentration is required for all BS in business students. Students select a field of concentration from among accountancy; business analytics; business economics and public policy; finance; information systems and technology management; innovation and entrepreneurship; international business; marketing strategy and analytics; real estate; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interest in business. The concentration consists of five field courses designated by the department. The concentration must be selected no later than the second semester of the sophomore year. Students should contact the GWSB Undergraduate Advising Center to declare a concentration.

Concentrations are restricted to GWSB students. Students may pursue up to three concentrations under the BS in business degree. Each concentration must have at least 9 credits taken in residence. Courses taken for the concentration

may not apply to any other requirement. All courses in each concentration must be completed with a minimum grade of C-. Information concerning concentration requirements is available on the School of Business website (<https://business.gwu.edu/academics/programs/undergraduate/bba/>) or at the GWSB Undergraduate Advising Center (<https://business.gwu.edu/current-students/undergraduate/advising-center/>).

CONCENTRATION OPTIONS:

- Accountancy (p. 554)
- Business analytics (p. 555)
- Business economics and public policy (p. 556)
- Finance (p. 556)
- Information systems and technology management (p. 557)
- Innovation and entrepreneurship (p. 558)
- International business (p. 558)
- Marketing strategy and analytics (p. 559)
- Real estate (p. 560)
- Sport, event, and hospitality management (p. 560)
- Individualized concentration (p. 561)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, ACCOUNTANCY CONCENTRATION

The bachelor of science with a major in business (BS) with a concentration in accountancy degree program provides undergraduate students with the analytical tools and conceptual framework needed to understand and record financial transactions.

The School of Business offers two degree options for students to study accountancy: the BS in business with a concentration in accountancy and the bachelor of science with a major in accountancy (<http://business.gwu.edu/undergraduate/baccy/>) (BS). The BS degree with an accountancy concentration is intended to be paired with a second, complementary field of concentration. For students who plan to work as an accountant,

often with a CPA designation, the BS in accountancy degree program is more appropriate as it offers substantially more preparation in accounting.

Accountancy is an ideal second concentration for BS in business students who plan to pursue careers in finance as it provides a strong background in information that underlies many financial decisions. Likewise, a second concentration in accountancy is an excellent choice for BS in business students with a concentration in information systems as such students often pursue jobs related to accounting information systems.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/accountancy/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), the concentration in accountancy requires five field courses:

Code	Title	Credits
Required field courses		
ACCY 3101	Intermediate Accounting I	
ACCY 3102	Intermediate Accounting II	
ACCY 3106	Financial Statement Analysis ¹	
or ACCY 4501	Accounting Systems	
Additional field courses		
Two courses from the following:		
ACCY 3106	Financial Statement Analysis ¹	
ACCY 3401	Federal Income Tax: Individuals	
ACCY 3403	Advanced Tax	
ACCY 4107	Advanced Accounting	
ACCY 4301	Auditing	
ACCY 4501	Accounting Systems ¹	

¹ACCY 3106 and ACCY 4501 are options for both the required and additional field course categories. If only one is taken, it will apply to the required field course category. If both are taken, one will apply to the required field courses, and the other will apply to the additional field course category.

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, BUSINESS ANALYTICS CONCENTRATION

The bachelor of science in business with a concentration in business analytics degree program provides students with the analytical tools and conceptual framework needed to understand and apply data and decision modeling in real life settings. Analytics is defined as the extensive use of data, statistical and quantitative models, and fact-based management to drive decisions and actions. More than just modeling and data manipulation, it is a process of transforming data into actions through analysis and insights in the context of organizational decision making and problem solving. Combining the business analytics concentration with any other area in business, such as finance or marketing, or in other fields, such as engineering, public policy, and international affairs, may give graduates expanded career opportunities.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), the concentration in business analytics requires five field courses:

Code	Title	Credits
Required		
Required field courses		
DNSC 3403	Decision Models	
DNSC 4211	Programming for Analytics	
DNSC 4279	Data Mining	
Two additional field courses, selected from the following:		
DNSC 4404	Essentials of Project Management	
DNSC 4900	Special Topics (Forecasting; Marketing Analytics; or Supply Chain Analytics)	
ISTM 4121	Database Principles and Applications	

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, BUSINESS ECONOMICS AND PUBLIC POLICY CONCENTRATION

The bachelor of science in business with a concentration in business economics and public policy degree program is concerned with the continuing business-government dialogue that leads to effective decision making and equitable relations between the public and private sectors. The program is designed to help students develop the knowledge and skills useful for a wide variety of positions in public, private, for-profit, and nonprofit organizations. Students deepen their understanding of the social and legal environments that influence business and its relationships with government at all levels. Students also receive in-depth training in micro- and macroeconomic analysis. This key element of the field prepares students to perform rigorous and sophisticated analyses of the economic impacts of policy decisions on various types of institutions and organizations.

Study in this concentration also serves to ensure that students understand the workings of political systems and institutions, particularly those of the U.S. federal government. This understanding includes recognizing not only what government can do and achieve, but also the limits of its power and the role of private interests in driving political decision making in Congress and government agencies.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/business-economics-and-public-policy/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business, (p. 553) the concentration in business economics and public policy requires five field courses:

Code	Title	Credits
Required		
Required field course		
ECON 2101	Intermediate Microeconomic Theory	
Economics field course		
One of the following:		
ECON 2102	Intermediate Macroeconomic Theory	
ECON 2158	Industrial Organization	
Political science field course		
One of the following:		

PSC 2211	State and Urban Politics
PSC 2214	U.S. Constitutional Law and Politics I
PSC 2215	U.S. Constitutional Law and Politics II
PSC 2219	Political Parties and Interest Groups
PSC 2220	Public Opinion
PSC 2228	Media, Politics, and Government
or SMPA 3428	Media, Politics, and Government
PSC 2229	Media and Politics
Political institutions field course	
One of the following:	
PSC 2213	Judicial Politics
PSC 2216	The American Presidency
PSC 2218	Legislative Politics
Policy focus field course	
One of the following:	
ECON 2136	Environmental and Natural Resource Economics
ECON 2148	Survey of Health Economics
ECON 3190	Law and Economics
GEOG 2120	World Regional Geography
IAFF 3190	Special Topics in International Affairs (Human Rights and Ethics)
MGT 3305	Human Capital Sustainability
PSC 2222	Science, Technology, and Politics
TSTD 4900	Special Topics (Advocacy & Lobbying)

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, FINANCE CONCENTRATION

The bachelor of science in business with a concentration in finance degree program provides students with the analytical tools and conceptual framework needed to evaluate financial transactions and make financial decisions within firms. The

academic program allows students to understand finance from three interrelated perspectives:

- Financial management related to capital budgeting, financial structure, financial analysis, working capital management, and dividend policy.
- Investment and portfolio management related to the valuation of stocks, bonds, and derivative contracts and the construction of efficient portfolios.
- The money and capital market related to the issuance and investment in financial instruments by banking organizations with emphasis on the consequence of interest rates and interest rate structure on valuation and risk.

Upon successful completion of the program, students might apply for professional positions such as credit analyst, equity analyst, or financial analyst with governmental agencies, for-profit corporations, and investment banks. Finance also provides an excellent foundation for graduate study in business, economics, public policy, and law.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/business-economics-and-public-policy/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business, (p. 553) the concentration in finance requires five field courses:

Code	Title	Credits
Required		
Field Courses		
FINA 3001	Intermediate Finance	
FINA 3101	Investment and Portfolio Management	
FINA 4001	Advanced Financial Management	
or FINA 4001W	Advanced Financial Management	
Additional field courses		
Two of the following:		
FINA 3201	Exploring Finance with Simulation	
or FINA 3201W	Exploring Finance with Simulation	
FINA 3301	Money and Capital Markets	
FINA 4101	Applied Financial Securities Analysis	
FINA 4201	Real Estate Investment	
FINA 4301	Financial Derivatives	

FINA 4900	Special Topics (Applied Financial Security Analysis: Fixed Income)
FINA 4900	Special Topics (Applied Financial Security Analysis: Real Estate)
FINA 4900	Special Topics (Investment Analysis Venture Capital)

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, INFORMATION SYSTEMS TECHNOLOGY MANAGEMENT CONCENTRATION

The bachelor of science in business with a concentration in information systems and technology management (BS-ISTM) enables undergraduate students to acquire an in-depth understanding of information technology (IT) and the skills and analytical methods needed to design and develop the information systems (IS) that businesses find indispensable. The IT overview covers areas ranging from data communications, to data management. Students also learn about and have opportunities for practical experience in the structured development of information systems, programming, database design, and other techniques needed for successful IS design and develop. These IS/IT-specific skills and knowledge, coupled with an understanding of the other aspects of business acquired in the program, give students a competitive start in their chosen careers.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/information-systems-and-technology-management/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), the concentration in information systems and technology management requires five field courses:

Code	Title	Credits
Required field courses		
ISTM 3119	Introduction to Programming	
ISTM 4120	Business Systems Development	
ISTM 4121	Database Principles and Applications	

Additional field courses

Two courses from the following:

ISTM 4123	Business Data Communications
ISTM 4130W	Writing On The Ethics of Technology
ISTM 4215	Human-Computer Interaction
ISTM 4223	Innovation Ventures
ISTM 4233	Emerging Technologies
ISTM 4900	Special Topics ¹

¹ Enrollment in ISTM 4900 on topics announced in the Schedule of Classes requires ISTM program director approval.

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, INNOVATION AND ENTREPRENEURSHIP CONCENTRATION

The bachelor of science in business with a concentration in innovation and entrepreneurship (INEN) provides students with a broad spectrum of skills that enable them to start, manage, and grow new and/or existing businesses. Graduates are equipped to work in major organizations that develop new products, procedures, and services. The program provides students with opportunities to explore new organizational types, both for-profit and nonprofit, and to develop the skills needed to become effective consultants. The INEN concentration emphasizes practical learning and encourages students to excel in the classroom while participating in field-related activities. Through exposure to scenarios designed to sharpen their ability to use fast-paced decision making, INEN students are challenged to operate with success in turbulent environments.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/innovation-and-entrepreneurship/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), the concentration in innovation and entrepreneurship requires five field courses:

Code	Title	Credits
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Field courses

MGT 3300	Entrepreneurship
or MGT 3300W	Entrepreneurship
MGT 4003	Management of the Growing Entrepreneurial Venture

Three courses selected from the following:

MGT 3301	Small Business Management
MGT 3302	e-Entrepreneurship
MGT 3303	Women's Entrepreneurial Leadership
MGT 3305	Human Capital Sustainability
MGT 4900	Special Topics (Innovation and Creativity)
DNSC 4404	Essentials of Project Management

Students should consult with the advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, INTERNATIONAL BUSINESS CONCENTRATION

The bachelor of science in business with a major in business with a concentration in international business provides students with the analytical tools and conceptual framework needed to understand the international financial, political, and economic environment; how that environment influences a firm's strategy and performance; how culture plays a role in guiding a firm's strategic activities; and how a firm can leverage home and host country resources to overcome challenges inherent in managing a multinational enterprise. The academic program allows students to understand international business from three interrelated perspectives: international economics and finance, international marketing, and international corporate strategy.

This field provides the basic academic foundations for entry-level positions in international business, particularly in multinational corporations, international banks, and governmental agencies. Such organizations include the Export-Import Bank, Overseas Private Investment Corporation, and the Departments of Commerce, State, and Treasury, in addition to international institutions such as the World Bank and the International Finance Corporation.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/international-business/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), the concentration in international business requires five field courses.

Code	Title	Credits
Required field course		
IBUS 3101	Global Financial Environment	
Additional field courses		
Four courses from the following:		
IBUS 3201	International Marketing Management	
IBUS 3301	International Business Finance	
IBUS 4202	Regional Strategy for Multinationals	
IBUS 4203	Foreign Market Analysis	
IBUS 4302	International Banking	
IBUS 4303	International Monetary and Financial Issues	
IBUS 4401	Managing the Multinational Enterprise	
IBUS 4402	Managing in Developing Countries	
IBUS 4403	Oil: Industry, Economy, and Society	
IBUS 4404	Global Energy	
IBUS 4900	Special Topics	
IBUS 4995	Independent Study	

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, MARKETING STRATEGY AND ANALYTICS CONCENTRATION

The bachelor of science in business with a concentration in marketing strategy and analytics degree program provides students with the analytical and conceptual foundations for strategic marketing processes. These processes include market research, segmentation, targeting, positioning, integrated

marketing communications, and relationship building. Students develop competencies and skills in identifying customer needs and wants; making decisions about which markets organizations should serve; designing product, service, and program offerings for these markets; planning and implementing strategies to communicate with and sell to these markets; and creating value through profitable relationships with customers as well as channel partners, suppliers, and other stakeholders.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/marketing/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business, (p. 553) the concentration in marketing strategy and analytics requires five field courses:

Code	Title	Credits
Required field courses		
MKTG 3142	Consumer Behavior	
or MKTG 3142W	Consumer Behavior	
MKTG 3143	Marketing Research	
Additional field courses		
Three courses selected from one or both of the following two tracks. The courses are organized in two tracks only to suggest courses that build on one another in a related field of knowledge.		
Marketing Strategy		
MKTG 4148	Advertising and Marketing Communications	
or MKTG 4156	Integrated Marketing Communications	
MKTG 4150	Salesmanship and Sales Management	
MKTG 4152	Retailing Management	
MKTG 4159	Marketing Strategy	
MKTG 4161	Pricing Strategy: Competitive and Dynamic Pricing	
Digital Marketing and Analytics		
MKTG 4154	Digital Marketing	
MKTG 4162	Digital Marketing Analytics	
MKTG 4163	Applied Marketing Decision Analytics	

MKTG 4164	Artificial Intelligence and Automated Marketing
MKTG 4165	Customer Relationship Management and Relational Databases
MKTG 4900	Special Topics

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, REAL ESTATE CONCENTRATION

The bachelor of science in business with a major in business, real estate concentration program provides students with the knowledge base in finance, real estate investment, development, valuation, and strategic planning to help prepare them for an entry-level position in the real estate industry. Most of the field courses in this concentration are at the graduate level, which may give students who complete the program a competitive advantage vis-a-vis students from other universities. For GW students interested in real estate who already are taking such courses, this concentration provides a vehicle to help quantify their commitment to real estate to potential employers.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/real-estate/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), (<http://bulletin.gwu.edu/business/undergraduate-programs/business-administration/#requirements>) the concentration in real estate requires five field courses:

Code	Title	Credits
Required field courses		
FINA 4201	Real Estate Investment	
FINA 6240	Real Estate Development	
FINA 6242	Real Estate Valuation and Investment	
Additional field courses		
Two courses from the following:		
AH 2154	American Architecture I	
or AMST 2520	American Architecture I	

ECON 2157	Urban and Regional Economics
FINA 4900	Special Topics (Applied Financial Securities Analysis: Real Estate)
FINA 6243	Strategic Planning for Walkable Urban Real Estate Companies
FINA 6290	Special Topics (Walkable Urban Place Development and Management)
GEOG 2140	Cities and Societies
SUST 2002	The Sustainable City

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, SPORT, EVENT, AND HOSPITALITY MANAGEMENT CONCENTRATION

The bachelor of science in business with a concentration in sport, event, and hospitality management degree program provides students with a theoretical and practical understanding of these industries through three different tracks:

- Sport management track focuses on the management and marketing of sport events, organizations, products, and athletes, as well as in special events, conferences, meetings, expositions, festivals, and other entertainment properties including sport and event facilities.
- Event management track focuses on the marketing and management of businesses related to conventions, meetings, special events, conferences, expositions, and festivals.
- Hospitality management track focuses on the marketing, management, and financing of both hotels and those businesses related to tourism, including cities, attractions, restaurants, and airlines.

Typical entry-level positions include those in collegiate and professional sport organizations, sport marketing agencies, sport manufacturers, sport and event facilities, hotels and resorts, restaurants and food service operations, visitor and convention bureaus, theme parks and recreation centers, museums, tour operators, travel management firms, destination management companies, event producers, associations, corporate sponsors, and consulting firms.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bba/sport-event-hospitality-management/>) for more information.

REQUIREMENTS

In addition to the requirements for the bachelor of science with a major in business (p. 553), the concentration in sport, event, and hospitality management requires five field courses:

Code	Title	Credits
Required field		
TSTD 3001	Introduction to Tourism and Hospitality Management	
TSTD 4102	Practicum	
or MGT 3305	Human Capital Sustainability	
Required track		
All courses in one of the following tracks:		
Sport management track		
TSTD 3101	Sport and Event Business Management	
TSTD 3102W	Sport and Event Marketing	
TSTD 4101	Issues in Sport and Event Management	
Event management track		
TSTD 3301	Hospitality Industry Management	
or TSTD 3101	Sport and Event Business Management	
TSTD 4301	Travel Marketing Communication	
or TSTD 3102v	Sport and Event Marketing	
TSTD 4900	Special Topics (Convention and Meeting Management)	
Hospitality management track		
TSTD 3301	Hospitality Industry Management	
TSTD 3302	Financial Management in Tourism and Hospitality	
TSTD 4301	Travel Marketing Communication	

Students should consult with an advisor for specific bachelor of science in business general education courses (<https://business.gwu.edu/current-students/undergraduate/advising-center/degree-requirements/>) that apply to this concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS, INDIVIDUALIZED CONCENTRATION

The purpose of the individualized concentration is to assist bachelor of science in business students who have a clear career objective that falls outside of the standard bachelor of science with a major in business concentrations (p. 553). The career objectives of most BS in business students easily can be met by one of these concentrations, in which case pursuing an individualized field of concentration is not recommended.

REQUIREMENTS

Program of study

The program of study for the bachelor of science in business individualized field of concentration varies greatly depending on the individual student's objectives. Past individualized concentrations pursued include small business management, health administration, human resource management, strategic management, and supply chain management.

Proposal and application process

As part of the application process, students must create a proposal that includes five field courses.

Students develop their full proposal based on extensive research and with the assistance of faculty members who focus in related fields. Complete criteria and application directions can be found in the Individualized Field of Concentration Application Packet (<https://business.gwu.edu/academics/programs/undergraduate/bba/individualized-field-of-study/>). GWSB students must have a minimum cumulative GPA of 3.2 in order to submit an individualized concentration proposal. Proposals must be submitted before the start of junior year.

The individualized field of concentration application process typically takes 10 to 12 weeks from initial research to receiving the faculty committee's final decision. Students are advised not to take proposed courses prior to approval of the individualized field of concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN BUSINESS ANALYTICS (STEM)

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 77 credits in required courses and 43 credits in elective courses.

Code	Title	Credits
Required		
General education courses		
UW 1020	University Writing	
One critical analysis in the humanities course. ¹		
One scientific reasoning with lab course. ¹		
Pre-business courses		
BADM 1001 & BADM 1002	First-Year Development Course I and First-Year Development Course II ³	
or BADM 1003	Transfer Student Development Course	
BADM 3001	Career Management Strategy ³	
BADM 4001	Leadership and Career Launch ⁴	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
One of the following two-course sequences in mathematics: ²		
MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences	
or MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics	
or APSC 3115	Engineering Analysis III	
or STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
DNSC 2001	Business Analytics II: Predictive and Prescriptive Analytics ⁵	
or ECON 2123	Introduction to Econometrics	
or STAT 2112	Business and Economic Statistics II	
or STAT 2118	Regression Analysis	
or STAT 2123	Introduction to Econometrics	

Code	Title	Credits
Business core courses		
ACCY 2001	Introduction to Financial Accounting	
Four of the following courses:		
ACCY 2002	Introductory Managerial Accounting	
BADM 2001W	Markets and Politics	
or BADM 2001	Markets and Politics	
BADM 2301	Management Information Systems Technology	
BADM 3103	Human Capital in Organizations	
BADM 3401	Contemporary Marketing Management	
or BADM 3401W	Contemporary Marketing Management	
BADM 3501	Financial Management and Markets	
BADM 3601	Operations Management	
BADM 4101	Business Ethics and the Legal Environment	
or BADM 4101W	Business Ethics and the Legal Environment	
BADM 4801	Strategy Formulation and Implementation	
IBUS 3001	Introduction to International Business	
Business analytics requirements		
DNSC 3288	Big Data, Predictive Analytics, and Ethics	
DNSC 3403	Decision Models	
DNSC 4211	Programming for Analytics	
DNSC 4219	Forecasting Analytics	
DNSC 4279	Data Mining	
DNSC 4280	Machine Learning	
DNSC 4289	Capstone in Business Analytics	
ISTM 4212	Data Management for Analytics	
Two courses selected from the following:		
DNSC 4233	Social Network Analytics	
DNSC 4281	Revenue Management Analytics	
DNSC 4282	Supply Chain Analytics	

Electives

In general, students complete 43 credits in elective courses, or the minimum necessary to reach 120 credits for the degree. 18 of those credits must be taken outside of GWSB. Elective courses may be numbered 1000 to 4999. Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses and may include a maximum of one HLWL (Health and Wellness) course. Students may use electives for an additional concentration, a second GWSB or non-GWSB major, or a minor.

¹See University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) for a list of approved courses.

²Students should meet with a GWSB academic advisor to discuss other options for fulfilling the mathematics requirement.

³Freshmen are required to take BADM 1001 and BADM 1002, transfer students are required to take BADM 1003.

⁴BADM 3001 is offered with industry-specific sections and should be completed during the sophomore year, following BADM 1001 and BADM 1002.

⁵BADM 4001 is offered with experiential-specific sections and should be completed in the senior year.

⁵BS in business analytics students should complete DNSC 2001 as their advanced statistics requirement.

BACHELOR OF SCIENCE WITH A MAJOR IN FINANCE

Emphasizing a finance-focused education, the bachelor of science with a major in finance degree program directly targets the financial industry including commercial banks, investment banks, investment companies, and insurance companies.

The degree is offered by the School of Business both to its own students and to those enrolled in other GW schools. School of Business students enrolled in the program are required to take a minor in another GW school, while those from other GW schools take the program as a second major.

Visit the program website (<https://business.gwu.edu/academics/programs/undergraduate/bs-finance/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
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General education and prerequisite course requirements

General education

UW 1020	University Writing
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One critical analysis course in the humanities ¹

One scientific reasoning with lab course ¹

Prerequisites

MATH 1231	Single-Variable Calculus I
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MATH 1232	Single-Variable Calculus II
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ECON 1011	Principles of Economics I
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ECON 1012	Principles of Economics II
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DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics
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or STAT 1051	Introduction to Business and Economic Statistics
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or STAT 1053	Introduction to Statistics in Social Science
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or STAT 1111	Business and Economic Statistics I
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or APSC 3115	Engineering Analysis III
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STAT 2118	Regression Analysis
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or ECON 2123	Introduction to Econometrics
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or STAT 2123	Introduction to Econometrics
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Code	Title	Credits
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Major requirements

School of Business courses

BADM 1001 & BADM 1002	First-Year Development Course I and First-Year Development Course II ²
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or BADM 1003	Transfer Student Development Course
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BADM 3001	Career Management Strategy ³
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BADM 4001	Leadership and Career Launch ⁴
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BADM 4101	Business Ethics and the Legal Environment
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or BADM 4101W	Business Ethics and the Legal Environment
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Courses in the major

ACCY 2001	Introduction to Financial Accounting
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ACCY 3106	Financial Statement Analysis
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BADM 3501	Financial Management and Markets
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FINA 3001	Intermediate Finance
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FINA 3101	Investment and Portfolio Management
FINA 4001	Advanced Financial Management
or FINA 4001W	Advanced Financial Management
Four additional courses in the major selected from the following:	
FINA 3201	Exploring Finance with Simulation
or FINA 3201W	Exploring Finance with Simulation
FINA 3301	Money and Capital Markets
FINA 3401	A Brief History of Finance
or FINA 3401W	A Brief History of Finance
FINA 4101	Applied Financial Securities Analysis
FINA 4201	Real Estate Investment
FINA 4301	Financial Derivatives
FINA 4900	Special Topics (Applied Financial Security Analysis: Fixed Income)
FINA 4900	Special Topics (Applied Financial Security Analysis: Real Estate)
FINA 4900	Special Topics (Investment Analysis Venture Capital)
One international field course selected from the following:	
ECON 2180	Survey of International Economics
ECON 2181	International Trade Theory and Policy
ECON 2182	International Macroeconomic Theory and Policy
IBUS 3001	Introduction to International Business
IBUS 3101	Global Financial Environment
IBUS 3301	International Business Finance
IBUS 4302	International Banking
IBUS 4303	International Monetary and Financial Issues
SMPP 4900W	Special Topics (Strategy and International Political Economy)
TSTD 3302	Financial Management in Tourism and Hospitality

Electives

In general, students complete 34 credits of electives or the minimum necessary to reach the 120 credits required for the degree. Elective courses may be numbered from 1000 to 4999. Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses. They may include one HLWL (Health and Wellness) course.

Elective courses may be applied toward a GWSB concentration or a GWSB or non-GWSB second major.^{6,7}

Minor requirement

A minor outside of the School of Business is required for the degree. Courses vary by minor and typically require a minimum of 18 credits. Students may pursue a second minor or a second major in lieu of the minor.⁷

¹A list of approved courses can be found in this Bulletin under General Education Requirements (p. 42).

²Freshmen take BADM 1001 and BADM 1002. Transfer students take BADM 1003.

³BADM 3001 is offered with finance-specific sections and should be completed during the sophomore year, after completing BADM 1001 and BADM 1002 or BADM 1003. Students should take one of the following sections, in accordance with their career interests: Finance and Accounting or Finance and Investment Banking.

⁴BADM 4001 is offered with experiential-specific sections and should be completed in the senior year.

⁵FINA 4001 must be taken at GW.

⁶Students pursuing a double major who wish to earn a major in accountancy must declare the BS in accountancy as their first major; i.e., accountancy may not be listed as a second major. Major courses in both majors must be completed with a grade of C- or above.

⁷Students should consult the regulations in this Bulletin and their academic advisor for assistance and additional information concerning elective courses and the minor requirement.

BACHELOR OF SCIENCE WITH A MAJOR IN INFORMATION SYSTEMS

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
General education and pre-business courses		
UW 1020	University Writing	

One critical analysis in the humanities course ¹

One scientific reasoning with lab course. ¹

Code	Title	Credits
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Pre-business courses

BADM 1001 & BADM 1002	First-Year Development Course I and First-Year Development Course II
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or BADM 1003	Transfer Student Development Course
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BADM 3001	Career Management Strategy
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BADM 4001	Leadership and Career Launch
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ECON 1011	Principles of Economics I
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ECON 1012	Principles of Economics II
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DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics
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or APSC 3115	Engineering Analysis III
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or STAT 1051	Introduction to Business and Economic Statistics
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or STAT 1053	Introduction to Statistics in Social Science
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or STAT 1111	Business and Economic Statistics I
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STAT 2118	Regression Analysis
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or ECON 2123	Introduction to Econometrics
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or STAT 2123	Introduction to Econometrics
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One of the following two-course sequences in mathematics ²

MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences
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MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II
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Business core courses

MATH 1220 & MATH 1221	Calculus with Precalculus I and Calculus with Precalculus II
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or MATH 1231	Single-Variable Calculus I
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BADM 2301	Management Information Systems Technology
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Four courses selected from the following:

ACCY 2001	Introduction to Financial Accounting
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ACCY 2002	Introductory Managerial Accounting
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BADM 2001	Markets and Politics
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or BADM 2001W	Markets and Politics
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BADM 3103	Human Capital in Organizations
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BADM 3401	Contemporary Marketing Management
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or BADM 3401W	Contemporary Marketing Management
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BADM 3501	Financial Management and Markets
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BADM 3601	Operations Management
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BADM 4101	Business Ethics and the Legal Environment
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or BADM 4101W	Business Ethics and the Legal Environment
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BADM 4801	Strategy Formulation and Implementation
-----------	--

IBUS 3001	Introduction to International Business
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Information systems courses

ISTM 3119	Introduction to Programming
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ISTM 4120	Business Systems Development
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ISTM 4121	Database Principles and Applications
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ISTM 4205	Web Applications Development
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ISTM 4206	Foundations of Information Systems Security and Ethics
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ISTM 4209	Foundations of Web Analytics
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ISTM 4210	Information Systems Capstone
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Three courses selected from the following:

ISTM 4213	Foundations of Cloud Applications
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ISTM 4214	Foundations of Artificial Intelligence
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ISTM 4216	Mobile Application Development
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ISTM 4217	Internet of Things Management
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Electives

In general, students complete 43 credits in elective courses, or the minimum necessary to reach 120 credits for the degree. 18 of those credits must be taken outside of GWSB. Elective courses may be numbered 1000 to 4999. Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses and may include a maximum of one HLWL (Health and Wellness) course. Students may use electives for an additional concentration, a second GWSB or non-GWSB major, or a minor.

¹See University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) for a list of approved courses.

²Students should meet with a GWSB academic advisor to discuss other options for fulfilling the mathematics requirement.

³Freshmen are required to take BADM 1001 and BADM 1002, transfer students are required to take BADM 1003.

⁴BADM 3001 is offered with industry-specific sections and should be completed during the sophomore year, following successful completion of BADM 1001 and 1002, or BADM 1003.

⁵BADM 4001 is offered with experiential-specific sections and should be completed in the senior year.

BACHELOR OF SCIENCE WITH A MAJOR IN MARKETING REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 77 credits in required courses and 43 credits in elective courses.

Code	Title	Credits
General education and pre-business		
UW 1020	University Writing	
One critical analysis in the humanities course. ¹		
One scientific reasoning with lab course. ¹		
Pre-business courses		
One of the following two-course sequences in mathematics: ²		
MATH 1051 & MATH 1252	Finite Mathematics for the Social and Management Sciences and Calculus for the Social and Management Sciences	
or MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	

BADM 1001 & BADM 1002	First-Year Development Course I and First-Year Development Course II ³
or BADM 1003	Transfer Student Development Course
BADM 3001	Career Management Strategy ⁴
BADM 4001	Leadership and Career Launch ⁵
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics
or APSC 3115	Engineering Analysis III
or STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1111	Business and Economic Statistics I
DNSC 2001	Business Analytics II: Predictive and Prescriptive Analytics
or ECON 2123	Introduction to Econometrics
or STAT 2112	Business and Economic Statistics II
or STAT 2118	Regression Analysis
or STAT 2123	Introduction to Econometrics

Code	Title	Credits
Required		
Business core courses		
BADM 3401	Contemporary Marketing Management	
or BADM 3401W	Contemporary Marketing Management	
Four courses selected from the following:		
ACCY 2001	Introduction to Financial Accounting	
BADM 2001W	Markets and Politics	
or BADM 2001	Markets and Politics	
BADM 3103	Human Capital in Organizations	
BADM 3501	Financial Management and Markets	
BADM 3601	Operations Management	
BADM 4101	Business Ethics and the Legal Environment	

or BADM 4101W	Business Ethics and the Legal Environment
BADM 4801	Strategy Formulation and Implementation
IBUS 3001	Introduction to International Business
Marketing courses	
MKTG 3142	Consumer Behavior
or MKTG 3142W	Consumer Behavior
MKTG 3143	Marketing Research
MKTG 4148	Advertising and Marketing Communications
or MKTG 4156	Integrated Marketing Communications
MKTG 4154	Digital Marketing
MKTG 4162	Digital Marketing Analytics
Five courses selected from the following:	
MKTG 4149	Advanced Advertising Campaigns
MKTG 4150	Salesmanship and Sales Management
MKTG 4159	Marketing Strategy
MKTG 4161	Pricing Strategy: Competitive and Dynamic Pricing
MKTG 4163	Applied Marketing Decision Analytics
MKTG 4164	Artificial Intelligence and Automated Marketing
MKTG 4165	Customer Relationship Management and Relational Databases

Electives

In general, students complete 43 credits in electives courses, or the minimum necessary to reach 120 credits for the degree. 18 of those credits must be taken outside of GWSB. Elective courses may be numbered 1000 to 4999. Electives may not include LSPA (Lifestyle, Sport, and Physical Activity) courses and may include a maximum of one HLWL (Health and Wellness) course. Students may use electives for an additional concentration, a second GWSB or non-GWSB major, or a minor.

¹See University General Education Requirement (p. 42) for a list of approved courses.

²Students should meet with a GWSB academic advisor to discuss other options for fulfilling the mathematics requirement.

³Freshmen are required to take BADM 1001 and BADM 1002; transfer students are required to take BADM 1003.

⁴BADM 3001 is offered with subject-specific sections and should be completed during the sophomore year, following successful completion of BADM 1001 and BADM 1002, or BADM 1003.

⁵BADM 4001 is offered with experiential-specific sections and should be completed in the senior year.

DUAL BS WITH A MAJOR IN BUSINESS AND MASTER OF HUMAN RESOURCE MANAGEMENT

The School of Business offers a dual bachelor of business administration and master of human resources degree program. The combined program allows students to take 9 graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's. All requirements for both degrees must be fulfilled. Students interested in the dual degree program should confer with the graduate advisor.

Visit the program website for additional information.

DUAL BACHELOR OF BUSINESS ADMINISTRATION AND MASTER'S IN MANAGEMENT

The School of Business offers a dual bachelor of business administration (<http://bulletin.gwu.edu/business/undergraduate-programs/business-administration/>) and master's in management (<http://bulletin.gwu.edu/business/graduate-programs/management/>) degree program. The combined program allows students to take 9 graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the graduate advisor.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN FINANCE AND MASTER OF SCIENCE IN THE FIELD OF FINANCE

The School of Business offers a dual bachelor of science with a major in finance (p. 563) and master of science in the field of finance (p. 580) degree program. The combined program allows students to take up to 12 graduate credits as part of their undergraduate degree, thereby decreasing the number of

credits normally required for the master's. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the graduate advisor. Visit the program website (<https://business.gwu.edu/four-plus-one/>) for additional information.

MINOR IN ACCOUNTANCY REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required course and 9 credits in elective credits.

Code	Title	Credits
Required field courses		
ACCY 2001	Introduction to Financial Accounting	
ACCY 2002	Introductory Managerial Accounting	
ACCY 3101	Intermediate Accounting I *	
or ACCY 3106	Financial Statement Analysis	
Additional field courses		
3 courses selected from the following:		
ACCY 3101	Intermediate Accounting I *	
ACCY 3102	Intermediate Accounting II	
ACCY 3106	Financial Statement Analysis *	
ACCY 3401	Federal Income Tax: Individuals	
ACCY 3403	Advanced Tax	
ACCY 4107	Advanced Accounting	
ACCY 4301	Auditing	
ACCY 4501	Accounting Systems	

* ACCY 3101 and ACCY 3106 may be applied to either the required field course requirement or the additional field course requirement. If only one course is taken, it will apply to the required field course requirement. If both are taken, one will apply to the required field course requirement and one to the additional field course requirement.

MINOR IN BUSINESS REQUIREMENTS

Note: Only students outside the School of Business may pursue the minor in business.

The following requirements must be fulfilled: 18 credits, including one 3-credit required course and 15 credits in preapproved elective courses.

Code	Title	Credits
Required prerequisite courses		
DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics	
or STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
or APSC 3115	Engineering Analysis III	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
MATH 1221	Calculus with Precalculus II	
or MATH 1231	Single-Variable Calculus I	
or MATH 1252	Calculus for the Social and Management Sciences	
Minor course requirements		
ACCY 2001	Introduction to Financial Accounting	
Any five courses selected from the following:		
BADM 2301	Management Information Systems Technology	
BADM 3103	Human Capital in Organizations	
BADM 3401	Contemporary Marketing Management	
or BADM 3401W	Contemporary Marketing Management	
BADM 3501	Financial Management and Markets	
BADM 3601	Operations Management	
BADM 4101	Business Ethics and the Legal Environment	
or BADM 4101W	Business Ethics and the Legal Environment	
BADM 4801	Strategy Formulation and Implementation	
IBUS 3001	Introduction to International Business	

MINOR IN BUSINESS ANALYTICS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses. All classes must be completed with a minimum grade of C-.

Code	Title	Credits
Prerequisite courses		
DNSC 1001	Business Analytics I: Statistics for Descriptive and Predictive Analytics	
or STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1111	Business and Economic Statistics I	
And one of the following options:		
Option A		
MATH 1051 & MATH 1231	Finite Mathematics for the Social and Management Sciences and Single-Variable Calculus I	
or MATH 1252	Calculus for the Social and Management Sciences	
Option B		
MATH 1231 & MATH 1232	Single-Variable Calculus I and Single-Variable Calculus II	
Option C		
MATH 1051 & MATH 1220 & MATH 1221	Finite Mathematics for the Social and Management Sciences and Calculus with Precalculus I and Calculus with Precalculus II	
Option D		
DNSC 4900 & MATH 1231	Special Topics and Single-Variable Calculus I	
or MATH 1252	Calculus for the Social and Management Sciences	
NOTE: To fulfill this requirement, DNSC 4900 must be taken with the topic Foundations of Business Analytics		
Required field courses		
DNSC 2001	Business Analytics II: Predictive and Prescriptive Analytics	
DNSC 3403	Decision Models	

DNSC 4211	Programming for Analytics
DNSC 4279	Data Mining
Elective field courses	
Two courses from the following:	
DNSC 4404	Essentials of Project Management
DNSC 4900	Special Topics (Forecasting)
DNSC 4900	Special Topics (Marketing Analytics)
DNSC 4900	Special Topics (Text Analytics)
DNSC 4900	Special Topics (Social Network Analytics)
DNSC 4900	Special Topics (Supply Chain Management)
ECON 2123	Introduction to Econometrics
ISTM 4121	Database Principles and Applications
STAT 2118	Regression Analysis

MINOR IN CREATIVITY, INNOVATION, AND ENTREPRENEURSHIP

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in elective courses.

Students outside of the School of Business may pursue this interdisciplinary minor. School of Business students may pursue this minor only if they are not pursuing the Innovation and Entrepreneurship concentration.

Code	Title	Credits
Required field courses		
MGT 3300	Entrepreneurship	
MGT 4900	Special Topics (New Venture Initiation)	
Field electives		
Four courses from the following, at least one of which must be at the 2000 level or above.:		
ACCY 2001	Introduction to Financial Accounting ¹	
ACCY 4601	Business Law: Enterprise Organization ¹	
AMST 2600	U.S. Popular Music and Culture	
ANTH 3531	Methods in Sociocultural Anthropology	

BADM 3401	Contemporary Marketing Management ¹
CAS 3360	
CDE 1090	Design Fundamentals I
CDE 1091	Design Fundamentals II
CDM 2280	
CE 2510	Environmental Sustainability
COMM 1025	Introduction to Communication Studies
CSCI 1030	Technology and Society
DNSC 4211	Programming for Analytics ¹
ECON 2121	Financial Economics
EMSE 4410	Engineering Economic Analysis
ENGL 1210	Introduction to Creative Writing
ENGL 3390	Topics in Creative Writing
FA 2001	
FA 2212	
GEOG 2148	Economic Geography
HSCI 2109	Trends and Innovations in Health Care
HSSJ 1100	Introduction to Human Services and Social Justice
HSSJ 3100W	Program Planning and Evaluation
HSSJ 4198	Special Topics (Social Entrepreneurship)
IAFF 3190	Special Topics in International Affairs (Globalization and Sustainable Development)
IAFF 3190	Special Topics in International Affairs (Women and Leadership in Africa)
IBUS 3001	Introduction to International Business ¹
ISTM 4223	Innovation Ventures ¹
MAE 2170	History and Impact of the U.S. Patent System
MGT 3301	Small Business Management ¹
MGT 3302	e-Entrepreneurship ¹
MGT 4003	Management of the Growing Entrepreneurial Venture ¹

MGT 4900	Special Topics (Social Entrepreneurship) ¹
ORSC 2116	Leading Change
ORSC 2143	Leadership and Performance
PHIL 2135	Ethics in Business and the Professions
SEAS 4800	Special Topics (Innovation and Technology)
SEAS 4800	Special Topics (Social Impact Startup Creation with Design Thinking)
SMPA 3195	Selected Topics in Journalism and Mass Communication (Entrepreneurship New Media Industry)
SOC 1002	The Sociological Imagination
SUST 1001	Introduction to Sustainability
SUST 3097	Culminating Experience in Sustainability

¹ No more than one field elective from a department within GWSB may apply towards this minor.

MINOR IN MANAGEMENT AND LEADERSHIP

REQUIREMENTS

Note: Only students outside the School of Business may pursue the minor in management and leadership.

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in selected courses.

Code	Title	Credits
Required		
BADM 3103	Human Capital in Organizations	
MGT 3305	Human Capital Sustainability	
MGT 3201	Leadership in Action	
Three courses from the following:		
DNSC 4404	Essentials of Project Management	
MGT 3202	Managerial Negotiations	
MGT 3300	Entrepreneurship	
MGT 3303	Women's Entrepreneurial Leadership	

MGT 4900	Special Topics (Diversity, Inclusion, and Leadership)
MGT 4900	Special Topics (Innovation and Creativity)
TSTD 3301	Hospitality Industry Management
TSTD 4101	Issues in Sport and Event Management

MINOR IN MARKETING REQUIREMENTS

The following requirements must be fulfilled: 18 credits in elective courses.

Code	Title	Credits
Required		
Six courses selected from the following:		
BADM 3401	Contemporary Marketing Management	
MKTG 3142	Consumer Behavior	
MKTG 3143	Marketing Research	
MKTG 4148	Advertising and Marketing Communications	
MKTG 4149	Advanced Advertising Campaigns	
MKTG 4150	Salesmanship and Sales Management	
MKTG 4154	Digital Marketing	
MKTG 4159	Marketing Strategy	
MKTG 4161	Pricing Strategy: Competitive and Dynamic Pricing	
MKTG 4162	Digital Marketing Analytics	
MKTG 4163	Applied Marketing Decision Analytics	
MKTG 4164	Artificial Intelligence and Automated Marketing	
MKTG 4165	Customer Relationship Management and Relational Databases	

MINOR IN REAL ESTATE REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required course and 9 credits in elective credits.

Code	Title	Credits
Required		
BADM 3501	Financial Management and Markets	
FINA 4201	Real Estate Investment	
FINA 6240	Real Estate Development	
or FINA 6242	Real Estate Valuation and Investment	
Electives		
Three courses from the following:		
AH 2154	American Architecture I	
or AMST 2520	American Architecture I	
ECON 2157	Urban and Regional Economics	
FINA 4900	Special Topics (Applied Financial Securities Analysis: Real Estate)	
FINA 6243	Strategic Planning for Walkable Urban Real Estate Companies	
FINA 6290	Special Topics (Walkable Urban Development)	
GEOG 2124	Urban Transportation	
GEOG 2125	Transportation Systems and Networks	
GEOG 2127	Population Geography	
GEOG 2140	Cities and Societies	
GEOG 2141	Cities in the Developing World	

MASTER'S PROGRAMS

Master's programs

- Master in Management (p. 572)
- Master of Accountancy (p. 573)
- Master of Human Resource Management (p. 578)
- Master of Interdisciplinary Business Studies (p. 579)
- Master of Interdisciplinary Business Studies (STEM) (p. 579)
- Master of Science in Finance (p. 580)
- Master of Science in the field of applied finance (p. 580)
- Master of Science in the field of business analytics (p. 581)
- Master of Science in the field of information systems technology (p. 581)
- Master of Science in the field of international business (p. 582)
- Master of Science in the field of project management (p. 583)

- Master of Science in the field of sport management (p. 583)
- Master of Tourism Administration (p. 584)

Master of Business Administration program

MBA offered in the following formats:

- Global MBA (<http://bulletin.gwu.edu/business/global-business-administration-ma/#requirementstext>)
- Accelerated MBA (p. 574)
- Professional MBA (p. 574)
- Online MBA (p. 574)
- Healthcare MBA (p. 574)

STEM MBA offered in the following formats and concentration:

- Global MBA, STEM (p. 575)
- STEM MBA, Accelerated (p. 575)
- STEM MBA, Security Technology Transition Concentration (p. 577)

Combined programs

- Dual Master of Business Administration and Master of Arts in Education and Human Development in the field of Higher Education Administration (p. 585)
- Dual Master of Business Administration and Master of Human Resource Management (p. 586)
- Dual Master of Business Administration and Master of Science in the field of applied finance (p. 586)
- Dual Master of Business Administration and Master of Science in the field of business analytics (p. 586)
- Dual Master of Business Administration and Master of Science in Finance (p. 586)
- Dual Master of Business Administration and Master of Science in the field of information systems technology (p. 586)
- Dual Master of Business Administration and Master of Science in the field of project management (p. 586)
- Dual Master of Business Administration and Master of Science in the field of sport management (p. 586)
- Dual Master of Business Administration and Master of Tourism Administration (p. 586)
- Joint Master of Arts in the field of international affairs and Master of Business Administration (p. 587)
- Joint Master of Business Administration and Juris Doctor (p. 587)

MASTER IN MANAGEMENT

The master in management (MiM) program emphasizes the quantitative and qualitative aspects of business practice and allows students to explore these issues in depth in a given functional area. The curriculum includes a set of business

fundamentals courses, including financial accounting, finance, organizations and human capital, marketing, decision making and data analysis, business ethics and public policy, and strategic management, that incorporate the application of concepts and analytical tools to solve current management problems. Teamwork and communication skills are taught through team projects with an emphasis on private and public sector issues. By including completion of one of the School of Business's numerous graduate certificates as part of the master's curriculum requirements, the program provides students with key knowledge, skills, and abilities in a specific discipline or functional area of business.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
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Required Core courses (21 credits)

MBAD 6211	Financial Accounting
MBAD 6224	Decision Making and Data Analysis
MBAD 6235	Finance
MBAD 6263	Organizations and Human Capital
MBAD 6274	Marketing
MBAD 6289	Business Ethics and Public Policy
SMPP 6290	Special Topics (Strategy Fundamentals)

Certificate courses (12 credits)

In addition to completing the core courses listed above, students complete the curriculum requirements of one of the GW School of Business graduate certificate programs listed below:

- Graduate certificate in accountancy (p. 588)
- Graduate certificate in analytics for managers (p. 589)
- Graduate certificate in artificial intelligence (p. 589)
- Graduate certificate in business analytics (p. 590)
- Graduate certificate in cloud, applications, and information technology (p. 591)
- Graduate certificate in corporate responsibility (p. 591)
- Graduate certificate in creativity, innovation, and entrepreneurship (p. 592)
- Graduate certificate in digital marketing and analytics (p. 592)
- Graduate certificate in financial management (p. 593)
- Graduate certificate in global management (p. 593)
- Graduate certificate in governmental and nonprofit accounting (p. 593)
- Graduate certificate in hospitality management (p. 594)

- Graduate certificate in human capital (p. 594)
- Graduate certificate in investments and portfolio management (p. 595)
- Graduate certificate in management leadership (p. 595)
- Graduate certificate in management of technology and innovation (p. 595)
- Graduate certificate in managing the digital organization (p. 596)
- Graduate certificate in marketing and brand management (p. 596)
- Graduate certificate in project management (p. 597)
- Graduate certificate in sports management (p. 597)
- Graduate certificate in strategic management (p. 598)
- Graduate certificate in walkable urban real estate development (p. 599)

MASTER OF ACCOUNTANCY

A flexible program tailored to individual interests and career objectives in accounting, financial management and tax practice. The Master of Accountancy program offers a path for students at all skill levels. An undergraduate degree in Accountancy or Business is not required. We also offer a five-year combined degree program for undergraduate students enrolled in the Bachelor of Accountancy and Bachelor of Business Administration program at the School of Business.

Each path of study requires a minimum 30 credits, with 21 credits of coursework in accounting. Required courses can be waived with substitution depending on previous academic study and performance.

In addition to the required courses, students also select from a wide range of electives in specialized accounting subjects, as well as other business topics that help them prepare for their professional certification and career goals. Students may choose from electives offered by the School of Business as well as the GW Law School.

Day and evening classes are available to accommodate working professionals.

Total Credits: 30

Duration:

-Part Time: 21-60 months

-Full Time: A minimum of nine months

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Preparatory courses		
ACCY 6101	Financial Accounting	

or ACCY 2001	Introduction to Financial Accounting
ACCY 2002	Introductory Managerial Accounting
MBAD 6242	Microeconomics for the World Economy
STAT 1051	Introduction to Business and Economic Statistics

Students that have not completed these courses prior to matriculation may be able to take them concurrent with the program requirements.

Required

ACCY 6104	Intermediate Accounting I
ACCY 6105	Intermediate Accounting II
ACCY 6201	Accounting for Internal Decision Making
ACCY 6202	Advanced Strategic Cost Management
ACCY 6301	Contemporary Auditing Theory
MBAD 6235	Finance

Electives

15 credits in elective courses, including 9 credits in accountancy (ACCY) courses.

Students who intend to take the C.P.A. examination should be aware that the coursework required for admission to the examination varies from state to state. Students are advised to consult the Board of Accountancy for the state in which they plan to take the examination and choose electives that meet that state's requirements.

In addition, students must fulfill preparatory courses in financial accounting, managerial accounting, micro- or macroeconomics, and statistics.

Preparatory courses may be waived *without* substitution for other coursework. Required classes, except for ACCY 6201 and ACCY 6202, may be waived *with* substitution for other coursework for students who:

- Have already completed these courses with a minimum grade of B-
- Have taken these courses at an AACSB - accredited institution
- Have taken these courses within five years prior to the first semester of enrollment into the program

Students should consult with the advisor concerning course substitution.

MASTER OF BUSINESS ADMINISTRATION

GW's MBA program offers a high quality education in a number of full- and part-time formats designed to accommodate students' career and scheduling needs. The MBA program helps students to achieve proficiency in the fundamentals of business, while mastering the tools of business administration and understanding of how business is situated in the broader global and ethical environment. The program puts an emphasis on technology, analytics, and experiential opportunities to achieve these outcomes.

The MBA is offered in the following formats and with an optional, online concentration in healthcare:

Accelerated MBA

The Accelerated MBA (AMBA) format is designed to allow students to complete the degree in two years. The program is structured specifically for students who are employed. During the first year, the program is offered in a cohort format that covers the majority of the core MBA curriculum. Those cohort courses are offered at a full-time credit load over the first year, allowing students to complete more credits in that first year than would normally be the case for a part-time student. This is accomplished by running those cohort courses in a condensed, five-week format. The courses run back-to-back, on Wednesday evenings (usually after 7:00 p.m.) and Saturdays (usually from 9:30 a.m. to 3:30 p.m.).

Professional MBA

The part-time Professional MBA (PMBA) format gives students the flexibility to complete the MBA in two to five years, on campus or online, with a cohort of fellow students or independently. Students can dive deeper with intensive weekend formats or explore experiential courses that leverage GW Business School's unique location. Students also may choose to participate in a short-term study abroad program to earn up to 6 credits in one to three weeks.

Starting their second year, students shift their focus to selective and elective requirements while completing the core curriculum. Because electives are offered in the full-semester format, we shift the recommended course load down to a part-time course load; however, the second year can be completed at a full-time pace for students requiring or able to handle that credit load.

Online MBA

While coursework for this part-time program format can be completed fully online, students may pursue in-person global and experiential opportunities as well. Cutting-edge, digital courses are organized into learning episodes and comprise videos, video cases, podcasts, animations, and other pre-recorded content in addition to traditional reading assignments. Students progress within each learning unit at their own pace but must complete the learning unit by assigned target dates.

In addition to this asynchronous material, students will meet weekly with their course leaders within our online environment to provide live interaction and engagement with the course material along with the self-paced to allow our online education to maintain the academic benefits of live interactions with your faculty and fellow students.

Online MBA, Healthcare concentration

The online Healthcare MBA, offered on a part-time basis, is designed specifically for those who are interested in the business and leadership aspect of healthcare organizations. It has the same high-quality, STEM-enhanced core curriculum; however, students tailor the program to their needs by selecting from healthcare-focused elective courses from the Health Sciences department of GW's School of Medicine and Health Sciences.

Visit the MBA program website (<https://business.gwu.edu/academics/programs/mba/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 46.5 credits, including 34.5 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required:		
MBAD 6205	Business Essentials for Dynamic Markets	
MBAD 6211	Financial Accounting	
MBAD 6213	Accounting for Internal Decision Making	
MBAD 6223	Operations Management	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6235	Finance	
MBAD 6240	Competition in the Global Economy	
MBAD 6242	Microeconomics for the World Economy	
MBAD 6250	Technology for Business in DC	
MBAD 6263	Organizations and Human Capital	
MBAD 6274	Marketing	
MBAD 6288	Strategic Management	
MBAD 6289	Business Ethics and Public Policy	
Three courses selected from the following:		
DNSS 6500	Analytic Skills for Managers	

ISTM 6500	Technology Skills for Managers
ISTM 6502	Working with Databases Using SQL
ISTM 6514	Introduction to Artificial Intelligence
ISTM 6519	Health Care Analytics and Applications
ISTM 6522	Digital Transformation

Electives

12 credits in graduate-level elective courses, numbered 6000 and above. Up to 6 of these credits may be taken in departments outside the GW School of Business. Students focusing their studies in the healthcare field must take all elective credits in the School of Medicine and Health Sciences.

NOTE: MBAD 6298 may not be applied toward MBA degree requirements.

MASTER OF BUSINESS ADMINISTRATION (STEM)

While the MBA programs offers all students a STEM-enhanced core education, students may choose to pursue a STEM-designated track by choosing elective courses in management sciences. Students in STEM programs develop advanced knowledge of business management through analytics, technology, and their application to the business environment. The STEM-designated MBA is available in many of the formats in which the MBA is offered. The program normally is completed in 21 to 27 months, depending on format.

Visit the program website (<https://business.gwu.edu/academics/programs/mba/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: Global STEM MBA—53 credits, including 35 credits in required courses and 18 credits in selective courses; STEM MBA, Accelerated/ Professional format (p. 576): 46.5 credits, including 34.5 credits in required courses and 12 credits in selective courses.

Global STEM MBA

Code	Title	Credits
Required		
MBAD 6206	Business Improv	
MBAD 6207	Leadership Lab	
MBAD 6211	Financial Accounting	
MBAD 6213	Accounting for Internal Decision Making	

MBAD 6223	Operations Management
MBAD 6224	Decision Making and Data Analysis
MBAD 6235	Finance
MBAD 6240	Competition in the Global Economy
MBAD 6242	Microeconomics for the World Economy
MBAD 6250	Technology for Business in DC
MBAD 6263	Organizations and Human Capital
MBAD 6274	Marketing
MBAD 6281	Business Ethics
MBAD 6284	Business and Public Policy
MBAD 6286	Strategic Management I
MBAD 6287	Strategic Management II

MBAD 6294 Consulting Abroad Project

Students must complete two enrollments in MBAD 6294 for a total of 3 credits, one on-campus and the other as the study abroad component of the Consulting Abroad Project.

Selective courses

A total of 18 credits in selective courses taken as follows:

3 credits from the following analytics/technology selectives:

DNSC 6500	Analytic Skills for Managers
ISTM 6502	Working with Databases Using SQL
ISTM 6500	Technology Skills for Managers
ISTM 6514	Introduction to Artificial Intelligence
ISTM 6519	Health Care Analytics and Applications
ISTM 6522	Digital Transformation

15 credits in elective courses selected from the following:

ACCY 6106	Financial Statement Analysis
ACCY 6202	Advanced Strategic Cost Management
DNSC 6203	Statistics for Analytics I
DNSC 6206	Stochastic Foundation: Probability Models
DNSC 6209	Forecasting for Analytics *
DNSC 6211	Programming for Analytics *

DNSC 6214	Pricing and Revenue Management *
DNSC 6215	Social Network Analytics *
DNSC 6225	Business Process Simulation *
DNSC 6251	Optimization Models for Decision Making
DNSC 6252	Risk Analysis for Decision Making
DNSC 6254	Risk Management
DNSC 6257	Cost Estimation and Control
DNSC 6262	Directed Computational Project Management
DNSC 6278	Big Data Analytics *
DNSC 6279	Data Mining *
DNSC 6280	Supply Chain Analytics *
DNSC 6403	Visualization for Analytics *
DNSC 6404	Sports Analytics *
FINA 6221	Financial Decision Making
FINA 6223	Investment Analysis and Portfolio Management
FINA 6224	Financial Management
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues
FINA 6239	Applied Portfolio Management
IBUS 6301	International Business Finance
ISTM 6200	Programming in Python & R
ISTM 6201	Information Systems Development and Applications
ISTM 6202	Relational Databases
ISTM 6203	Managing Cloud Security
ISTM 6206	Information Systems Security
ISTM 6209	Web and Social Analytics
ISTM 6214	Foundations of Artificial Intelligence
ISTM 6215	Human-Computer Interaction
ISTM 6222	IS/IT Strategy and Implementation
ISTM 6223	Technology Entrepreneurship

ISTM 6224	Management of Technology and Innovation
ISTM 6225	Cloud Foundations
ISTM 6234	New Venture Financing
ISTM 6290	Special Topics (Business Applications of AI)
MGT 6290	Special Topics (HR Analytics)
MKTG 6243	Marketing Research
TSTD 6221	Hospitality Market Analysis

STEM MBA, Accelerated format

Code	Title	Credits
Required		
MBAD 6205	Business Essentials for Dynamic Markets	
MBAD 6211	Financial Accounting	
MBAD 6213	Accounting for Internal Decision Making	
MBAD 6223	Operations Management	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6235	Finance	
MBAD 6240	Competition in the Global Economy	
MBAD 6242	Microeconomics for the World Economy	
MBAD 6250	Technology for Business in DC	
MBAD 6263	Organizations and Human Capital	
MBAD 6274	Marketing	
MBAD 6288	Strategic Management	
MBAD 6289	Business Ethics and Public Policy	

Selective courses

A total of 15 credits in selective courses taken as follows:

3 credits in analytics/ technology courses selected from the following:

ISTM 6502	Working with Databases Using SQL
ISTM 6514	Introduction to Artificial Intelligence
ISTM 6519	Health Care Analytics and Applications

ISTM 6522	Digital Transformation
DNSC 6500	Analytic Skills for Managers
ISTM 6500	Technology Skills for Managers
12 credits in courses selected from the following:	
ACCY 6106	Financial Statement Analysis
ACCY 6202	Advanced Strategic Cost Management
DNSC 6203	Statistics for Analytics I
DNSC 6206	Stochastic Foundation: Probability Models
DNSC 6209	Forecasting for Analytics *
DNSC 6211	Programming for Analytics *
DNSC 6214	Pricing and Revenue Management *
DNSC 6215	Social Network Analytics *
DNSC 6225	Business Process Simulation *
DNSC 6251	Optimization Models for Decision Making
DNSC 6252	Risk Analysis for Decision Making
DNSC 6254	Risk Management
DNSC 6257	Cost Estimation and Control
DNSC 6262	Directed Computational Project Management
DNSC 6278	Big Data Analytics ³
DNSC 6279	Data Mining *
DNSC 6280	Supply Chain Analytics *
DNSC 6403	Visualization for Analytics *
DNSC 6404	Sports Analytics *
FINA 6221	Financial Decision Making
FINA 6223	Investment Analysis and Portfolio Management
FINA 6224	Financial Management
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues
FINA 6239	Applied Portfolio Management
IBUS 6301	International Business Finance

ISTM 6200	Programming in Python & R
ISTM 6201	Information Systems Development and Applications
ISTM 6202	Relational Databases
ISTM 6203	Managing Cloud Security
ISTM 6206	Information Systems Security
ISTM 6209	Web and Social Analytics
ISTM 6214	Foundations of Artificial Intelligence
ISTM 6215	Human-Computer Interaction
ISTM 6222	IS/IT Strategy and Implementation
ISTM 6223	Technology Entrepreneurship
ISTM 6224	Management of Technology and Innovation
ISTM 6225	Cloud Foundations
ISTM 6290	Special Topics (Business Applications of AI)
ISTM 6234	New Venture Financing
MGT 6290	Special Topics (HR Analytics)
MKTG 6243	Marketing Research
TSTD 6221	Hospitality Market Analysis

* Students must be admitted to the graduate certificate in business analytics program in order to take this course.

MASTER OF BUSINESS ADMINISTRATION, SECURITY TECHNOLOGY TRANSITION CONCENTRATION

In July, 2020, the Department of Homeland Security Science and Technology Directorate selected the George Washington University School of Business to lead a new Center of Excellence to deliver an MBA program focused on security technology transition. The master of business administration, security technology transition (MBA-STT) program focuses on management of transition of technology from development to commercial and government applications. The program is designed for professionals with backgrounds in cybersecurity, engineering, science, technology, and related fields with an interest in the transition and commercialization of security technology for application in the public and private sectors.

Participants are mentored by security, technology, and innovation experts in a community of practice. During the program, participants develop a professional network throughout student engagement events with GW alumni, government agencies, and industry partners. Students experience the innovation impact through interactions with other professionals interested in the transition of security technology across organizations.

REQUIREMENTS

The following requirements must be fulfilled: 49.5 credits, including 30 credits in core courses, 15 credits in concentration courses, and 4.5 credits in capstone courses.

Code	Title	Credits
Required		
Core courses		
MBAD 6205	Business Essentials for Dynamic Markets	
MBAD 6211	Financial Accounting	
MBAD 6213	Accounting for Internal Decision Making	
MBAD 6223	Operations Management	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6235	Finance	
MBAD 6240	Competition in the Global Economy	
MBAD 6242	Microeconomics for the World Economy	
MBAD 6263	Organizations and Human Capital	
MBAD 6274	Marketing	
MBAD 6288	Strategic Management	
MBAD 6289	Business Ethics and Public Policy	
Concentration courses		
ISTM 6204	Information Technology Project Management	
ISTM 6223	Technology Entrepreneurship	
ISTM 6233	Emerging Technologies	
ISTM 6234	New Venture Financing	
ISTM 6290	Special Topics (Technology Commercialization)	

ISTM 6290 Special Topics (Government Procurement of Intellectual Property)

ISTM 6290 Special Topics (Procurement Reform Seminar)

Capstone courses

ISTM 6224 Management of Technology and Innovation

ISTM 6290 Special Topics (Business and Technology in DC Capstone)

MASTER OF HUMAN RESOURCE MANAGEMENT

Offered online or on campus

The GW School of Business Master of Human Resource Management (MHRM) provides graduates with the knowledge and skills they need to excel in a field that is vitally important to the operation and success of organizations of all types. Students learn the latest human capital theories and proven, cutting-edge practices. Special topics include diversity and inclusion, change, leadership, and employee development.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Required		
MGT 6252	Strategic Human Resource Management	
MGT 6210	Leading Teams	
MGT 6257	Performance Management and Development	
MGT 6290	Special Topics (People Analytics, taken for 3 credits)	
MBAD 6263	Organizations and Human Capital	
One of the following:		
MGT 6253	Leadership and Executive Development	
MGT 6277	Critical Thinking Skills for Executive Leadership	
MGT 6290	Special Topics (Perspectives on Leadership, 3 credits)	

Electives

12 credits in elective courses, selected from the following:

MGT 6215 Conflict Management and Negotiations

MGT 6259 Employment Law and Ethics

MGT 6270 Consulting Processes

MGT 6280 Entrepreneurship

MGT 6286 Creativity and Innovation

MGT 6290 Special Topics (Human Capital Sustainability, 3 credits)

MASTER OF INTERDISCIPLINARY BUSINESS STUDIES

The master of interdisciplinary business studies (MIBS) is a 30-credit degree program designed to facilitate upskilling and re-skilling and increase employment competitiveness and effectiveness for students with interdisciplinary interests. The program of study combines two 12-credit graduate certificates and 6 additional credits in elective courses taken within or outside of the School of Business, allowing students to custom-tailor their degree to meet their professional and employment goals.

REQUIREMENTS

The master of interdisciplinary business studies allows students with specific interdisciplinary interests to take the curricula of two School of Business graduate certificate programs for 24 credits and an additional 6 credits in elective courses to complete the total of 30 credits required for the degree.

Required

Students complete two 12-credit certificate programs selected from the list below. All requirements for both programs must be fulfilled.

The master of interdisciplinary business studies allows students with specific interdisciplinary interests to take the curricula of two School of Business graduate certificate programs for 24 credits and an additional 6 credits in elective courses to complete the total of 30 credits required for the degree.

Required

Students complete two 12-credit certificate programs selected from the list below. All requirements for both programs must be fulfilled.

- Graduate certificate in accountancy (p. 588)
- Graduate certificate in analytics for managers (p. 589)
- Graduate certificate in artificial intelligence (p. 589)
- Graduate certificate in business analytics (p. 590)

- Graduate certificate in cloud, applications, and information technology (p. 591)
- Graduate certificate in corporate responsibility (p. 591)
- Graduate certificate in creativity, innovation, and entrepreneurship (p. 592)
- Graduate certificate in digital marketing and analytics (p. 592)
- Graduate certificate in financial management (p. 593)
- Graduate certificate in global management (p. 593)
- Graduate certificate in governmental and nonprofit accounting (p. 593)
- Graduate certificate in hospitality management (p. 594)
- Graduate certificate in human capital (p. 594)
- Graduate certificate in investments and portfolio management (p. 595)
- Graduate certificate in management leadership (p. 595)
- Graduate certificate in management of technology and innovation (p. 595)
- Graduate certificate in managing the digital organization (p. 596)
- Graduate certificate in marketing and brand management (p. 596)
- Graduate certificate in project management (p. 597)
- Graduate certificate in quantitative business foundations (p. 597)
- Graduate certificate in sport management (p. 597)
- Graduate certificate in strategic management (p. 598)
- Graduate certificate in tourism management (p. 598)
- Graduate certificate in walkable urban real estate development (p. 599)

Electives

Students take an additional 6 credits in elective courses. Students may elect to use these credits to focus in one specific area or to choose courses from different business areas in consultation with the advisor. Electives should focus on integrating the curricula of the two certificate programs.

MASTER OF INTERDISCIPLINARY BUSINESS STUDIES (STEM)

The master of interdisciplinary business studies (STEM) program allows students with specific interdisciplinary interests to take the curricula of two School of Business graduate certificate programs for 24 credits and an additional 6 credits in elective courses to complete total of 30 credits required for the degree.

Required

Students complete two 12-credit certificate programs selected from the list below. All requirements for both programs must be fulfilled.

- Graduate certificate in artificial intelligence (p. 589)
- Graduate certificate in business analytics (p. 590)
- Graduate certificate in cloud, applications, and information technology (p. 591)
- Graduate certificate in management of technology and innovation (p. 595)
- Graduate certificate in managing the digital organization (p. 596)

Electives

Students take an additional 6 credits in STEM-focused elective courses selected from those listed for the above five certificate programs. Other STEM-focused electives may be approved by the academic advisor. Electives should focus on integrating the curricula of the two certificate programs.

MASTER OF SCIENCE IN FINANCE

The M.S.F. program builds upon a Bachelor or Master of Business Administration or a degree in another quantitative discipline. It emphasizes both financial theory and quantitative methods in financial management.

Students engage in applied research and modeling, using large professional databases and computer software packages. They explore the international and regulatory dimensions of finance while focusing on risk management, financial engineering, banking, corporate finance and portfolio analysis and management.

Students pursuing an M.S.F. degree may choose between the intensive program and the regular program. Under the intensive program, students take four classes per semester to complete the degree in 12 months, including a summer session. The regular program, which we highly recommend, paces classes over a period of 24 months, including two summer sessions.

There are no majors in this degree program. However, students with strong backgrounds in particular subject areas may petition to waive a required course and replace it with an elective approved by the program director.

Visit the program website (<http://business.gwu.edu/programs/specialized-masters/m-s-in-finance/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits in required courses

Code	Title	Credits
Required:		
FINA 6271	Financial Modeling and Econometrics	

FINA 6272	Global Financial Markets
FINA 6273	Cases in Financial Management and Investment Banking
FINA 6274	Corporate Financial Management and Modeling
FINA 6275	Investment Analysis and Global Portfolio Management
FINA 6276	Financial Engineering and Derivative Securities
FINA 6277	Comparative Financial Market Regulation and Development
FINA 6278	Financial Theory and Research
FINA 6279	Real Estate Finance and Fixed-Income Security Valuation
FINA 6280	Financial Institution Management and Modeling
FINA 6281	Cases in Financial Modeling and Engineering
FINA 6282	Advanced Financial Econometrics and Modeling

MASTER OF SCIENCE IN THE FIELD OF APPLIED FINANCE

The master of science in the field of applied finance program at the GW School of Business (GWSB) produces leaders in the field of finance. The program focuses on risk management, financial engineering, banking, corporate finance, and portfolio analysis and management. It has been designed to combine quantitative and computer skills with financial theory and applications. The MSAF program qualifies as a STEM program.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
FINA 6271	Financial Modeling and Econometrics	
FINA 6272	Global Financial Markets	
FINA 6273	Cases in Financial Management and Investment Banking	
FINA 6275	Investment Analysis and Global Portfolio Management	

FINA 6276	Financial Engineering and Derivative Securities
FINA 6279	Real Estate Finance and Fixed-Income Security Valuation
FINA 6280	Financial Institution Management and Modeling
FINA 6281	Cases in Financial Modeling and Engineering
FINA 6282	Advanced Financial Econometrics and Modeling (taken for 4 credits)

MASTER OF SCIENCE IN THE FIELD OF BUSINESS ANALYTICS

The GW School of Business's M.S. in Business Analytics offers a rigorous curriculum that prepares students for successful careers in helping organizations make better decisions through Analytics. Students are provided a deep foundation in the various methodologies and technologies of analytics along with the necessary team and project skills to apply them in the real world.

Our faculty members are committed to our mission of advancing the scientific principles and best practices of management decision-making in both the private and public sectors. Courses are offered in either a 12 months (accelerated program), 16 months (full-time program), or 24 months (part-time program). Students will participate in an industry related practicum during their final semester where they will work closely with faculty on real world problems and present their findings to the client firm at the end of the project.

Visit the program website (<http://business.gwu.edu/current-students-2/specialized-masters-programs/msba-degree-requirements/>) (<http://business.gwu.edu/programs/specialized-masters/m-s-in-business-analytics/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 25.5 credits in required courses and 7.5 credits in elective courses.

Code	Title	Credits
Required		
DNSC 6203	Statistics for Analytics I	
DNSC 6206	Stochastic Foundation: Probability Models	
DNSC 6210	Decision and Risk Analytics	

DNSC 6211	Programming for Analytics
DNSC 6212	Optimization Methods and Applications
DNSC 6213	Statistics for Analytics II
DNSC 6216	Business Analytics Skills Workshops
DNSC 6217	Business Analytics Practicum
DNSC 6219	Time Series Forecasting for Analytics
DNSC 6231	Consulting for Analytics
DNSC 6279	Data Mining
ISTM 6212	Data Management for Analytics

Electives

7.5 credits in elective courses selected from the following:

DNSC 6214	Pricing and Revenue Management
DNSC 6215	Social Network Analytics
DNSC 6225	Business Process Simulation
DNSC 6278	Big Data Analytics
DNSC 6280	Supply Chain Analytics
DNSC 6290	Special Topics (Machine Learning)
DNSC 6290	Special Topics (Natural Language Processes)
DNSC 6401	Sustainable Supply Chains
DNSC 6403	Visualization for Analytics
DNSC 6404	Sports Analytics

MASTER OF SCIENCE IN INFORMATION SYSTEMS AND TECHNOLOGY

The master of science in information systems and technology (MSIST) degree program is designed for working professionals in information systems technology who are looking to make a career shift. Through dynamic, hands-on laboratory and classroom-based courses, students learn how to integrate information systems technology expertise and management skills to effectively implement business solutions. Students may complete the degree through full-time or part-time study.

There are daytime, evening, and weekend class options offered online and at GW's Foggy Bottom Campus. A hybrid format is available, combining on-campus and online study options. A typical full-time student will complete degree

requirements in 18 to 24 months. Part-time students typically complete the program in 24 to 36 months.

Visit the program website (<http://business.gwu.edu/current-students-2/specialized-masters-programs/msist-degree-requirements/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 21 credits in core courses and 12 credits in elective courses.

In addition, students must complete up to 6 credits in prescribed foundation requirements in the areas of computer programming language and database design and applications. If a foundation courses was not completed with a minimum grade of *B* at an accredited institution within five years of matriculation, it must be completed before beginning the program, or within the first year of study in the program.

Code	Title	Credits
Required		
Foundation courses		
ISTM 3119	Introduction to Programming	
ISTM 4121	Database Principles and Applications	
or ISTM 6200	Programming in Python & R	
Core courses		
ISTM 6201	Information Systems Development and Applications	
ISTM 6202	Relational Databases	
ISTM 6204	Information Technology Project Management	
ISTM 6205	Web Application Development	
ISTM 6206	Information Systems Security	
ISTM 6209	Web and Social Analytics	
ISTM 6210	Integrated Information Systems Capstone	
6 credits selected from the following:		
ISTM 6213	Cloud Applications	
ISTM 6214	Foundations of Artificial Intelligence	
ISTM 6218	Business Applications of Artificial Intelligence	
ISTM 6222	IS/IT Strategy and Implementation	

ISTM 6224	Management of Technology and Innovation
ISTM 6225	Cloud Foundations

Electives
6 credits in ISTM courses at the 6000 level or above, excluding ISTM 6200.

MASTER OF SCIENCE IN THE FIELD OF INTERNATIONAL BUSINESS

The master of science in the field of international business program is designed to provide students with knowledge, skills and abilities to collect, organize and analyze a variety of data in a changing and uncertain global context – and make informed decisions for their organizations. The program provides students with a strong foundation of business and technical knowledge and skills, enhances their global mindset, and gives them the opportunity to apply what they've learned in two application challenges: an international business "desk study" capstone and a "field study" study-abroad capstone course.

The program opens with a hybrid (part online, part in-person) non-credit bearing orientation program called "Managing in a Changing World," where students are assigned a collection of multi-media materials based on current business events, discuss them with fellow students, alumni, and faculty in online discussions, and conduct site visits and attend lectures at the World Bank, USAID, and other D.C.-based government, private-sector, and NGO organizations during a two-day orientation.

The program concludes with a one-credit hour professional development seminar, where students attend weekly workshops, featuring guest speakers from government, private-sector organizations, and NGOs, to discuss how these organizations are responding to the changing and uncertain global environment – and provide students with tips for how they can best leverage the knowledge, skills and abilities gleaned in this program to add value to international business organizations.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 27 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
Core courses		

MBAD 6211	Financial Accounting
MBAD 6235	Finance
IBUS 6301	International Business Finance
MBAD 6288	Strategic Management

Statistics course

Any one quantitative methods course at the 6000 level or above that requires completion of an introductory statistics course as a prerequisite. Prior approval of the Program Director is required.

International business focused courses

MBAD 6245	Global Perspectives
IBUS 6290	Special Topics (Economics for Global Business)
IBUS 6290	Special Topics (International Business Consulting Capstone I)
IBUS 6290	Special Topics (International Business Consulting Capstone II)
IBUS 6290	Special Topics (International Business Professional Seminar)

Electives

6 credits in any 6000 level or above IBUS courses.

MASTER OF SCIENCE IN THE FIELD OF PROJECT MANAGEMENT

The program brings real workplace examples to the classroom, integrating them into the overall curriculum. The program is not discipline-specific and focuses on no single technical domain. Our M.S. in project management was among the world's first specialized degree programs of its kind. GW's innovative program guides students in advanced project-management techniques and in balancing practice and theory so that they may become effective project managers. The program is ideal for managers seeking to more effectively integrate complex projects, motivate people, and achieve cost efficiency. To accommodate the needs of working professionals, courses are offered in the evenings on our Foggy Bottom Campus as well as via state-of-the-art distance learning.

Through cutting-edge technology, lectures are made available to distance students as quickly as 60 minutes after each on-campus class concludes. The recorded lectures are fully integrated into the University's mainframe. Students log on to watch the classes at their convenience. Class handouts, assignments, and other materials are mediated through Web-

based course management software, both for distance and on-site learners. The graduate certificate will prepare students with the knowledge, diverse proficiencies, and skill sets required to succeed in a project environment.

Visit the program website (<http://business.gwu.edu/current-students-2/specialized-masters-programs/mspm-degree-requirements/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 27 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
DNSC 6202	Statistics for Managers	
DNSC 6247	Organization, Management, and Leadership	
DNSC 6250	Project Management Finance	
DNSC 6254	Risk Management	
DNSC 6257	Cost Estimation and Control	
DNSC 6258	Executive Decision Making	
DNSC 6259	Project Portfolio Management	
DNSC 6261	Introduction to Project and Program Management	
DNSC 6262	Directed Computational Project Management	
DNSC 6267	Planning and Scheduling	
DNSC 6269	Project Management Application	

Electives

6 credits in elective courses, including one 3-credit, graduate-level Decision Sciences (DNSC) course and one 3-credit, graduate-level course approved by the advisor.

MASTER OF SCIENCE IN THE FIELD OF SPORT MANAGEMENT

The GWSB master of science in the field of sport management program prepares students for executive careers in events and facility management, sports marketing, athlete representation, sports analytics, sports media and the sporting goods industry, working with professional teams and leagues and in collegiate athletics.

Students will learn to recognize issues facing sports industry leaders and make sound, ethical business decisions; identify revenue streams and expenses for sports organizations; understand legal terms, operational structure and contract clauses; and apply analytic and research skills to solve problems and increase performance for sports-related businesses.

Visit the GW School of Business website (<https://business.gwu.edu/ms-sport-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Required		
TSTD 6251	Applied Quantitative Methods	
TSTD 6264	Sport Marketing	
TSTD 6265	Sport Law: Contracts and Negotiations	
TSTD 6266	Sport and Event Facility Management	
TSTD 6267	Sport Media and Communications	
TSTD 6270	Research Methods and Applications	
TSTD 6283	Practicum	
Electives		
15 credits in elective courses. Students may elect to use these credits to focus in one specific area, earn a specialized graduate certificate, or choose courses from different business areas with guidance from the advisor.		
DNSC 6214	Pricing and Revenue Management	
DNSC 6279	Data Mining	
DNSC 6404	Sports Analytics	
FINA 6224	Financial Management	
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues	
IBUS 6201	International Marketing	
IBUS 6403	International Business Negotiations	
MGT 6215	Conflict Management and Negotiations	
MGT 6254	Negotiations and Labor Relations	
MGT 6285	Social Entrepreneurship	

MGT 6290	Special Topics (Business of e-Sports)
MGT 6290	Special Topics (Sport Entrepreneurship)
MKTG 6243	Marketing Research
MKTG 6246	Marketing of Services
MKTG 6248	Advertising and Marketing Communications Strategy
MKTG 6252	Digital Marketing
MKTG 6256	Integrated Marketing Communication
PPPA 6031	Governing and Managing Nonprofit Organizations
PPPA 6032	Managing Fund Raising and Philanthropy
TSTD 6277	Event Management
TSTD 6278	Conference and Exposition Management
TSTD 6282	International Experiences
TSTD 6296	Hospitality Digital Marketing Strategies
TSTD 6998	Thesis Research
TSTD 6999	Thesis Research

MASTER OF TOURISM ADMINISTRATION

The master of tourism administration degree program is designed to prepare students for competitive professional management positions in public, commercial, or nonprofit organizations, providing visitor services at the local, national, or international level. In addition to coursework, students have opportunities to learn from culturally diverse colleagues and from a wide range of visitor-service organizations. Students may choose one of the three formal concentration areas: sustainable tourism, event and meeting management, or hospitality management. They also may develop an individualized studies program.

Visit the program website (<http://business.gwu.edu/current-students-2/specialized-masters-programs/mta-degree-requirements/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Required		
TSTD 6249	Sustainable Destination Development	
TSTD 6251	Applied Quantitative Methods	
TSTD 6270	Research Methods and Applications	
MBAD 6263	Organizations and Human Capital	
or MGT 6282	New Venture Initiation	
Completion of one of the following areas of specialization:		
Sustainable tourism management specialization		
Required		
TSTD 6260	Tourism Economics	
TSTD 6261	Tourism Policy and Planning	
TSTD 6263	Destination Marketing	
Electives		
9 credits in concentration-specific elective courses chosen in coordination with the student's academic advisor or program director.		
Event and meeting management specialization		
Required		
TSTD 6276	Risk Management for Events and Meetings	
TSTD 6277	Event Management	
TSTD 6278	Conference and Exposition Management (Suggested Electives)	
Electives		
9 credits in concentration-specific elective courses chosen in coordination with the student's academic advisor or program director.		
Hospitality management specialization		
Required		
TSTD 6220	International Hospitality Management	
TSTD 6221	Hospitality Market Analysis	
TSTD 6296	Hospitality Digital Marketing Strategies	
Electives		

9 credits in concentration-specific elective courses chosen in coordination with the student's academic advisor or program director.

Individualized plan of study

Students may design a 30-credit plan of study, with a brief proposal specifying the courses to be taken submitted to the program director for review.

DUAL MBA AND MAED&HD IN THE FIELD OF HIGHER EDUCATION ADMINISTRATION

The GW School of Business and Graduate School of Education and Human Development offer a dual master of business administration (p. 574) (MBA) and master of arts in education and human development in the field of higher education administration (p. 645) (MAEd&HD) degree program. Up to 18 credits may be shared between degrees: 12 credits of MAEd&HD courses may be applied toward MBA degree requirements, and 6 credits of MBA electives, selected in consultation with the higher education administration advisor, may be applied toward the MAEd&HD degree. All requirements for both degrees must be fulfilled.

The field of higher education administration demands further training in business administration, and vice versa. It is well established that higher education institutions are under pressure to respond to rising challenges due to diminished funding, economic pressures, access for low income and under-resourced students, and demands for accountability at all levels. At the same time demands to optimize limited resources and provide stakeholders responsive digital and online services are increasing.

To respond to current challenges for higher education administrators, policy makers, and consultants, GW has established dual degrees between business administration and social sciences in which MBA students are able to hone analytical skills that examine the intersection between business, technology, social, political, economic, and institutional factors that shape higher education administration and policies and their underlying conditions.

Visit the School of Business (<http://business.gwu.edu/programs/masters-of-business-administration/joint-dual-degree-mba/>) and Graduate School of Education and Human Development (<https://gsehd.gwu.edu/programs/mbamasters-higher-education-administration/>) websites for additional information.

DUAL MASTER OF BUSINESS ADMINISTRATION AND MASTER OF HUMAN RESOURCE MANAGEMENT

The School of Business offers a dual master of business administration (p. 574) (MBA) and master of human resource management (p. 578) (MHRM) degree program. 21 credits are shared between the two degrees. All requirements for both degrees must be fulfilled.

Visit the School of Business website (<https://business.gwu.edu/academics/programs/>) for additional information.

DUAL MBA AND MS IN THE FIELD OF APPLIED FINANCE

The School of Business offers a dual master of business administration (MBA) (p. 574) and master of science in the field of applied finance (MS) (p. 580) degree program. Up to 15 credits of core courses from the MS degree program may count toward MBA degree requirements. Students must complete all MBA core coursework before beginning coursework for the MS. All requirements for both degrees must be fulfilled.

Visit the School of Business website (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) for additional information.

DUAL MBA AND MS IN BUSINESS ANALYTICS

The School of Business offers a dual master of business administration (MBA) (p. 574) and master of science in the field of business analytics (MS) (p. 581) degree program. 21 credits are shared between the two degrees. All requirements for both degrees must be fulfilled.

Visit the School of Business website (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) for additional information.

JOINT MBA AND MS IN FINANCE

The GW School of Business offers a joint master of business administration (MBA) (p. 574) and master of science (MS) in the field of finance (p. 580) degree program. Up to 15 credits of courses in the MS program may count toward MBA degree requirements. Students must complete MBA core coursework before beginning coursework for the MS. All requirements for both degrees must be fulfilled. As degrees in joint programs are awarded simultaneously, degree requirements for both programs must be met before either degree is awarded.

Visit the School of Business website (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) for additional information.

DUAL MBA AND MS IN INFORMATION SYSTEMS TECHNOLOGY

The GW School of Business offers a dual master of business administration (p. 574) (MBA) and master of science in information systems technology (p. 581) (MS in ISTM) degree program. Up to 21 credits of coursework may be shared between programs: 12 credits of ISTM graduate courses may be applied toward the MBA, and 9 credits of ISTM-designated electives in the MBA may be applied toward the MS.

Visit the GW School of Business (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) website for additional information.

DUAL MASTER OF BUSINESS ADMINISTRATION AND MASTER OF SCIENCE IN PROJECT MANAGEMENT

The GW School of Business offers a dual master of business administration (p. 574) (MBA) and master of science in the field of project management (p. 583) (MS) degree program. 21 credits of coursework may be shared between programs: 9 credits of MS coursework may be applied towards the MBA, and 9 credits of core courses and 3 credits in electives from the MBA may count towards the MS. All requirements for both degrees must be fulfilled.

Visit the program website (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) for additional information.

DUAL MBA AND MS IN THE FIELD OF SPORT MANAGEMENT

The School of Business offers a dual master of business administration (p. 574) (MBA) and master of science in sport management (p. 583) (MS) degree program. Up to 21 credits may be shared between programs: 9 credits of MS coursework may be applied toward the MBA, and 12 credits of MBA coursework may be applied toward the MS.

Visit the program website (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) for additional information.

DUAL MBA AND MTA

The School of Business offers a dual master of business administration (MBA) (p. 574) and master of tourism

administration (MTA) (p. 584) degree program. 21 credits are shared between the two degrees. All requirements for both degrees must be fulfilled.

Visit the School of Business website (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) for additional information.

JOINT MA IN THE ELLIOTT SCHOOL AND MBA

The Elliott School of International Affairs and the GW School of Business offer a joint degree program leading to any of the master of arts degrees in the Elliott School (p. 833) and the master of business administration (p. 574) (MBA). Students must be admitted to both schools separately, and each school must approve the student's application to pursue the joint degree program.

The Elliott School counts up to 12 credits of business courses taken as part of the MBA toward the completion of the MA degree. The School of Business counts up to 12 credits of coursework completed in the MA program toward completion of the MBA. All requirements for both degrees must be fulfilled. As degrees in joint programs are awarded simultaneously, degree requirements for both programs must be met before either degree is awarded. Students should consult an advisor regarding detailed joint program requirements.

Visit the Elliott School (<https://elliott.gwu.edu/joint-and-dual-degrees/>) and School of Business (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) websites for additional information.

JOINT MASTER OF BUSINESS ADMINISTRATION AND JURIS DOCTOR

The GW School of Business (GWSB) and the Law School offer a joint program leading to the master of business administration and juris doctor (JD) degree. Students must be admitted to both schools separately, and each school must approve the student's application to pursue the joint degree. GWSB counts 12 credits taken for the JD toward the MBA. The Law School counts 12 credits of courses taken for the MBA toward the JD.

The Law School stipulates that joint degree students must register exclusively in the Law School to complete the first-year JD curriculum. Students in the Global MBA also must complete their first year of MBA coursework as a unit.

All requirements for both degrees must be fulfilled. As degrees in joint programs are awarded simultaneously, requirements for both programs must be met before either degree is awarded. Students should confer with an adviser for specific requirements of the joint program.

Visit the School of Business (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) and Law School (<https://www.law.gwu.edu/joint-degrees/>) websites for additional information.

DOCTORAL PROGRAMS

Doctoral program

- Doctor of Philosophy in the field of business administration (p. 587)

DOCTOR OF PHILOSOPHY IN BUSINESS ADMINISTRATION

The doctoral program in Business Administration prepares students for full-time careers as business academics. Working with a distinguished faculty, students develop expertise in research and scholarship and learn to contribute as vital members of a dynamic community of scholars. Graduates aspire to faculty appointments at internationally recognized business schools, and plan to balance teaching and active research.

The Ph.D. in Business Administration offers the following concentrations: Accountancy, Decision Sciences, Finance, International Business, Management, and Strategic Management and Public Policy.

Visit the program website (<https://business.gwu.edu/academics/programs/doctoral/>) for additional information.

REQUIREMENTS

The doctor of philosophy in business administration is designed to prepare students who wish to pursue academic careers in business. The program consists of two major stages: the pre-candidacy stage and the dissertation stage. During the pre-candidacy stage, students complete coursework and a comprehensive examination, under the guidance of a committee of three faculty members (faculty advisory group). Upon admission to candidacy, students prepare, submit, and defend a dissertation.

Curriculum requirements

The doctoral curriculum involves two years of formal courses established by each Department and approved by the Doctoral Committee. Students take a minimum of 45 credits during their program (including core courses and a summer paper). Students should consult their Faculty Advisory Group about the required courses and electives for which they should register. The following 30 credits constitute the core requirements for the degree:

- Four required courses in research methods and quantitative analysis (12 credits).

- Four required doctoral seminars that cover important studies in the student's area of interest (12 credits).
- An additional doctoral level seminar from outside the student's area of interest (3 credits).
- A summer research paper during the first or first and second summer, as required by the student's area of interest (3 credits).

The remaining 15 elective credits are chosen in consultation with the student's faculty advisory group. Students should complete at least 39 credits within the first two years from matriculation, and the remaining 6 credits should be completed during the third year.

Policies for core courses

In general, all core courses should be doctoral courses, i.e., those at the 8000 level. All courses must be taken for letter grades. Required courses cannot be waived without substitution except in unusual circumstances as determined on a case-by-case basis. Examples of unusual circumstances include students holding a specialized master's or doctoral degree where equivalent core courses were taken in a particular area (such as statistics or mathematics). Students may petition the Associate Dean of Research and Doctoral Programs to substitute up to 12 credits of required courses with alternative courses approved by the faculty advisory group.

Comprehensive examination

After the student completes the coursework and the summer paper requirements, the faculty advisory group and department faculty administer a comprehensive examination. The format of the comprehensive examination is at the discretion of the advisory committee, subject to approval by the doctoral committee when evaluating the study plan. The comprehensive examination establishes the student's mastery of the current and classic literature. The comprehensive exam can be written, in-class or take-home, and may include an oral component. Failure to pass the comprehensive examination in two attempts leads to termination from the program.

Dissertation

Following successful completion of the comprehensive examination, the student is considered a doctoral candidate, and may form a dissertation committee, and develop a dissertation proposal. During this stage, students prepare, submit, and defend a dissertation.

Other policies

All course work and required comprehensive examination must be completed within five years of matriculation. All program requirements must be completed within seven years of the date of matriculation.

The doctoral program is administered and supervised by the Associate Dean and the committee on doctoral studies. For more detailed information on the program, please see the

Doctoral Program Handbook, available in the GWSB Doctoral Program Office

CERTIFICATE PROGRAMS

Graduate Certificate Programs

- Accountancy (p. 588)
- Analytics for managers (p. 589)
- Artificial intelligence (p. 589)
- Business analytics (p. 590)
- Capital markets (p. 590)
- Cloud, applications, and information technology (p. 591)
- Corporate responsibility (p. 591)
- Creativity, innovation, and entrepreneurship (p. 592)
- Digital marketing and analytics (p. 592)
- Financial management (p. 593)
- Global management (p. 593)
- Governmental and nonprofit accounting (p. 593)
- Hospitality management (p. 594)
- Human capital (p. 594)
- Investments and portfolio management (p. 595)
- Management leadership (p. 595)
- Management of technology and innovation (p. 595)
- Managing the digital organization (p. 596)
- Marketing and brand management (p. 596)
- Project management (p. 597)
- Quantitative business foundations (p. 597)
- Sports management (p. 597)
- Strategic management (p. 598)
- Tourism management (p. 598)
- Walkable urban real estate development (p. 599)

GRADUATE CERTIFICATE IN ACCOUNTANCY

The graduate certificate in accountancy offers students a deeper understanding of accounting information. Although the certificate does not qualify students for a CPA, the program is designed to provide a solid understanding of the fundamentals of accounting. Program graduates will be informed users of accounting information, able to apply accounting knowledge in their current disciplines and make more informed decisions.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-accounting/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
ACCY 6101	Financial Accounting (or equivalent course/experience)	
or MBAD 6211	Financial Accounting	
ACCY 6104	Intermediate Accounting I	
or ACCY 6106	Financial Statement Analysis	
Electives		
6 credits in elective courses from the following:		
SMPP 6215	Corporate Governance and Ethics	
ACCY 6104	Intermediate Accounting I	
ACCY 6105	Intermediate Accounting II	
ACCY 6106	Financial Statement Analysis	
ACCY 6110	International Reporting and Control	
ACCY 6112	International Financial Reporting Standards	
ACCY 6201	Accounting for Internal Decision Making	
ACCY 6202	Advanced Strategic Cost Management	
ACCY 6203	Controls, Alignment, and the Organization	
ACCY 6204	Managerial Accounting for Government and Nonprofits	
ACCY 6302	Fraud Examination and Forensic Accounting	
ACCY 6401	Federal Income Taxation	
ACCY 6402	Federal Income Taxation of Partnerships	
ACCY 6404	Taxation of Financial Instruments	
ACCY 6501	Accounting Information Systems and Electronic Data Processing	
ACCY 6701	Government Accounting	
ACCY 6705	Nonprofit Accounting	

GRADUATE CERTIFICATE IN ANALYTICS FOR MANAGERS

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
MBAD 6224	Decision Making and Data Analysis	
DNSC 6210	Decision and Risk Analytics	
DNSC 6251	Optimization Models for Decision Making	
DNSC 6279	Data Mining	
Electives		
3 credits selected from the following courses:		
DNSC 6209	Forecasting for Analytics	
DNSC 6215	Social Network Analytics	
DNSC 6225	Business Process Simulation	
DNSC 6278	Big Data Analytics	
DNSC 6280	Supply Chain Analytics	
DNSC 6403	Visualization for Analytics	
DNSC 6404	Sports Analytics	
DNSC 6290	Special Topics (Digital Analytics)	
DNSC 6290	Special Topics (Machine Learning)	
DNSC 6290	Special Topics (Natural Language Processes)	

GRADUATE CERTIFICATE IN ARTIFICIAL INTELLIGENCE

The graduate certificate in artificial intelligence program prepares business leaders for new opportunities afforded by innovations in artificial intelligence (AI). AI is the next evolution of technology in business, driven by advancements in machine learning and expanding use cases. Image recognition, voice assistants, natural language processing, and chatbots are transforming industries such as transportation, agriculture, and health care, as well as how consumers live in connected homes. In this program, students learn foundational knowledge and hands-on skills in machine learning, deep learning,

and embedded systems, and apply them to AI's business applications including the internet of things (IoT).

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
ISTM 6214	Foundations of Artificial Intelligence	
ISTM 6217	Internet of Things Management	
ISTM 6218	Business Applications of Artificial Intelligence	
Electives		
One course from the following:		
DNSC 6279	Data Mining	
ISTM 6203	Managing Cloud Security	
ISTM 6213	Cloud Applications	
ISTM 6225	Cloud Foundations	
ISTM 6216	Mobile Application Development	

GRADUATE CERTIFICATE IN BUSINESS ANALYTICS

The master of science in business analytics (MSBA) degree program offers a stand-alone graduate certificate in business analytics. The graduate certificate is available to current GW School of Business and GW graduate students as well as interested professionals who are not currently enrolled at the University. The credits earned for this certificate are directly transferable towards earning the MSBA degree for up three years after completion of the certificate.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-business-analytics/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits total, including 10.5 credits in required courses and 1.5 credits in an elective course.

Code	Title	Credits
Required		
DNSC 6203	Statistics for Analytics I *	
DNSC 6206	Stochastic Foundation: Probability Models *	
DNSC 6211	Programming for Analytics	
DNSC 6279	Data Mining	
Electives		
A minimum of 3 credits from the following courses*:		
DNSC 6209	Forecasting for Analytics	
DNSC 6214	Pricing and Revenue Management	
DNSC 6215	Social Network Analytics	
DNSC 6225	Business Process Simulation	
DNSC 6233	Social Network Analysis for Managers	
DNSC 6251	Optimization Models for Decision Making	
DNSC 6252	Risk Analysis for Decision Making	
DNSC 6278	Big Data Analytics	
DNSC 6280	Supply Chain Analytics	
DNSC 6403	Visualization for Analytics	
DNSC 6404	Sports Analytics	
DNSC 6290	Special Topics (Digital Analytics)	
DNSC 6290	Special Topics (Responsible Machine Learning)	

*DNSC 6203 and DNSC 6206 may be waived by examination. If a waiver is granted, the total number credits required for the degree is not reduced and the student must make up the credits from the waived course(s) by taking additional elective credits.

GRADUATE CERTIFICATE IN CAPITAL MARKETS

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
CAMA 6001	Capital Markets, Instruments and Institutions	
CAMA 6002	Corporate Finance and Risk Management	
CAMA 6003	Capital Markets, Financial Crises and the Global Economy	
CAMA 6004	Quantitative Thinking for Capital Market Decision Makers	

GRADUATE CERTIFICATE IN CLOUD, APPLICATIONS, AND INFORMATION TECHNOLOGY

The graduate certificate in cloud, applications and information technology program trains business leaders to learn, design, and implement cloud architecture and policies. Cloud-managed services such as Amazon Web Services (AWS), Microsoft Azure, and Google Cloud Platform (GCP) accelerate businesses' capacity for innovation and enable agile navigation through today's hypercompetitive business climate. Students acquire the skills to adeptly and securely deploy those services to help firms meet their needs.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
ISTM 6213	Cloud Applications	
ISTM 6225	Cloud Foundations	
ISTM 6216	Mobile Application Development	
Elective		
One course selected from the following:		
ISTM 6203	Managing Cloud Security	
ISTM 6214	Foundations of Artificial Intelligence	
ISTM 6217	Internet of Things Management	
ISTM 6218	Business Applications of Artificial Intelligence	

GRADUATE CERTIFICATE IN CORPORATE RESPONSIBILITY

The graduate certificate in corporate responsibility prepares professionals to become responsible leaders in business and to understand a firm's impact on society. The program emphasizes responsible behavior by individuals in organizations as well as the organizations themselves. The focus of the program lies in identifying the significance of values in business and demonstrating how integrating values in decision-making and strategy can promote responsible business in society.

Courses completed as a non-degree student are not eligible for application towards the certificate requirements.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-in-responsible-management/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
MBAD 6289	Business Ethics and Public Policy	
Two courses from the following:		
SMPP 6215	Corporate Governance and Ethics	
SMPP 6218	Topics in Business and Society <small>Students may enroll in course multiple times with different topics.</small>	
SMPP 6290	Special Topics (Strategic Negotiations & Ethics)	
Electives		
One additional course from the list above or one course from the following:		
DNSC 6401	Sustainable Supply Chains	
FINA 6290	Special Topics (Microfinance: Financial Services for Poor)	
MGT 6285	Social Entrepreneurship	
SMPP 6202	Business-Government Relations	
SMPP 6210	Strategic Environmental Management	
SMPP 6211	Corporate Environmental Management in Developing Nations	

SMPP 6216	Public Policy, Governance, and the Global Market
SMPP 6241	Global Corporate Responsibility
SMPP 6290	Special Topics (Corporate Fraud and Corruption)
SMPP 6290	Special Topics (Public-Private Partnerships)
SMPP 6290	Special Topics (Sustainable and Responsible Investing)
SMPP 6290	Special Topics (Strategic Management and Environmental Analysis Within a Development Context)
SMPP 6298	Directed Readings and Research *

*Enrollment must be approved by the faculty director.

GRADUATE CERTIFICATE IN CREATIVITY, INNOVATION, AND ENTREPRENEURSHIP

The graduate certificate in creativity, innovation, and entrepreneurship broadens the field of study from beyond the primary focus of starting a new venture to include exploring how one acts more entrepreneurial, takes risks, and creatively introduces new innovations and combinations in organizations both large and small. The foundation of the graduate certificate is the core introductory course, MGT 6280 (<http://bulletin.gwu.edu/search/?P=MGT%206280>) Entrepreneurship, which introduces students to the concentration and the importance and benefits of entrepreneurship

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-innovation-creativity-entrepreneurship/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
MGT 6280	Entrepreneurship	
MGT 6282	New Venture Initiation	
ISTM 6224	Management of Technology and Innovation	

Elective

One course from the following:

MBAD 6263	Organizations and Human Capital
MGT 6285	Social Entrepreneurship
MGT 6286	Creativity and Innovation

GRADUATE CERTIFICATE IN DIGITAL MARKETING AND ANALYTICS

This certificate provides an introduction to the expanding area of digital marketing and analytics. As this area is inherently multidisciplinary, the certificate draws from coursework within various sub-disciplines offered by the Marketing department (marketing management, digital marketing, and integrated marketing communication) as well as coursework in web analytics and information systems offered by the ISTM and Decision Sciences departments. The objective of the certificate is to provide students with an understanding of the practice of digital marketing, how it relates to marketing communication and marketing strategy, and the role of analytics.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-digital-marketing-communications/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Prerequisite		
MBAD 6274	Marketing	
Required		
MKTG 6252	Digital Marketing	
MKTG 6262	Digital Marketing Analytics	
Electives		
Two courses selected from the following:		
MKTG 6263	Marketing Decision Analytics	
MKTG 6264	Artificial Intelligence and Machine Learning for Marketing Automation	

GRADUATE CERTIFICATE IN FINANCIAL MANAGEMENT

The graduate certificate in financial management provides background and training in the financial aspects of three broad principal business functions: obtaining necessary capital, investing the capital into the firm's asset and operations, with the purpose of ethically maximizing the value to shareholders, and distributing the profits resulting from product/service sales to shareholders.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-financial-management/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Pre-Requisite		
MBAD 6211	Financial Accounting	
Required		
MBAD 6235	Finance	
FINA 6221	Financial Decision Making	
FINA 6223	Investment Analysis and Portfolio Management	
Elective		
One course from the following:		
ACCY 6106	Financial Statement Analysis	
FINA 6224	Financial Management	
FINA 6250	Securities Regulation and Financial Scandals	
FINA 6290	Special Topics (Exploring Finance with Simulation)	

GRADUATE CERTIFICATE IN GLOBAL MANAGEMENT

The graduate certificate in global management program prepares business leaders to succeed and lead in today's global economy. Students acquire the knowledge to assess

and act upon the opportunities and challenges faced in the global business environment. Fulfilling the program's elective requirement by participating in a GWSB-sponsored short-term study away program is strongly encouraged.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
IBUS 6201	International Marketing	
IBUS 6401	International Business Strategy	
MBAD 6245	Global Perspectives	
Elective		
One course from the following:		
ACCY 6900	Special Topics (Macroeconomics for the Global Economy)	
ECON 6280	Survey of International Economics	
IBUS 6301	International Business Finance	
Or any IBUS course numbered 6000 or above.		

GRADUATE CERTIFICATE IN GOVERNMENT AND NONPROFIT ACCOUNTING

The graduate certificate in governmental and nonprofit accounting program offers an in-depth understanding of accounting in these sectors. Located at the intersection of federal government agencies, international NGOs, and domestic nonprofits, the GW School of Business is uniquely positioned at the center of accounting needs for these prevalent organizations.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in selected courses.

Code	Title	Credits
Prerequisite coursework		
ACCY 2001	Introduction to Financial Accounting	
or ACCY 6101	Financial Accounting	
Required		

6 credits from the following courses:

ACCY 6204 Managerial Accounting for Government and Nonprofits

ACCY 6701 Government Accounting

ACCY 6705 Nonprofit Accounting

ACCY 6900 Special Topics (Governmental Auditing)

ACCY 6900 Special Topics (Case Studies: Governmental Accounting & Auditing)

Electives

6 credits from the following courses:

ACCY 6302 Fraud Examination and Forensic Accounting

PPPA 6031 Governing and Managing Nonprofit Organizations

PPPA 6032 Managing Fund Raising and Philanthropy

PPPA 6048 Financing State and Local Government

PPPA 6051 Governmental Budgeting

PPPA 6053 Financial Management for Public and Nonprofit Organizations

PPPA 6054 Issues in Federal Budgeting

GRADUATE CERTIFICATE IN HOSPITALITY MANAGEMENT

The graduate certificate in hospitality management provides students with specialized knowledge in hotel development and operations; the former serves ownership groups by providing investment advice in market analysis, feasibility studies, and asset management and the latter focuses on hospitality management functions using different business models, including management contract, franchise agreement, and leasehold.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-hospitality-management/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
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Required

TSTD 6220	International Hospitality Management	
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TSTD 6221	Hospitality Market Analysis	
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TSTD 6296	Hospitality Digital Marketing Strategies	
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Electives

One course from the following:

TSTD 6260	Tourism Economics	
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TSTD 6263	Destination Marketing	
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TSTD 6276	Risk Management for Events and Meetings	
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GRADUATE CERTIFICATE IN HUMAN CAPITAL

The graduate certificate in human capital provides depth of knowledge in the practices and research based disciplines of human capital and human resource management. Participants learn how human capital contributes to the core strategy of an organization. Courses cover key areas associated with human resource competencies as well as knowledge associated with the psychology of people, organizations, and careers. Human capital theory is presented in a practical way, targeted towards HR generalists or non-human resource managers interested in understanding the strategic function of HR in organizations. The program builds on the strengths of GWSB in the areas of human capital development.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-human-capital/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
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Required

MGT 6252	Strategic Human Resource Management	
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MGT 6257	Performance Management and Development	
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MGT 6290	Special Topics (Human Resource Analysis)	
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Electives

One course from the following:

MGT 6259 Employment Law and Ethics

MGT 6290 Special Topics (Diversity and Globalization)

GRADUATE CERTIFICATE IN INVESTMENTS AND PORTFOLIO MANAGEMENT

The certificate in Investments and Portfolio Management provides background and training in the theory and practice of the various methods of investment analysis and selection. Topics covered include risk-reward analysis of security investments, including analysis of national economy, industry, company, and markets, legal environment, active and passive portfolio management techniques, portfolio performance evaluation, as well as practical experience in security selection and portfolio management.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
MBAD 6235	Finance	
FINA 6223	Investment Analysis and Portfolio Management	
FINA 6239	Applied Portfolio Management *	
or FINA 6290	Special Topics	
FINA 6242	Real Estate Valuation and Investment	

*If FINA 6290 is taken, it must be on the topic of Investment Analysis Venture Capital.

GRADUATE CERTIFICATE IN MANAGEMENT LEADERSHIP

Leadership is the ability to move others in a unified manner toward a common goal. It is not related to typical notions of authority. Rather, it is a skill that requires self-awareness, self-monitoring, social-awareness, and relationship building. Leadership is employed across all organization functions, and thus is the central source of progress and innovation in all

organizations. This graduate certificate educates students in the principles of effective leadership.

REQUIREMENTS

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-management-leadership/>) for additional program information.

The following requirements must be fulfilled: 12 credits, including 9 credits in required course and 3 credits in elective courses.

Code	Title	Credits
Required		
MBAD 6263	Organizations and Human Capital	
MGT 6210	Leading Teams	
MGT 6253	Leadership and Executive Development	
Electives		
3 credits from the following:		
MGT 6215	Conflict Management and Negotiations	
MGT 6252	Strategic Human Resource Management	
MGT 6257	Performance Management and Development	
MGT 6270	Consulting Processes	
MGT 6285	Social Entrepreneurship	
MGT 6286	Creativity and Innovation	
MGT 6287	Women's Entrepreneurial Leadership	
MGT 6290	Special Topics (Advanced People Analytics)	
MGT 6290	Special Topics (Diversity and Globalization)	

GRADUATE CERTIFICATE IN MANAGEMENT OF TECHNOLOGY AND INNOVATION

This graduate certificate program provides a broad treatment of the management of science and technology as well as innovation. The curriculum focuses on the management of organizations and the professional workforce involved in conceiving, developing, and delivering products and services involving technology of all kinds.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-management-technology-innovation/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
ISTM 6222	IS/IT Strategy and Implementation	
ISTM 6224	Management of Technology and Innovation	
ISTM 6223	Technology Entrepreneurship	
or ISTM 6233	Emerging Technologies	
Electives		
One course from the following: *		
ISTM 6204	Information Technology Project Management	
ISTM 6223	Technology Entrepreneurship	
ISTM 6234	New Venture Financing	
ISTM 6239	Seminar: Competitiveness/Technology	
ISTM 6290	Special Topics (Technology Management in European Business Environment)	

*Students may take other elective courses from the MSIST curriculum or from other departments with the advisor's approval.

GRADUATE CERTIFICATE IN MANAGING THE DIGITAL ORGANIZATION

The graduate certificate in managing the digital organization program focuses on the ways in which organizations use systems to collect, process, and distribute data. Information systems are not only the technology an organization uses, but also the way people support business processes through interaction with technology. Students in this program gain an understanding of the components that comprise information systems and how those systems support all aspects of an organization's operations, management, and decision making.

Visit the program website (<https://business.gwu.edu/graduate-certificate-managing-digital-organization/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
ISTM 6201	Information Systems Development and Applications	
ISTM 6202	Relational Databases	
ISTM 6209	Web and Social Analytics	
Elective		
3 credits in any ISTM course at the 6000 level or above.		

GRADUATE CERTIFICATE IN MARKETING AND BRAND MANAGEMENT

This graduate certificate provides students with an in-depth understanding of the interface between Marketing and Brand Management. The exciting area of Brand Management is considered by top executives as a high-demand specialty area of marketing. Students will learn how to strategically manage brands to help their organizations in creating customer value, building loyalty and name recognition strong enough to overcome intense competition in local and global markets. The certificate has a special focus on how organizations design brand identity, manage customer experience, measure/ analyze brand performance, and differentiate brand communication strategies.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-marketing-brand-management/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Prerequisite		
MBAD 6274	Marketing	

Required

MKTG 6248	Advertising and Marketing Communications Strategy
or MKTG 6256	Integrated Marketing Communication
MKTG 6255	Strategic Brand Management

Elective

Two courses selected from the following:

MKTG 6242	Buyer Behavior
MKTG 6243	Marketing Research
MKTG 6246	Marketing of Services
MKTG 6251	Product Management
MKTG 6259	Marketing Strategy

GRADUATE CERTIFICATE IN PROJECT MANAGEMENT

The master of science in project management program (MSPM) is enhanced by its related graduate certificate in project management. The certificate is available to current GWSB students as well as those not enrolled in a graduate degree program. The certificate program is designed to provide students with detailed coverage of basic concepts and theories of project management and related skills, preparing students to succeed in a project environment. Up to the total 12 credits earned for the certificate may count toward requirements for the MSPM degree.

Visit the program website (<https://business.gwu.edu/graduate-certificate-project-management/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled 12 credits, including 9 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
DNSC 6202	Statistics for Managers	
or MBAD 6224	Decision Making and Data Analysis	
DNSC 6247	Organization, Management, and Leadership	
or MBAD 6263	Organizations and Human Capital	

DNSC 6261	Introduction to Project and Program Management
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Electives

3 credits in elective courses selected from the following:

DNSC 6254	Risk Management
DNSC 6257	Cost Estimation and Control
DNSC 6258	Executive Decision Making
DNSC 6267	Planning and Scheduling

GRADUATE CERTIFICATE IN QUANTITATIVE BUSINESS FOUNDATIONS

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
MBAD 6211	Financial Accounting	
MBAD 6224	Decision Making and Data Analysis	
MBAD 6235	Finance	
Elective		
One 3-credit graduate elective selected in consultation with the academic advisor.		

GRADUATE CERTIFICATE IN SPORTS MANAGEMENT

The sport and recreation industry is estimated to be almost \$500 billion with more than \$60 billion derived from professional sports alone. The industry includes the management and marketing of youth to professional sport organizations and athletes as well as sport media, sporting goods, health/sport clubs, and venues. The graduate certificate in sport management helps prepare student to enter all areas of the field with a strong understanding of sport marketing, sport media, sport law, and sport facilities.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-in-responsible-management/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
TSTD 6264	Sport Marketing	
TSTD 6265	Sport Law: Contracts and Negotiations	
TSTD 6266	Sport and Event Facility Management	
TSTD 6267	Sport Media and Communications	

GRADUATE CERTIFICATE IN STRATEGIC MANAGEMENT

The graduate certificate in strategic management program prepares future business leaders with strategic management principles by emphasizing the executive manager’s perspective and evaluating the strategy of various types of organizations in the global economy. The curriculum covers key areas associated with strategic management, including corporate strategy, competitive strategy, corporate political and nonmarket strategy, business and government relations, strategic decision making, strategic networks, and strategic leadership. The program is recommended for individuals interested in the fields of consulting, business development, corporate strategy, corporate political strategy, sustainability, strategic compliance, and business and government relations.

Visit the program website (<https://business.gwu.edu/graduate-certificate-strategic-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in selected courses.

Code	Title	Credits
Required		
MBAD 6288	Strategic Management	
or SMPP 6290	Special Topics	
(SMPP 6290 in the topic Strategy Fundamentals)		
Two courses selected from the following:		
SMPP 6202	Business-Government Relations	
SMPP 6290	Special Topics (Strategic Networking and Social Capital)	

SMPP 6290	Special Topics (Strategic Negotiations & Ethics)
One additional course from the SMPP courses listed above or one course from the courses listed below:	
IBUS 6401	International Business Strategy
MGT 6253	Leadership and Executive Development
MGT 6280	Entrepreneurship
MGT 6283	Strategic Entrepreneurship
MGT 6290	Special Topics (Strategic Human Resources)
MKTG 6255	Strategic Brand Management
SMPP 6210	Strategic Environmental Management
SMPP 6211	Corporate Environmental Management in Developing Nations
SMPP 6215	Corporate Governance and Ethics
SMPP 6216	Public Policy, Governance, and the Global Market
SMPP 6218	Topics in Business and Society
SMPP 6290	Special Topics (Public-Private Partnerships)

GRADUATE CERTIFICATE IN TOURISM MANAGEMENT

The graduate certificate in tourism management program is designed for tourism professionals and career changers with a wide range of backgrounds and interests in tourism and event and hospitality management. Students in the program gain fundamental knowledge of tourism management and learn how to apply the concept of sustainability in tourism development, develop and manage a destination marketing program, evaluate the impact of tourism development on local communities, develop digital marketing strategies, and promote destination through events and conferences.

All credits earned toward the certificate are eligible for transfer to the master of tourism administration degree.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
TSTD 6249	Sustainable Destination Development	
TSTD 6263	Destination Marketing	
TSTD 6278	Conference and Exposition Management	
TSTD 6296	Hospitality Digital Marketing Strategies	

FINA 6243	Strategic Planning for Walkable Urban Real Estate Companies
PSUS 6204	Land Use Law

GRADUATE CERTIFICATE IN WALKABLE URBAN REAL ESTATE DEVELOPMENT

The graduate certificate in walkable urban real estate development program provides the knowledge, insight, and skills needed to handle the unique challenges of twenty-first century real estate development and place management. Walkable urban real estate development and place management is the future of the real estate industry and metropolitan Washington, DC, has more examples of walkable urbanism than any other region in the country. The program addresses the emerging approach to the development, strategy, and management of these mixed-use, walkable places.

Visit the program website (<https://business.gwu.edu/academics/programs/certificate/graduate-certificate-walkable-urban-real-estate-development/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including one 3-credit required course and 9 credits in elective courses.

Code	Title	Credits
Required		
FINA 6290	Special Topics (Walkable Urban Development, Strategy, and Place Management)	
PSUS 6202	Urban and Environmental Economics	
Electives		
Two courses selected from the following:		
FINA 6240	Real Estate Development	
FINA 6242	Real Estate Valuation and Investment	

GRADUATE SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT

Dean M.J. Feuer

Academic Dean C. Green

Associate Dean for Research and External Relations M.B. Freund

Associate Dean for Doctoral Studies S.A. Dannels

Associate Dean for Master's Studies and Student Life R.C. Jakeman

The Graduate School of Education and Human Development (<http://gsehd.gwu.edu/>) is the administrative unit for the Departments of Counseling and Human Development, Curriculum and Pedagogy, Educational Leadership, Human and Organizational Learning, and Special Education and Disability Studies. The School offers master of arts in education and human development, master of arts in teaching, master of education, education specialist, doctor of philosophy, and doctor of education degree programs. Academic programs are offered in numerous fields of study.

In addition to its degree programs, the School offers graduate and post-graduate certificate programs; credit and noncredit workshops designed to meet the unique needs of metropolitan area school systems and other clientele in industry and government; and a wide range of courses for teachers who wish to pursue advanced studies and/or additional endorsements, as well as for degree students who want to pursue initial teacher licensure. Clinical facilities are provided by the Community Counseling Service Center (<http://gsehd.gwu.edu/ccsc/>), which supports counseling internships as well as outreach services to the community.

All programs are designed to meet the broad needs of individuals who seek the knowledge and skills necessary to provide effective learning and teaching, research, services, and leadership in a variety of settings that cover the entire life span. Special curricula are individually tailored for liberal arts graduates and graduates of other professional schools who are interested in teaching or in other human services areas. Some programs and courses are also offered at off-campus locations or via distance education.

The Office of Professional Preparation and Accreditation (<https://blogs.gwu.edu/gsehdoppa/>) serves as a liaison with schools for clinical experiences required for licensure in school counseling and in teaching. Field and internship experiences required in master's and doctoral programs are provided in cooperation with public and private schools, social and health agencies, museums, institutions in the business community, institutions of higher education, nonprofit and professional associations, and the federal government.

The educator preparation programs in the Graduate School of Education and Human Development are accredited by the

Council for the Accreditation of Educator Preparation/National Council for Accreditation of Teacher Education (CAEP/NCATE), and are state-approved by the District of Columbia Office of the State Superintendent of Education (OSSE). Programs that prepare students to become eligible for licensure as a professional counselor are accredited by The Council for Accreditation of Counseling and Related Educational Programs (CACREP).

Mission

The Graduate School of Education and Human Development, strategically based in the nation's capital and serving the global community, develops informed and skilled leaders through innovative teaching and learning. Students engage in scholarly inquiry that links policy, research, and practice across the lifespan and fosters continuous self-examination and critical analysis towards excellence.

Bridging Concepts

The following bridging concepts are central to the unified conceptual framework of the School and weave through the mission, goals, and initiatives of its strategic plan.

- Research and scholarship are prerequisite to the improvement of educational practice.
- Leadership is critical in the transformation of education and human development at all levels.
- Building reflective practitioners through the integration of theory and practice must be a focus of all programs.
- A community of diverse learners is prerequisite to success in the education and human development professions.

REGULATIONS

GSEHD provides an online Master's, Education Specialist, and Certificate Student Handbook (https://gsehd.gwu.edu/sites/default/files/documents/ma_eds_student_handbook_20-21.pdf) and a Doctoral Student Handbook (https://gsehd.gwu.edu/sites/default/files/documents/2020-2021_doctoral_handbook.pdf). These online handbooks contain additional updated information on policies, regulations, and other matters of concern to enrolled and admitted students. It is the responsibility of the student to be aware of the information contained in both this Bulletin and the appropriate Student Handbook. Students should also consult departmental/program handbooks and guidelines.

Admission Requirements

The Graduate School of Education and Human Development seeks applicants with strong academic potential, high motivation, and aptitude to do graduate-level work. Admission decisions are based on an evaluation of all material submitted in support of the application. The School requires a bachelor's degree from a regionally accredited institution, official transcripts of all previous undergraduate and graduate coursework, and acceptable test scores on either the Graduate

Record Examination or the Miller Analogies Test in some programs. These tests are waived in several master's programs. All doctoral applicants must have a master's degree from a regionally accredited institution. Additional requirements vary by program.

A minimum of two letters of recommendation and a statement of purpose are required. Most programs also require an interview with program faculty. For those living outside the Washington metropolitan area the interview may be conducted virtually with permission of lead faculty of the desired program. In addition to these basic requirements, individual programs may require relevant professional experience and other supporting documentation before a final decision on admission is made.

English Language Requirements for International Students

Applicants who are not citizens of countries where English is the official language or who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English-Academic (PTE). English language scores are valid for two years. The most recent test scores are used for applicants who submit multiple scores. Specified possible exemptions from this policy can be found on the Graduate Admissions (<https://graduate.admissions.gwu.edu/international-student-application-requirements/>) website. The required minimum score for admission to a program is 80 on the Internet-based or 550 on the paper-based TOEFL, or an overall band score of 6.0 on the IELTS (with no individual band score below 5.0), or a score of 53 on the PTE. Some programs have higher minimum scores. Applicants who have a TOEFL score of at least 70 (but less than 80), or an IELTS overall band score of 5.0 (but less than 6.0) may be considered for admission on the condition that they successfully complete the Applied English Studies program prior to beginning their graduate studies.

Students with the following English language test scores are exempt from taking English for Academic Purposes (EAP) courses: TOEFL, 600 paper-based or 100 Internet-based; IELTS, overall band score of 7.0 with no individual band score below 6.0; PTE, 68. Students with test scores below these minimums must register for an EAP course during their first semester. Students assigned EAP courses should anticipate additional tuition expenses as well as a possible extended period of time required to complete their degree program. EAP courses do not count toward degree requirements.

Students required to take an EAP course must earn a minimum grade of B- in the course. Students who do not earn a B- or above in their first course must take an additional EAP course in the subsequent semester. Students who earn an F in an EAP course must repeat the course and are subject to the process described in the Scholarship section.

Academic Policies

Information on grades, the graduate student grading system, assignment of credits, Incompletes, the grade-point average, and eligibility for graduation is found under University Regulations (p. 27).

The symbol *I* (Incomplete) indicates that a satisfactory explanation of extenuating circumstances has been given to the instructor for the student's inability to complete the required work of the course during the semester of enrollment. The work must be completed within the designated time period agreed upon by the instructor, student, and School, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which the work of the course is being completed. If not registered in other classes during this period, the student must register for Continuous Enrollment status.

When work for the course is completed, the instructor will complete a grade change form. The final grade will replace the symbol of *I*. If work for the course is not completed within the designated time, the grade will be converted automatically to a grade of *F*, Failure, 0 quality points, and the grade-point average and academic standing recalculated. See University Regulations for full details.

Scholarship

An overall grade-point average of 3.0 is required for graduation. Students who have a cumulative GPA below 3.0, or receive a grade of *C* or below in more than 6 credits, or receive a grade of *F* will have an academic hold placed on their account and may be subject to program removal. Students must meet with a representative of the Dean's Office before enrollment in further coursework is allowed. More detailed information can be found in the GSEHD student handbooks.

Comprehensive Examination

A comprehensive examination is required for some master's and all doctoral programs. Candidates who plan to take the examination must file an application in the Office of Student Life of the Graduate School of Education and Human Development by the published deadline.

Continuous Enrollment and Residency

Students must be continuously enrolled in GSEHD unless the Dean's Office grants a leave of absence. Failure to register each fall and spring semester will result in lapse of candidacy. Subsequent readmission is subject to whatever new conditions and regulations have been established by the School. See Continuous Enrollment Status under University Regulations.

When master's degree candidates are sitting for a comprehensive examination and are not otherwise enrolled in coursework, they may prepare for and sit for the exam in continuous enrollment status. If not enrolled in other coursework, doctoral and education specialist students are

required to enroll in the examination preparation course, which carries a fee equivalent to 1 credit of tuition. See Comprehensive Examination policy in the appropriate student handbook.

Leave of Absence

Students who, for personal reasons, are temporarily unable to continue their program of studies may request a leave of absence for a specific period of time not to exceed one calendar year during the total period of degree candidacy. If the request is approved, the student must register for leave of absence each semester. If a student fails to register, degree candidacy is terminated. Students who need additional semesters of leave of absence must seek approval from the appropriate appeals committee.

Class Attendance Policy

Attending class and scheduled make-up classes, discussions, and other course meetings is a fundamental student responsibility. Faculty may use class attendance and participation as factors in determining course grades.

MASTER'S

Master's Degree Programs

See list of programs, below (p. 603).

Admission Requirements

The Graduate School of Education and Human Development (<https://gsehd.gwu.edu/>) seeks applicants with strong academic potential, high motivation, and aptitude to do graduate-level work. Admission decisions are based on an evaluation of all material submitted in support of the application. The School requires a bachelor's degree from a regionally accredited institution, official transcripts of all previous undergraduate and graduate coursework, and acceptable test scores on either the Graduate Record Examination or the Miller Analogies Test in some programs. These tests are waived in several master's programs.

Two letters of recommendation and a statement of purpose are required. Most programs also require an interview with program faculty. The interview may be conducted virtually with permission of lead faculty of the desired program for those living outside the Washington metropolitan area. In addition to these basic requirements, individual programs may require relevant professional experience and other supporting documentation before a final decision on admission is made.

Plan of Study

The plan of study leading to a master's degree varies by program, but all require a minimum of 30 graduate credits including a program-approved 3-credit research methods course to satisfy the research requirements. At least 24 credits of this work must be taken in residence at the Graduate School

of Education and Human Development. Several programs have additional credit and/or capstone requirements.

All degree requirements must be completed within six years, whether study is full- or part-time. More detailed information can be found in the GSEHD Master's, Education Specialist, and Certificate Student Handbook (https://gsehd.gwu.edu/sites/default/files/documents/ma_ed_s_student_handbook_20-21.pdf).

Transfer Credit

Transfer credit is granted for approved courses taken at other regionally accredited institutions, but a minimum of 24 credits must be completed in the Graduate School of Education and Human Development as a master's candidate. One semester (and a maximum of 12 credits) taken in non-degree status may be credited toward the master's degree. Transfer credit is not granted for work completed five or more years before application for admission or readmission to master's candidacy. All work accepted for transfer must have been earned with a minimum grade of B and must be approved for acceptance by both the advisor and the dean. *Credit, Satisfactory, Audit*, or other non-letter grades are not acceptable.

Teacher Certification Preparation Programs

Programs are available to prepare students for teacher licensure in elementary, secondary, and special education through the master of arts in the field of education and human development, and master of education degree programs. Students who plan to prepare for licensure must apply to the appropriate degree program. These degree programs are also available to credentialed teachers seeking additional endorsements.

In accordance with the 2008 Higher Education Opportunity Act, Title II, Section 205, The George Washington University Graduate School of Education and Human Development provides required information in response to any request by potential applicants, guidance counselors, and prospective employers. Visit the GSEHD website (<http://gsehd.gwu.edu/>) for additional information.

PRAXIS® Teacher Licensure Assessments

All degree programs preparing students for initial teacher licensure require completion of the Educational Testing Service PRAXIS® teacher assessments as specified by the Office of the State Superintendent of Education (OSSE) of the District of Columbia.

The master's degree program preparing students for licensure in school counseling requires completion of the Educational Testing Service PRAXIS® assessment as specified by the Office of the State Superintendent of Education (OSSE) of the District of Columbia.

The master's degree program, the post-master's certificate, and the education specialist degree preparing students for licensure in educational administration follow the state-

approved program, PRAXIS® test requirements put forth by the Office of the State Superintendent of Education (OSSE) of the District of Columbia.

Master's Thesis Option

Students in select programs may elect a thesis option. The choice of the thesis subject must be approved in writing by the student's advisor. Students should consult program faculty for more information.

Second Master's Degree

Persons seeking a second master's degree in the Graduate School of Education and Human Development must complete all core and specialization requirements and a minimum residency requirement of 24 credits. Students seeking a second master's degree must follow the application procedures described on the GSEHD website (<https://gsehd.gwu.edu/>).

Master of Arts in Teaching

- Master of Arts in Teaching in the field of museum education (p. 656)

Master of Education

- Master of Education in the field of elementary education (p. 635)
- Master of Education in the field of secondary education (p. 636)

Master of Arts in Education and Human Development

- Master of Arts in Education and Human Development individualized program (p. 637)
- Master of Arts in Education and Human Development in the field of assessment, testing, and measurement in education (p. 637)
- Master of Arts in Education and Human Development in the field of clinical mental health counseling (p. 638)
- Master of Arts in Education and Human Development in the field of curriculum and instruction (p. 640)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in elementary education (p. 640)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in interdisciplinary studies of literacy and reading education (p. 641)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in Jewish education (p. 642)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in secondary education (p. 642)

- Master of Arts in Education and Human Development in the field of early childhood special education (p. 643)
- Master of Arts in Education and Human Development in the field of education policy studies (p. 643)
- Master of Arts in Education and Human Development in the field of educational leadership and administration (p. 644)
- Master of Arts in Education and Human Development in the field of educational technology leadership (p. 645)
- Master of Arts in Education and Human Development in the field of experiential Jewish education (p. 647)
- Master of Arts in Education and Human Development in the field of higher education administration (p. 645)
- Master of Arts in Education and Human Development in the field of interdisciplinary secondary transition services (p. 648)
- Master of Arts in Education and Human Development in the field of international education (p. 649)
- Master of Arts in Education and Human Development in the field of language education, teaching world languages K-12 licensure concentration (p. 650)
- Master of Arts in Education and Human Development in the field of language education, teaching world languages non-licensure concentration (p. 651)
- Master of Arts in Education and Human Development in the field of language education, TESOL K-12 licensure concentration (p. 651)
- Master of Arts in Education and Human Development in the field of language education, TESOL non-licensure concentration (p. 652)
- Master of Arts in Education and Human Development in the field of organizational leadership and learning (p. 652)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (p. 640)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling with licensure eligibility (p. 653)
- Master of Arts in Education and Human Development in the field of school counseling (p. 653)
- Master of Arts in Education and Human Development in the field of secondary special education (p. 654)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (p. 654)
- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners (p. 655)

Combined programs

- Dual Bachelor of Arts with a major in English and a Master of Education in the field of secondary education with a concentration in English (p. 656)

- Dual Bachelor of Arts with a major in history and a Master of Education in the field of secondary education with a concentration in social studies (p. 656)
- Dual Bachelor of Arts with a major in Spanish and Latin American languages, literatures, and cultures, and Master of Education in secondary education with a concentration in foreign language education (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in elementary education and Graduate Certificate in incorporating international perspectives in education (IIPE) (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in secondary education and Graduate Certificate in incorporating international perspectives in education (IIPE) (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in elementary education and Graduate Certificate in TESOL (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in secondary education and Graduate Certificate in TESOL (p. 658)
- Dual Master of Arts in Education and Human Development in the field of International Education and Graduate Certificate in assessment, testing, and measurement (ATM) (p. 658)
- Dual Master of Arts in Education and Human Development in the field of international education and Graduate Certificate in incorporating international perspectives in education (IIPE) (p. 658)
- Dual Master of Arts in Education and Human Development in the field of international education and Graduate Certificate in TESOL (p. 658)
- Dual Master of Business Administration and Master of Arts in Education and Human Development in the field of higher education administration (p. 585)
- Joint Master of Arts in Education and Human Development in the field of education policy studies and Juris Doctor (p. 659)
- Joint Master of Arts in Education and Human Development in the field of higher education administration and Juris Doctor (p. 659)

EDUCATION SPECIALIST

Education Specialist Programs

The Graduate School of Education and Human Development (<https://gsehd.gwu.edu/>) program of advanced study leading to the degree of education specialist (EdS) is for students with a master's degree who seek further professional preparation. The program is primarily available in the field of educational leadership and administration, but is also available in the fields

of counseling, curriculum and instruction, higher education administration, human and organizational learning, and special education on an individualized basis.

Education Specialist Programs

- Education Specialist in the field of educational leadership and administration (p. 659)
- Education Specialist in the field of special education (p. 660)

Admission Requirements

The following are required for entrance to the education specialist program in educational leadership and administration: an undergraduate degree and a master's degree from a regionally accredited institution, and one year of teaching experience. Two letters of recommendation, one from a professional supervisor and one from the most recent graduate faculty advisor, are required, along with a statement of professional goals. Each applicant must be interviewed and recommended by a faculty advisor.

Programs of Study and Degree Requirements

A minimum of 30 credits beyond the requirements for a master's degree is required. At least 21 credits of this work must be taken in residence at GSEHD. A maximum of five calendar years is allowed for completion of the program. More detailed information can be found in the GSEHD Master's, Education Specialist, and Certificate Student Handbook (https://gsehd.gwu.edu/sites/default/files/documents/ma_ed_s_student_handbook_20-21.pdf).

Comprehensive Examination

A comprehensive examination may be required, depending on field of study.

(<http://bulletin.gwu.edu/education-human-development/education-specialist/educational-leadership-administration/>)

DOCTORAL

Doctoral Degree Programs

Doctoral Programs

- Doctor of Education in the field of curriculum and instruction (p. 660)
- Doctor of Education in the field of educational leadership and administration (p. 661)
- Doctor of Education in the field of higher education administration (p. 662)
- Doctor of Education in the field of human and organizational learning (p. 663)
- Doctor of Education in the field of special education (p. 665)
- Doctor of Philosophy in the field of counseling (p. 667)
- Doctor of Philosophy in the field of education (p. 666)

Plan of Study

All doctoral students must complete at least 36 credits of coursework and at least 12 credits of dissertation research at GSEHD while enrolled in their doctoral program. Individual doctoral programs usually have additional requirements.

For doctoral students, all degree requirements must be completed within eight (8) years from the time of admission to the doctoral program. Any leaves of absence do not count against this time limit. More detailed information can be found in the GSEHD Doctoral Student Handbook (https://gsehd.gwu.edu/sites/default/files/documents/2020-2021_doctoral_handbook.pdf).

Required graduate courses, with few exceptions, are offered in the late afternoon and evening. In some programs, courses are offered at off-campus locations and on weekends.

Doctor of Philosophy Degree

The Doctor of Philosophy (PhD) in the field of counseling is accredited by the Council for Accreditation of Counseling and Related Educational Programs.

The Doctor of Philosophy (PhD) in the field of education degree program is designed to create opportunities for cross-disciplinary research by concentrating on critical national and global problems in which education and human development play a significant role. To adequately address issues, scholars require both a strong foundation in education as well as theoretical and disciplinary grounding in multiple disciplines. The PhD program is distinguished by four characteristics: candidates apply to a cross-disciplinary research team that is focused on a critical problem related to education and human development; approaches to the research problems require a cross-disciplinary lens; students engage in individual and collaborative research throughout their program; and candidates aspire to careers in which the production of research is paramount.

Admission Requirements, PhD

A master's degree from a regionally accredited institution is required. Materials to be submitted include: official transcripts, GRE scores, TOEFL scores (for international applicants), three letters of recommendation, and a statement of purpose. Each program has more specific details about these materials and additional requirements. Selection is competitive and is based on the applicant's past achievements, perceived potential, and fit to the goals and mission of the program.

Doctor of Education Degree

The Graduate School of Education and Human Development offers programs of advanced study leading to the degree of Doctor of Education (EdD). These programs provide major fields of study in curriculum and instruction, educational leadership and administration, higher education administration, human and organizational learning, and special education. With the approval of a student's advisor, coursework

may be taken in or from other departments of the University and through the Consortium.

Admission Requirements, EdD

A master's degree from a regionally accredited institution is required. Materials to be submitted include: official transcripts; GRE, GMAT, or Miller Analogy Test scores (options vary by program); TOEFL scores (for international applicants); two letters of recommendation; and a statement of purpose. Each program has more specific details about these materials and additional requirements. Selection is competitive and is based on the applicant's past achievements, perceived potential, and fit to the goals and mission of the program.

Pre-Candidacy and Candidacy

The Doctor of Philosophy and Doctor of Education programs are divided into two stages: pre-candidacy and candidacy. In general, the degree program requires two or more years of full-time study beyond the master's degree or the equivalent in part-time study. Coursework and the comprehensive examination must be completed within five years, and the entire program must be completed within eight years. The minimum residency requirement in degree status for the doctorate is 36 credits of coursework in the pre-candidacy stage and 12 to 24 credits of dissertation research in the candidacy stage. In most cases, coursework beyond the minimum is required.

In the pre-candidacy stage, all coursework in the program must be completed and the comprehensive examination passed. Coursework toward the doctorate is established on the basis of a framework of seven domains: knowledge of foundations; critical literature review; research methods; clarity of thought, as expressed both in speech and in writing; professional development; technological skills; and depth of knowledge of the specialty area.

The comprehensive examination is taken upon completion of all pre-candidacy coursework. Students taking the examination must be registered for at least 1 credit in the semester it is to be taken, and must file an online application in the Office of Student Life of the Graduate School of Education and Human Development by the published deadline.

The candidacy stage of doctoral study begins after successful completion of the content coursework *and* the comprehensive examination. A doctoral research dissertation committee is established and the candidate develops a dissertation proposal (this may be while registered in Pre-Dissertation Seminar). Upon successful completion of coursework listed on the approved program plan of study, students must register for dissertation research at the rate of 3 or 6 credits each fall and spring semester. A minimum of 12 dissertation research credits are required for graduation. Students who have not defended their dissertation after 12 credits continue to register at the rate of 3 or 6 credits until they have reached 24 credits of dissertation research. Once they have reached their 24 credit maximum, they must register each subsequent fall and spring

semester for 1 credit of Continuing Research until completion of their degree program with the successful defense of the dissertation to the Dissertation Oral Examination Committee. The accepted dissertation is submitted electronically, with a processing fee paid directly to ProQuest.

Detailed information on the doctoral programs and their administration is available in the GSEHD Doctoral Student Handbook (https://gsehd.gwu.edu/sites/default/files/documents/2020-2021_doctoral_handbook.pdf). Students completing their degree program should refer to the section on Graduation Requirements, Participating in the Commencement Ceremony (<http://bulletin.gwu.edu/university-regulations/#Gradcommencement>), under University Regulations.

Doctoral Dissertation

All doctoral students must complete a doctoral dissertation.

This includes the successful completion of an oral defense of the proposal and then of the completed dissertation. Additional information is available in the GSEHD Doctoral Student Handbook.

Doctoral Programs

- Doctor of Education in the field of curriculum and instruction (p. 660)
- Doctor of Education in the field of educational leadership and administration (p. 661)
- Doctor of Education in the field of higher education administration (p. 662)
- Doctor of Education in the field of human and organizational learning (p. 663)
- Doctor of Education in the field of special education (p. 665)
- Doctor of Philosophy in the field of counseling (p. 667)
- Doctor of Philosophy in the field of education (p. 666)

CERTIFICATES

Certificate Programs

The Graduate School of Education and Human Development offers the following graduate certificate programs. Graduate certificates do not constitute eligibility for an initial license or assure admission to a subsequent degree program. Courses taken as part of a certificate program may be applied toward advanced credentials or endorsements added to an initial license.

Graduate Certificates

- Assessment, testing, and measurement in education (p. 668)
- Autism spectrum disorders (p. 669)
- Brain injury: educational and transition services (p. 669)
- Counseling and life transitions (p. 670)
- Design and assessment of adult learning (p. 670)

- Educational technology leadership (p. 671)
- Global leadership in teams and organizations (p. 671)
- Incorporating international perspectives in education (p. 672)
- Instructional design (p. 672)
- Israel education (p. 673)
- Job development and placement (p. 673)
- Leadership development (p. 674)
- Literacy education (p. 674)
- Organizational learning and change (p. 674)
- Special education for culturally and linguistically diverse learners (p. 675)
- STEM master teacher (p. 675)
- Teaching English to speakers of other languages (p. 676)
- Teaching strategies and classroom management for Jewish studies educators (p. 676)
- Transition special education (p. 677)

Post-Master's Certificates

- Advanced practice of education policy (p. 677)
- Counseling (p. 677)
- Educational leadership and administration (p. 678)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Counseling (CNSL) (p. 1522)
- Curriculum and Pedagogy (CPED) (p. 1526)
- Education (EDUC) (p. 1545)
- Human Development (HDEV) (p. 1645)
- Human and Organizational Learning (HOL) (p. 1647)
- School of Education and Human Development (SEHD) (p. 1812)
- Special Education (SPED) (p. 1830)

COUNSELING AND HUMAN DEVELOPMENT

GRADUATE

Graduate certificates

- Graduate certificate in counseling and life transitions (p. 670)
- Graduate certificate in job development and placement (p. 673)
- Post-master's certificate in counseling (p. 677)

Master's programs

- Master of Arts in Education and Human Development in the field of clinical mental health counseling (p. 638)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling (p. 640)
- Master of Arts in Education and Human Development in the field of rehabilitation counseling with licensure eligibility
- Master of Arts in Education and Human Development in the field of school counseling (p. 653)
- Master of Arts in Education and Human Development individualized program (p. 637)

Doctoral program

- Doctor of Philosophy in the field of counseling (p. 667)

FACULTY

Professors J. Garcia, K. Hergenrather, S. Marotta-Walters
(Chair)

Associate Professors S. Beveridge, R. Dedmond, R. Froelich,
R. Lanthier, M. McGuire-Kuletz, M. Megivern

Assistant Professors M. Attia, B. Das, M. DeRaedt, M. Parker,
H. Peters, D. Pittman

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Programs in counseling are offered at the graduate level by the Graduate School of Education and Human Development (<http://gsehd.gwu.edu>) through its Department of Counseling

and Human Development (<http://gsehd.gwu.edu/content/departments-counseling-and-human-development/>).

CNSL 0920. Continuing Research - Master's. 1 Credit.

CNSL 0940. Continuing Research - Doctoral. 1 Credit.

CNSL 2102. Foundations of Counseling. 3 Credits.

CNSL 2162. Professional and Ethical Orientation to Counseling. 3 Credits.

The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 2163. Psychosocial Adjustment. 3 Credits.

Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents.

CNSL 2376. Introduction to Rehabilitation Counseling. 3 Credits.

Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice.

CNSL 2378. Disability Management and Psychosocial Rehabilitation. 3 Credits.

Case management services for persons with physical, mental, and emotional disabilities.

CNSL 2381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.

Chronic and traumatic disorders; rehabilitation and psychosocial implications.

CNSL 5099. Variable Topics. 1-99 Credits.

CNSL 6100. Special Workshop. 1-12 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit. Credit cannot be earned for this course and CPED 6100, CPED 6199, SPED 6100, SPED 6299.

CNSL 6101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with an instructor.

CNSL 6103. Thesis Research. 3 Credits.

CNSL 6104. Thesis Research. 3 Credits.

CNSL 6114. Introduction to Research and Evaluation in Counselor Education. 3 Credits.

Conceptual understanding of research design and analysis of quantitative, qualitative, and mixed methods designs for the consumer and future producer of research. Restricted to students in master's and doctoral counseling programs.

CNSL 6130. Vocational Assessment of Individuals with Disabilities. 3 Credits.

Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as SPED 6230.

CNSL 6151. Professional and Ethical Orientation to Counseling. 3 Credits.

The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 6153. Counseling Interview Skills. 3 Credits.

Acquisition of counseling skills common to all theories through lectures, demonstrations by faculty, role playing, and videotaping. Permission of the instructor required for non-counseling majors. CNSL 6151 may be taken as a corequisite. Material fee. Prerequisites: CNSL 6151 for counseling majors.

CNSL 6154. Theories and Techniques of Counseling. 3 Credits.

An introduction to basic counseling and psychotherapeutic theories and associated techniques. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6155. Career Counseling. 3 Credits.

A consideration of theory, practice, and the body of information related to career counseling, choice, and development over the life span. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6157. Individual Assessment in Counseling. 3 Credits.

Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6159. Psychosocial Adaptation. 3 Credits.

Mental health problems; emphasis on needs of counselors, teachers, and others working with children, adolescents, and adults.

CNSL 6161. Group Counseling. 3 Credits.

Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6163. Social and Cultural Dimensions - CNS. 3 Credits.

Basic sociocultural concepts in counseling theory and how they apply to the practice of the counseling profession. CNSL 6153 may be taken as a corequisite. Permission of the instructor required for non-counseling majors. Prerequisites: CNSL 6153 for counseling majors.

CNSL 6164. Values, Spiritual, and Religious Issues in Counseling. 3 Credits.

The theoretical and practical intersection of counseling, psychotherapy, and mental health considerations with religion and spirituality. The clinically effective and ethically responsible integration of religion and spirituality into counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6169. Counseling Substance Abusers. 3 Credits.

Individual, group, family, and self-help counseling applied to substance abusers. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6170. Grief and Loss. 3 Credits.

Exploration and discussion of grief and loss from theoretical, practical, cross-cultural, and personal perspectives; implications for counselors within a multidisciplinary environment.

CNSL 6171. Family Counseling. 3 Credits.

The family as a system: how it affects the client and how the client affects it. Didactic presentations, role playing, and work with simulated families. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6172. Human Sexuality for Counselors. 3 Credits.

Issues of sexuality as related to counseling in contemporary society. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6173. Diagnosis and Treatment Planning. 3 Credits.

For counselors and mental health practitioners. Symptoms and treatment of various mental disorders. The process of making psychiatric diagnoses. A variety of treatment strategies are covered, along with their application to various disorders. Prerequisite: CNSL 6153.

CNSL 6174. Trauma and Crisis Intervention. 3 Credits.

This course provides the counseling student with an introduction to research, theory, and practices within the field of traumatology. The course covers the historical evolution of the field; biopsychosocial underpinnings of trauma and trauma spectrum disorders; issues in diagnosis, assessment, and intervention from a culturally diverse framework; and a synthesis of best practices as they are currently evolving. Using a developmental and systemic approach, the course provides a counseling perspective on the knowledge base from the multiple disciplines that contribute to the field of traumatology.

CNSL 6175. Living and Dying: A Counseling Perspective. 3 Credits.

Survey of fundamental psychosocial issues surrounding grief, loss, and life-threatening illness. Topics include AIDS, suicide, multiple loss, caregiver's grief, spirituality, and cross-cultural issues.

CNSL 6177. Spirituality and Loss. 3 Credits.

Exploration of how spiritual beliefs, faith traditions, and life philosophy affect the process of dying, bereavement, and grieving. Effective counseling approaches.

CNSL 6179. Children and Loss. 3 Credits.

The process of grief, loss, and death as experienced by children and adolescents from theoretical, moral, spiritual, and developmental perspectives. Development of effective and sensitive skills and competencies to meet the needs of children and their families as they face life-challenging transitions.

CNSL 6185. Internship in Counseling. 3 Credits.

First part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 100 hours of supervised practicum in a counseling setting.

CNSL 6186. Advanced Internship in Counseling. 3 Credits.

Second part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 600 hours of supervised counseling experience in a counseling setting. Prerequisite: CNSL 6185.

CNSL 6188. Systems in Career Counseling Development. 3 Credits.

The complex role of systems in career counseling and development. Class and work experience in the areas of career assessment, computerized career planning, and the design and evaluation of career counseling systems.

CNSL 6189. Career Development and the Contemporary Workforce. 3 Credits.

Through case studies, simulations, and group work, the demographics and challenges of the workforce in the United States are examined. The knowledge, skills, and competencies necessary to respond to current trends and projected changes in the global workforce.

CNSL 6190. Advanced Career Counseling. 3 Credits.

Expansion of career development theory, concepts, and practice: the helping relationship, delivery systems, current market and economic information, and available resources. Prerequisite: CNSL 6155 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6268. Foundations of Clinical Mental Health Counseling. 3 Credits.

Description of community counseling settings, problems clients present, and a consideration of appropriate intervention strategies.

CNSL 6269. Practicum I in Counseling. 3 Credits.

First in a two-semester clinical experience. Working with clients in the practicum clinic, agency, or school setting under intensive supervision from faculty, developing the therapeutic relationship and basic counseling competencies. Six to eight hours of work per week are required for a minimum of 100 hours total over two practica. Prerequisites: CNSL 6151, CNSL 6153, CNSL 6154, CNSL 6157, CNSL 6163, CNSL 6173, CNSL 6174, CNSL 6268, EDUC 6115 and HDEV 6108.

CNSL 6270. Practicum II in Counseling. 3 Credits.

Second in a two-semester clinical experience. Working with clients in the practicum clinic, agency, or school setting under intensive supervision, developing therapeutic relationship and basic counseling competencies. Six to eight hours of work per week are required for a minimum of 100 hours total over two practica. Prerequisite: CNSL 6269.

CNSL 6271. Advanced Clinical Skills. 3 Credits.

The practice of empirically supported counseling practice; essential interviewing and case conceptualization skills; developmentally relevant assessment, diagnosis, and treatment; and multicultural and social justice counseling. Restricted to students in master's and doctoral counseling programs. Prerequisites: CNSL 6269.

CNSL 6376. Foundations of Rehabilitation Counseling. 3 Credits.

Introduction to the field of rehabilitation counseling. History, development, and current practices. Key concepts, including vocational rehabilitation, roles and functions of the rehabilitation counselor, and independent living rehabilitation.

CNSL 6378. Disability Management and Psychosocial Rehabilitation. 3 Credits.

Disability management services; psychosocial aspects of disability; rehabilitation services for persons with psychiatric disabilities.

CNSL 6380. Job Placement and Supported Employment. 3 Credits.

Job development and modification: placement of persons with disabilities.

CNSL 6381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.

Chronic and traumatic disorders with rehabilitation and psychosocial implications.

CNSL 6395. Foundations of Forensic Rehabilitation Counseling I. 3 Credits.

Overview of the roles and functions of professionals who provide forensic rehabilitation services in matters of litigation. Vocational assessments, labor market issues, transferable skills analysis, job analyses. Instruments utilized in forensic rehabilitation.

CNSL 6396. Foundations of Forensic Rehabilitation Counseling II. 3 Credits.

Workers' compensation, personal injury, medical/professional malpractice, catastrophic injury, loss of earnings capacity, and life care planning. Ethical standards, practices, federal court rules, and common situations found in the litigation process.

CNSL 6397. Law and the Rehabilitation Consultant. 3 Credits.

Overview of law and court procedures for forensic rehabilitation professionals. Qualification of forensic experts, roles and functions of expert witnesses, discovery, work product, hearsay, direct and cross-examination, admissibility of evidence, and opinions in state and federal venues.

CNSL 6398. Psychopharmacology. 3 Credits.**CNSL 6466. Foundations of School Counseling K-12. 3 Credits.**

Study of the environmental and specialty elements for school counseling, with special attention to the principles and practices of school counseling.

CNSL 6467. Coordination of Comprehensive School Counseling Services. 3 Credits.

Theory and practice of classroom management for school counselors; creation and implementation of guidance programming, school system support; designation, coordination of services, systemic and student support for special education students Restricted to students in the school counseling program. Prerequisites: CNSL 6466 and CNSL 6269.

CNSL 8100. Special Workshop. 1-12 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 8101. Research and Independent Study. 1-3 Credits.

Guided individual research. Program and conferences arranged with an instructor.

CNSL 8244. Advanced Group Counseling. 3-6 Credits.

A post-master's course on interpersonal process groups, with didactic, experiential, and supervisory components. Prerequisites: CNSL 6161 and permission of the instructor.

CNSL 8251. Advanced Psychopathology and Pharmacology. 3 Credits.

In-depth study of psychopathology and standard pharmacological intervention to psychological dysfunction associated with distress or impaired functioning; the range of child, adolescent, and adult presentations of psychological disorders seen in clinical practice.

CNSL 8252. Leadership and Advocacy in Counseling. 3 Credits.

Exploration of leadership styles as they apply to counseling professionals. Ethical and multicultural issues associated with leadership and advocacy will be presented, consultation models will be introduced.

CNSL 8253. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as HDEV 8253/HOL 8742.

CNSL 8254. Advanced Multicultural Counseling. 3 Credits.

Recent research addressing key aspects of multicultural counseling. Practical knowledge about effective skills practice in the provision of services to clients from different cultural backgrounds, with emphasis on experiential and cognitive/behavioral approaches. Permission of the instructor required prior to enrollment. Prerequisite: CNSL 6163. Recommended background: PhD degree student in the field of counseling; completed a master's degree in counseling.

CNSL 8255. Supervision in Counseling. 3 Credits.

Theory and practice of clinical supervision and consultation for preparation to enter supervisory positions in the field of counselor education. Current thinking regarding supervisory theory/models, practice, research, and ethics. Permission of the instructor required prior to enrollment. Restricted to students in the PhD in counseling program.

CNSL 8256. Doctoral Practicum in Counseling. 3 Credits.

Supervised clinical experiences in applied settings. Students receive University-based supervision related to their cases through group supervision and case presentations.

CNSL 8257. Doctoral Internship in Teaching. 3 Credits.

Minimum 300 clock hours of supervised didactic and experiential learning activities relevant to instructional roles and responsibilities in counselor education.

CNSL 8258. Advanced Theories of Counseling. 3 Credits.

Current research on counseling and psychotherapy process and outcome; critical analysis of theory with applications for practice and research. For EdS and PhD degree candidates in the field of counseling. Permission of the instructor required prior to enrollment.

CNSL 8259. Doctoral Internship in Supervision I. 3 Credits.

Doctoral internship.

CNSL 8260. Doctoral Internship in Supervision II. 3 Credits.

Doctoral internship. Prerequisite: CNSL 8259.

CNSL 8961. Doctoral Internship in Research. 3 Credits.

Critical approach to reading research; practical experience in applied research design; integration of theoretical, research, and applied elements of the profession of counseling.

CNSL 8998. Predissertation Seminar. 3 Credits.

Required of all doctor of philosophy in the field of counseling degree candidates.

CNSL 8999. Dissertation Research. 3,6 Credits.

. Prerequisites: CNSL 8998 or EDUC 8998.

HDEV 5099. Variable Topics. 1-99 Credits.

HDEV 6108. Life Span Human Development. 3 Credits.

Continuity and change in developmental attributes. The developing person in relation to social norms, roles, and stage-graded expectations from birth to death. Interaction between biogenetics and environment.

HDEV 6109. Child Development. 3 Credits.

Typical development and the familial and social antecedents of developmental risk. Environments that foster competent children and developmental sequelae of childhood vulnerability and trauma. For graduate students in counseling, psychology, and related disciplines.

HDEV 6110. Adolescent Development. 3 Credits.

Key attributes and problems in adolescent development. Typical adolescent development and contemporary social problems in relation to stress, risk, and resilience. For graduate students in counseling, psychology, and related areas.

HDEV 6129. Cultural Effects on Human Development. 3 Credits.

Effects of culture on the experience and expression of self, others, space, time, faith systems, norms, and other attributes. Egocentric and sociocentric effects, primitive and technological effects. Group immersion as the basis for prejudice. Developmental consequences as a consequence of cultural context.

HDEV 6161. Practicum in Human Development. 3 Credits.

Permission of the instructor required prior to enrollment.

HDEV 6162. Internship in Human Development. 3 Credits.

Permission of the instructor required prior to enrollment.

HDEV 6701. Adult Learning. 3 Credits.

Same as HOL 6701.

HDEV 8100. Issues and Special Topics in Human Development. 3-6 Credits.

Issues and special contemporary topics related to child, adolescent, and adult development. Applications for professional roles.

HDEV 8241. Emotional and Cognitive Development. 3 Credits.

Emotional and cognitive development as related to self-esteem, social cognition, and interpersonal skills. Relationships among cognitive development, intellectual reasoning, insight, and social development.

HDEV 8244. Adult and Aging Development. 3 Credits.

Theories and research on personality and intelligence in adulthood. Research designs and methods. Implications of developmental data for counseling and selected professional roles.

HDEV 8253. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/ HOL 8742.

CURRICULUM AND PEDAGOGY

GRADUATE

Minor program

STEM Teaching Minor ((p. 66) Undergraduate GWTeach Program) (p. 66)

Graduate certificates

- Graduate Certificate in literacy education (p. 674)
- Graduate Certificate in STEM master teacher (p. 675)
- Graduate Certificate in teaching English to speakers of other languages (p. 676)
- Graduate Certificate in teaching strategies and classroom management for Jewish studies educators (p. 676)

Master's programs

- Master of Arts in Education and Human Development in the field of curriculum and instruction (p. 640)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in elementary education (p. 640)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration

in interdisciplinary studies of literacy and reading education (p. 641)

- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in Jewish education (p. 642)
- Master of Arts in Education and Human Development in the field of curriculum and instruction, concentration in secondary education (p. 642)
- Master of Arts in Education and Human Development individualized program (p. 637)
- Master of Arts in Education and Human Development in the field of language education, teaching world languages K-12 licensure concentration (p. 650)
- Master of Arts in Education and Human Development in the field of language education, teaching world languages non-licensure concentration (p. 651)
- Master of Arts in Education and Human Development in the field of language education, TESOL K-12 licensure concentration (p. 651)
- Master of Arts in Education and Human Development in the field of language education, TESOL non-licensure concentration (p. 652)
- Master of Education in the field of elementary education (p. 635)
- Master of Education in the field of secondary education (p. 636)

Combined programs

- Dual bachelor of arts with a major in English and a master of education in the field of secondary education with a concentration in English (p. 656)
- Dual Bachelor of Arts with a major in history and a Master of Education in the field of secondary education with a concentration in social studies (p. 656)
- Dual Bachelor of Arts with a Major in Spanish and Latin American languages, literatures, and cultures, and Master of Education in Secondary Education with a concentration in foreign language education (p. 657)
- Dual Master of Arts in Education and Human Development in the field of Curriculum and Instruction with a concentration in Elementary Education and Graduate Certificate in Incorporating International Perspectives in Education (IIPE) (p. 657)
- Dual Master of Arts in Education and Human Development in the field of Curriculum and Instruction with a concentration in Elementary Education and Graduate Certificate in TESOL (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in secondary education and Graduate Certificate in Incorporating International Perspectives in Education (IIPE) (p. 658)
- Dual Master of Arts in Education and Human Development in the field of Curriculum and Instruction with a

concentration in Secondary Education and Graduate Certificate in TESOL (p. 658)

- Dual Master of Arts in Education and Human Development in the field of International Education and Graduate Certificate in TESOL (p. 658)

Doctoral program

- Doctor of Education in the field of curriculum and instruction (p. 660)

FACULTY

Associate Professors S. Beck, E. Brown, B. Casemore, J. Eakle (Chair), C. Green, C. Pyke, P. Tate

Assistant Professors J. Grooms, T. Sikorski

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPED 0920. Continuing Research - Masters. 1 Credit.

CPED 0940. Continuing Research - Doctoral. 1 Credit.

CPED 5099. Variable Topics. 1-99 Credits.

CPED 6100. Special Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes. Credit cannot be earned for this course and CNSL 6100, SPED 6100.

CPED 6100W. Special Topics. 1-12 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CPED 6101. Research and Independent Study. 1-3 Credits.

Individual research under the guidance of a staff member; program and conferences arranged with an instructor.

CPED 6131. Teaching Jewish History to Middle and High School Students. 3 Credits.

Concepts for educators surrounding the ways in which Jewish historians interpret primary sources and analyze historiographic debates.

CPED 6132. Strategies for Teaching Biblical Texts. 3 Credits.

Analysis of major biblical narratives using study methods ranging from the historical to the literary; key aspects of biblical interpretation and strategies for teaching Bible effectively.

CPED 6133. Rabbinic Judaism and the Teaching of Rabbinic Texts. 3 Credits.

The development of rabbinic Judaism through a study of its thought and literature using primary texts from 100 to 500 C.E.; best practices for teaching rabbinic texts using different pedagogical approaches; distinctions between a historically-based academic approach and a more imaginative, theological approach.

CPED 6134. Practicum in Jewish Education. 2 Credits.

Field-based experiences and weekly seminar for students seeking to teach in classrooms dedicated to Jewish education; honing disciplinary expertise in the curriculum; lesson planning, instructional strategies, classroom management and intervention, and new methods and tools.

CPED 6172. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.

Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as SPED 6272.

CPED 6175. The Culturally and Linguistically Diverse Student with Special Needs: Policy, Research, and Trends. 3 Credits.

Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Material fee. Same as SPED 6275.

CPED 6176. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.

Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Material fee. Same as SPED 6276.

CPED 6199. Federal Education Policy Institute. 3 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as SPED 6299.

CPED 6221. Developmental Reading: Emergent Literacy. 3 Credits.

The components of a balanced literacy program for emergent, beginning, and early-instructional-level readers. Incorporation of phonological awareness, phonics, fluency, reading comprehension, and writing lessons into a balanced reading-literacy program.

CPED 6223. Interdisciplinary Elementary School Literacies. 3 Credits.

Theory and practice of interdisciplinary elementary school studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6224. Diagnostic Teaching of Reading: K-6. 3 Credits.

Collection of diagnostic data; construction of informal traditional and non-traditional reading and writing tests; other instruments of evaluation; selecting and planning activities suitable to specific problems. Prerequisite: at least one previous course in reading.

CPED 6225. Introduction to International Curricula. 3 Credits.

CPED 6229. Current Issues in Elementary Education. 3 Credits.

Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school.

CPED 6236. Analysis of Teaching. 3 Credits.

Teaching viewed as a system; component aspects are examined with a view toward developing a critical method of analysis. Material fee.

CPED 6239. Practicum in Curriculum and Instruction. 3-6 Credits.

Supervised field experience in curriculum and instruction. Permission of the instructor required prior to enrollment.

CPED 6289. New Literacies Coach and Reading Specialist. 3 Credits.

Contemporary issues and conditions influencing literacy/reading leadership roles and the expanded roles of the new literacy reading coach and reading specialist. Topics include designing and evaluating interdisciplinary literacy education environments. Students work with educators on instructional and professional development activities to meet the literacy education needs of children. Prerequisites: CPED 6224 and permission of the department.

CPED 6292. Practicum 2: Leadership in Interdisciplinary Literacies. 3-6 Credits.

Drawing on prior program experiences in leadership and interdisciplinary literacies, students develop and refine effective interdisciplinary literacy education leadership qualities and skills, facilitate change in school communities, and foster teacher growth and student achievement. Students demonstrate lessons and provide assistance with lesson planning to teachers in, across, and between subject area disciplines and conduct professional development workshops in school settings. Prerequisite: CPED 6289.

CPED 6305. Foundations of Curriculum Theory. 3 Credits.

Examination of the educational ideas of individuals and groups that have influenced American and international curriculum development and practice during the 20th and 21st centuries. Comparisons of the issues, models, and principles that have guided curricular thought, development, and innovation.

CPED 6339. Teachers as Researchers. 3 Credits.

Qualitative and quantitative methods of research in teaching and learning with a focus on practitioner-based research. Prepares teachers to develop an inquiry stance towards their practice and provides them with the knowledge, experiences, and skills to systematically examine their own practice and student learning.

CPED 6340. Teacher Leadership in Education. 3 Credits.

From the perspectives of educational theory and practice, the ideals and realities of contemporary public school teaching are viewed within a system of local, state, and federal organizations, with the goal of enhancing the role of teachers as knowledgeable and effective leaders in their profession. Material fee.

CPED 6353. Post-Master's Internship in Curriculum and Instruction. 3-6 Credits.

Supervised professional internship in curriculum, instruction, teaching, research, or policymaking. Internships are individually arranged. (Same as SPED 8353).

CPED 6365. Perspectives and Research in Teaching Computer Science. 3 Credits.

CPED 6366. Perspectives and Research in Teaching English. 3 Credits.

The teaching of English in the context of the social and historical foundations of education and through conceptual frameworks from contemporary curriculum theory.

CPED 6367. Perspectives and Research in Teaching Science. 3 Credits.

Significant trends, findings, and perspectives in science education in the United States from the early nineteenth century to the present.

CPED 6368. Perspectives and Research in Teaching Social Studies. 3 Credits.

Deepens students' understanding of the social studies curriculum through analysis of current research, theory, and practice, and application of this knowledge to instructional planning.

CPED 6370. Perspectives and Research in Teaching Mathematics. 3 Credits.

Survey of the history of mathematics, mathematics education research, instructional design, and the teaching of science, technology, engineering, and mathematics (STEM) curriculum standards. The impact of history in the field and research on teaching.

CPED 6410. Reading Children's Literature across the Curriculum. 2,3 Credits.

Participants read and analyze multicultural children's literature (from folktale to nonfiction) while simultaneously practicing discussion, dramatization, art, and writing response strategies suitable for involving all students and integrating literature across the school curriculum.

CPED 6412. Elementary School Curriculum and Methods. 2 Credits.

A comprehensive block course with sections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. Pre-service teachers taking the four sections learn to be successful teachers of elementary methods in all content areas, including how to incorporate content and pedagogy into practice at their internships. May be repeated for up to 8 credits; with permission, up to four blocks (to a total of 8 credits) may be taken in one semester. Permission of the advisor required prior to enrollment.

CPED 6507. Instructional Models and Classroom Management. 3 Credits.

The interconnections between effective instruction and positive classroom management. Through planning, implementing, and evaluating learning activities that apply research-based practices, students link instructional and management strategies to specific content and thinking goals. Microteaching lab. Material fee.

CPED 6530. Assessment in the Secondary Classroom. 3 Credits.

Key concepts and principles in the field of educational assessment, with emphasis on practical applications for classroom teachers. Students design and evaluate a range of assessment tools in their content areas.

CPED 6532. Professional Internship in Middle School Education. 3-6 Credits.

Supervised internship in middle schools; required seminar. Restricted to permission from instructor.

CPED 6534. Professional Internship in Secondary Education. 6 Credits.

Internship seminar providing various means of support related to the field placement and program portfolio, as well as a forum for engaging in academic conversation around the field experiences. Fee applies.

CPED 6544. Educational Technology and Computer Literacy Methods. 3 Credits.

Computers and related technologies in educational settings. Using national technology standards for teachers as a framework, the course combines discussion of key issues related to technology in education, demonstration of technology-related instructional methods, and hands-on computer use and materials development. Material fee.

CPED 6545. Teaching Computer Science in Secondary Schools. 3 Credits.

Theoretical, curricular, and practical considerations. Thirty hours of field experience in a secondary classroom is required. Material fee.

CPED 6546. Teaching English in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Material fee. Prerequisites: CPED 6606 and CPED 6507 and the approved certification coursework in the content area.

CPED 6547. Teaching Science in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Material fee. Prerequisites: CPED 6606 and CPED 6507 and the approved certification coursework in the content area.

CPED 6548. Teaching Social Studies in Secondary Schools. 3 Credits.

Theoretical, curricular, and practical considerations. 30-hour field experience in a secondary classroom is required. Material fee. Prerequisites: CPED 6507 and CPED 6606.

CPED 6549. Teaching Art in Secondary Schools. 3 Credits.

Theoretical, curricular, and practical considerations. Material fee.

CPED 6550. Teaching Mathematics in Secondary Schools. 3 Credits.

Introductory course in mathematics teaching that derives its goals from pedagogy standards for secondary mathematics developed in collaboration with the National Council of Teachers of Mathematics (NCTM). Focus on developing and understanding middle and high school curriculum standards. Material fee.

CPED 6551. Second Language Instructional Methods. 3 Credits.

Knowledge and skills related to the instruction and assessment of language students in English and foreign language settings; past second language teaching methods, contemporary instructional approaches and materials, and other considerations in developing academic and social language proficiency. Requires field experience in a classroom. Materials fee. Prerequisites: CPED 6507 and CPED 6606.

CPED 6554. Issues, Study, and Practices - ESL. 3 Credits.

A critical review of scholarship and research findings in English as a second language. Major policy issues and implications that relate to ESL practice.

CPED 6555. Educating Language Minorities. 3 Credits.

A study of federal, state, and local policies and issues affecting the education of linguistically diverse populations. Resources for use with specific linguistically diverse groups.

CPED 6556. Linguistic Applications in English as a Second Language. 3 Credits.

The science of language and how its different branches may be used for English as a Second Language (ESL) teacher training, classroom instruction, material development, evaluation, research, and policy development.

CPED 6557. Second Language Acquisition. 3 Credits.

The nature of first and second language acquisition and development; social, psychological, and linguistic factors affecting language acquisition; implications of language acquisition research and theory on English and foreign language classroom instruction.

CPED 6604. Perspectives in American Education. 3 Credits.

Historical and social development of education in the United States; evolution of American education related to the growth of the nation and the changing social order; examination of selected issues in contemporary education.

CPED 6606. Theories of Learning and Development. 3 Credits.

A comprehensive investigation of the complex relationship between teaching and learning. How learning takes place, how it is motivated, and how it is influenced. Material fee.

CPED 6608. Development and Diversity. 3 Credits.

Student diversity in relation to theories of human growth and development. Diverse student strengths and needs; the special needs population; dynamics of inclusion; and intercultural issues related to the teaching/learning process. Material fee.

CPED 6622. Foundations of Reading Development. 3 Credits.

Theories of printed text reading acquisition and development; strategic processes of teaching and learning from printed texts; linguistic, cognitive, developmental, sociocultural, and affective dimensions and models of reading; design and implementation of meaningful reading instruction.

CPED 6623. Foundations of Reading Development. 2 Credits.

Basic theories and processes of reading acquisition and assessment; linguistic, cognitive, developmental, social, and affective bases of reading; influences of media, instructional strategies, including formal and informal assessment. Design and implementation of instruction in critical literacy.

CPED 6624. Foundations and Research of Literacy and Reading Education. 3 Credits.

Study of the scholarship on foundational and new literacy knowledge, concepts, and practices. Topics include models of literacy, theories and relations of multimodal and printed text reading (e.g., linguistic, psychological, and sociocultural), and the uses of these theories for the teaching and learning of literacies.

CPED 6626. Practicum 1: Reading Diagnosis, Assessment, and Solutions. 3 Credits.

Candidates learn advanced diagnostic and assessment procedures to determine specific difficulties associated with printed-text reading, generate diagnostic profiles, and make instructional recommendations. Data are collected from children who struggle with printed texts; and, from those data, case studies are developed with implications for instruction.

CPED 6627. Teaching Second Language Reading and Writing. 3 Credits.

Literacy development for language learners; theories of literacy development in a second or foreign language, strengths and needs of language learners, reading and writing instructional strategies for language and content classrooms. Appropriate for students interested in teaching ESL, foreign languages, or content areas in elementary or secondary schools. Materials fee.

CPED 6628. Literacies in Informal Learning Environments. 3 Credits.

How culture, language, and out-of-school literacy experiences, particularly those in museums, influence attitude, learning, affective and interdisciplinary knowledge, and teaching practices. New literacy research, curriculum, and literature, and how social and cultural factors contribute to the literacies of everyday life.

CPED 6635. Professional Internship in Elementary Education. 3-6 Credits.

Supervised internship; required seminar. Permission of the instructor required prior to enrollment. Material fee.

CPED 6691. Interdisciplinary Adolescent Literacies. 3 Credits.

Theory and practice of interdisciplinary adolescent literacies studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6701. Arts in the STEM Curriculum. 3 Credits.

In-depth coverage of approaches to integrating arts and design into STEM curricula ("STEAM") for student learning; criteria and approaches for assessing student learning in arts-integrated STEM curricula; building a culture of craftsmanship; and collaborating with arts and design professionals.

CPED 6702. Integrating Engineering in the Math and Science Classroom. 3 Credits.

Approaches to integrating engineering and design into K-12 math and science classrooms. Students develop competencies by engaging in various forms of engineering and design, from small "design challenges" to more complex, semester-long engineering projects.

CPED 6703. Advanced STEM Teaching Methods. 3 Credits.

Advanced approaches for integrating science, technology, engineering, and mathematics into the K-12 classroom.

CPED 8100. Special Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

CPED 8101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a faculty member.

Program and conferences arranged with an instructor.

CPED 8199. Federal Education Policy Institute. 3 Credits.

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CPED 8309. Supervising Preservice Clinical Experience. 1-3 Credits.

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CPED 8325. Curriculum Theory. 3 Credits.

History and development of the field of curriculum studies; theoretical perspectives on curriculum and the nature and purposes of curriculum research, development, and theorizing.

CPED 8330. Foundations of Education Research in Curriculum and Instruction. 3 Credits.

Works that have influenced twenty-first century curriculum and instruction: post-positivism, constructivism, critical theory, and post-structuralism/new materialism.

CPED 8331. Seminar in Teaching. 3 Credits.

Key issues that define the complexities of teaching; the connections between advanced teaching and learning.

CPED 8332. Search of the Literature in Curriculum and Instruction. 3 Credits.

Analysis of types of literature reviews in the field of curriculum and instruction and development of a literature review; the relationship of theory building to review of literature, and how research questions arise from extant theory and related literature. For doctoral students in curriculum and instruction, to precede CPED 8998. Material fee.

CPED 8333. School Reform through Professional Development. 3 Credits.

Fundamental perspectives of school reform through professional development of educators (K-12); evolution of contemporary professional development models and trends: examination of interactive modules using selected professional development activities. Material fee.

CPED 8334. Seminar in Learning. 3 Credits.

Theories and processes for making claims about learning.

CPED 8335. Seminar in Research in Curriculum and Instruction II. 3 Credits.

Students develop research skills in curriculum and instruction; create an individual, unique, and focused research study that is feasible for a doctoral student to accomplish; and learn skills and strategies for writing a research proposal. Prerequisite: CPED 8334.

CPED 8340. Education Policy, Reform, and Teacher Leadership. 3 Credits.

This online course engages students in the study of education policies and reforms that specifically focus on teaching and teachers. Further, this course examines teacher leadership as it impacts school reform through professional development initiatives that sustain change efforts. Four areas of study ground the focus of this course: education policy, change theories and school reform, teacher leadership, and professional development. Restricted to doctoral students; permission of the instructor required for master's students.

CPED 8341. Evaluation in Curriculum and Instruction. 3 Credits.

This course teaches doctoral and master's students about evaluating curriculum and instruction related programs, projects, or policies. This course provides students with the theoretical grounding and practical experiences they need to develop and implement evaluation research. Students in the course are required to: 1) read current literature that covers the breadth of theories and models applied in the field of evaluation, 2) participate in live online discussions and instructor presentations and, 3) design, implement and report on a targeted evaluation of a curriculum and instruction related program, project or policy. Restricted to doctoral students; master's students with approval of instructor.

CPED 8354. Doctoral Internship: Teacher Education. 3-6 Credits.

Supervised professional internship in college teaching, administration, supervision, research, policymaking, or private agency function. Permission of the advisor required prior to enrollment.

CPED 8998. Doctoral Seminar in Curriculum and Instruction. 3-6 Credits.

Review of literature; preparation of a dissertation proposal and a manuscript of publishable quality. Permission of the instructor and major advisor required prior to enrollment. Material fee.

CPED 8999. Dissertation Research. 3-6 Credits.

Prerequisite: CPED 8998.

EDUCATIONAL LEADERSHIP

GRADUATE

Graduate certificates

- Graduate Certificate in assessment, testing, and measurement in education (p. 668)
- Graduate Certificate in educational technology leadership (p. 671)
- Graduate Certificate in incorporating international perspectives in education (p. 672)
- Graduate Certificate in instructional design (p. 672)
- Graduate Certificate in Israel education (p. 673)
- Graduate Certificate in teaching strategies and classroom management for Jewish studies educators (p. 676)

- Post-master's Certificate in advanced practice of education policy (p. 677)
- Post-master's Certificate in educational leadership and administration (p. 678)

Master's programs

- Master of Arts in Teaching in the field of museum education (p. 656)
- Master of Arts in Education and Human Development in the field of assessment, testing, and measurement in education (p. 637)
- Master of Arts in Education and Human Development in the field of education policy studies (p. 643)
- Master of Arts in Education and Human Development in the field of educational leadership and administration (p. 644)
- Master of Arts in Education and Human Development in the field of educational technology leadership (p. 645)
- Master of Arts in Education and Human Development in the field of experiential Jewish education (p. 647)
- Master of Arts in Education and Human Development in the field of higher education administration (p. 645)
- Master of Arts in Education and Human Development in the field of international education (p. 649)
- Master of Arts in Education and Human Development individualized program (p. 637)

Post-master's program

- Education Specialist in the field of educational leadership and administration (p. 659)

Combined programs

- Dual Master of Arts in Education and Human Development in the field of International Education and Graduate Certificate in assessment, testing, and measurement (p. 658)
- Dual Master of Arts in Education and Human Development in the field of International Education and Graduate Certificate in Incorporating International Perspectives in Education (IIPE) (p. 658)
- Dual Master of Arts in Education and Human Development in the field of International Education and Graduate Certificate in TESOL (p. 658)
- Dual Master of Business Administration and Master of Arts in Education and Human Development in the field of higher education administration (p. 585)
- Joint Master of Arts in Education and Human Development in the field of education policy studies and Juris Doctor (p. 659)
- Joint Master of Arts in Education and Human Development in the field of higher education administration and Juris Doctor (p. 659)

Doctoral programs

- Doctor of Education in the field of educational leadership and administration (p. 661)
- Doctor of Education in the field of higher education administration (p. 662)

FACULTY

Professors M. Corry, M. Feuer, N. Milman, I. Rotberg, R. Watkins, J. Williams

Associate Professors J. Choi, J. Clayton, S. Dannels, W. Dardick, L. Engel, J. Glazer, L. Howard (*Chair*), R. Jakeman, M. Kim, Y. Nakib, C. Stapp, S. Swayze, A. Tekleselassie, B. Weiss

Assistant Professors A. Ali, M. Madden, C. Nganga, K. Sherrill, M. Shirrell, A. Stone, B. Streitwieser, R. Thessin, L. Trimmer

Lecturers L. Lent, J. Washburn

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EDUC 0920. Continuing Research - Master's. 1 Credit.

EDUC 0940. Continuing Research: Doctoral. 1 Credit.

EDUC 1099. Variable Topics. 1-36 Credits.

EDUC 2701. Museums as Cultural and Educational Resources. 3 Credits.

A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area. Admission by permission of instructor.

EDUC 3002. Special Workshops. 3 Credits.

EDUC 5099. Variable Topics. 1-99 Credits.

EDUC 6100. Experimental Courses. 1-12 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 6101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with a program advisor.

EDUC 6112. Foundations of Assessment, Testing, and Measurement in Education. 3 Credits.

Foundations of assessment, testing, and measurement with a focus on basic statistical concepts for assessment data literacy, research design issues for assessments, a review of other educational assessments (IQ and psychological, personality and diagnostic), and other issues with assessment and testing including technology, ethical, and legal issues.

EDUC 6114. Introduction to Quantitative Research. 3 Credits.

Development of a conceptual understanding of research design and quantitative analysis options for the consumer of research. Appropriate use of vocabulary and interpretation of research findings. Critique of research articles and/or development of a small-scale proposal.

EDUC 6116. Introduction to Educational Statistics. 3 Credits.

Fundamentals of descriptive statistics and hypothesis testing; introduction to inferential statistics and research design, distinguishing between nonexperimental, quasi-experimental, and true experimental designs. Designed for those with little preparation in quantitative methods or who are not prepared for Educ 8120.

EDUC 6232. Supervision of Curriculum, Instruction, and Assessment. 3 Credits.

Preparation to lead and assess curriculum, instruction, and assessment practices in educational settings.

EDUC 6234. Foundations of K-12 Educational Leadership. 3 Credits.

Function, processes, and best practices involved in school principal leadership.

EDUC 6236. School Law and Policy. 3 Credits.

The legal basis of education and public schools in the United States. Constitutional provisions and federal statutes that guide school law. Legal factors that influence school policy. Consideration of practical school situations for legal implications, development of skills to research legal issues affecting schools, and preventive law measures.

EDUC 6238. Leadership for Equity and Social Justice. 3 Credits.

Cultural diversity and social justice in the context of teaching, learning, and leadership practice; systemic inequities in schools and how inclusive and socially just leadership practices can address these inequities.

EDUC 6240. Instructional Leadership for School Improvement. 3 Credits.

Introduction to the theory and practice of school improvement with a focus on the role of school leaders in the process.

EDUC 6242. Administrative Issues in Education. 3 Credits.

The impact of major social, political, economic, and education issues on the role of school leaders and the delivery and quality of programs and services.

EDUC 6244. School, Family, and Community Engagement. 3 Credits.

The purpose, scope, essential elements, and impact of a successful school-community relations program; community power structures, the roles of policy and leadership, communication techniques for interacting with various audiences and the media, and evaluation of public relations and marketing for educational institutions.

EDUC 6246. School Finance and Resource Management for School Leaders. 3 Credits.

Theory and practice of personnel and resource management for school administrators; selection, compensation, evaluation, promotion, retention, and removal of staff; principles of effective financial and resource management, including accounting, budgeting, and reporting; technology acquisition, building operations, and facilities management.

EDUC 6252. Human Relations Diversity. 3 Credits.

Application of current theory and research findings in human relations to staff motivation, change, conflict management, and communication techniques for working with individuals and groups within organizations.

EDUC 6256. School Business Management. 3 Credits.

Management and control of the business functions of school districts. Assessing, planning, developing, and presenting educational budgets; the legal contexts affecting school business management. Risk management and school-site budgeting.

EDUC 6258. School Finance. 3 Credits.

The financing of public elementary and secondary education in the United States; current revenue sources, distribution decisions, and trends in the fiscal operations of schools. Litigation, finance policies, and equitable investments of public monies.

EDUC 6260. Practicum in Supervision. 3-6 Credits.

Practical experience in supervision of instruction. Admission by permission of instructor.

EDUC 6262. Internship in Supervision and Instructional Leadership. 3-6 Credits.

Service in a school situation directed by the University's faculty and school systems; integration of theory and practice.

EDUC 6264. Problems and Practices in Staff. 3 Credits.

Application of principles and practices concerned with change and evaluation of educational administration.

EDUC 6270. Education Policy for School Leaders. 3 Credits.

Overview of education policy for educational leaders; economic and social dimensions of education policy and analysis of the policy process; policy development, planning, implementation, analysis, and evaluation.

EDUC 6272. Leading Evidence-Based Action Research for School Improvement. 3 Credits.

Culminating experience implementing the design and leadership of an action research project at a school or central office location. Gathering and analysis of data, reviewing the literature, developing and implementing a program to address an identified area of need; and measuring the program's effectiveness and reflecting on/modifying it based on results. Prerequisite: EDUC 6287.

EDUC 6287. Internship: Administration. 1-6 Credits.

Standards-based work in a practical setting, planned and guided cooperatively by GW and personnel in the placement school district.

EDUC 6314. History of American Education Reform. 3 Credits.

An examination of how evolving social, economic, and political forces have propelled and opposed American education reform efforts throughout history.

EDUC 6368. Leadership and Education. 3 Credits.

A general introduction to issues of leadership applicable to education settings and to key features of educational organizations; leadership as a process and a set of skills and how its styles interact with organizational contexts.

EDUC 6371. Education Policy. 3 Credits.

An introduction to the development, implementation, and assessment of education policies at national, state, and local levels.

EDUC 6381. Program Evaluation: Theory and Practice. 3 Credits.

Introduction to the theory of social program evaluation, alternative evaluation models and methodologies, and the political and social contexts of evaluation.

EDUC 6388. Analysis of Education Policy Issues. 3 Credits.

Covers a range of education policy options, assessing their advantages and disadvantages based on evidence, and drawing implications for policy formulation. A critical approach is applied to the assigned readings, questioning the sources of evidence, appropriateness of analysis, and validity of the findings. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 6392. Practicum in Educational Policy Program Evaluation. 3-6 Credits.

Supervised practical experience in field placements. Admission by permission of instructor. Prerequisite: EDUC 6381.

EDUC 6401. Foundations in Educational Technology. 3 Credits.

Theory and practice of educational technology. Key characteristics of different media, principles of application, and issues concerning their appropriate use.

EDUC 6402. Trends and Issues in Educational Technology. 3 Credits.

The research and practice surrounding the use of computers in educational and training settings. Students acquire the practical knowledge necessary to the development and evaluation of computer-related curricula through projects and case studies.

EDUC 6403. Educational Hardware Systems. 3 Credits.

Design and implementation of educational hardware systems, including computers and computer networks.

EDUC 6404. Managing Computer Applications. 3 Credits.

For managers and prospective managers in education and human services who are concerned with the automation of their operations. Basic principles needed to design, implement, and manage an information system. Admission by permission of instructor.

EDUC 6405. Developing Multimedia Materials. 3 Credits.

The design, development, integration, and use of multimedia resources in education and training settings. Students examine and critique multimedia technologies, develop instructional materials, and create a unit or module that applies instructional design theory.

EDUC 6406. Instructional Design. 3 Credits.

Designing, implementing, and evaluating instructional strategies for learners. Assessing needs, writing objectives, selecting curriculum/content, selecting and implementing methods and techniques, selecting appropriate devices and evaluating instruction.

EDUC 6407. Design and Implementation of Educational Software. 3 Credits.

Theory and practice of creating educational software; psychological basis of using software in learning; instructional programs; authoring tools; artificial intelligence applications; interactive media. Students design and evaluate an educational program. Prerequisite: EDUC 6401 or permission of instructor.

EDUC 6421. Critical Issues in Distance Education. 3 Credits.

Historical, conceptual, theoretical, and practical issues associated with distance education as a foundation for research and practice in the domain of distance education as well as adult learning, educational systems design, and school administration and policy.

EDUC 6422. Instructional Needs Assessment and Analysis. 3 Credits.

An introduction to the role of instructional needs assessment and analysis. The design and development of instruction. Key elements of the instructional design cycle, including data analysis.

EDUC 6423. Technology and Disabilities. 3 Credits.

Assistive technology as it impacts the lives of people with disabilities, including the performance of tasks related to employment, education, and activities of daily living.

EDUC 6424. Learning Technologies and Organizations. 3 Credits.

The role of learning technology in organizations, learning in the workplace, and knowledge management in corporations, schools, and universities.

EDUC 6425. Developing Effective Training with Technology. 3 Credits.

Development of skills in planning and producing effective technology-rich training that meets institutional and organizational needs.

EDUC 6426. Computer Interface Design for Learning. 3 Credits.

Human-computer interaction, both in general and with emphasis on issues in education. General design aspects; theories, principles, and guidelines related to human-computer interaction.

EDUC 6427. Advanced Instructional Design. 3 Credits.

Development of a prototype instructional design project and documentation report requiring rapid design and development strategies. Prerequisites: EDUC 6406.

EDUC 6428. Developing Digital Professional Portfolios. 3 Credits.

Students create a digital professional portfolio, using advanced skills in the design, development, integration, and use of multimedia resources.

EDUC 6441. Internship in Educational Technology Leadership. 3 Credits.

Students are assigned to a cooperating agency and work in consultation under the guidance of the course instructor. Admission by permission of instructor.

EDUC 6442. Educational Technology Leadership Master's Project. 1-6 Credits.

Students design, develop, implement, and evaluate an individual project. Admission by permission of instructor.

EDUC 6500. Introduction to Student Affairs and Higher Education. 3 Credits.

Introduction to the study of higher education and the student affairs profession, including the ways in which broader aspects of higher education research, theory and policy inform the work of student affairs practitioners. Historical and current contexts of American higher education, the academic community, and existing issues and emerging challenges surrounding the practice of student affairs in the current higher education landscape.

EDUC 6510. Administration of Higher Education. 3 Credits.

Government, organization, and administration of colleges and universities; duties of trustees and administrators.

EDUC 6520. Foundations of College Student Development. 3 Credits.

College student development theories, practices, and problems, including historical overview and human development theories related to college students.

EDUC 6525. Managing College Student Services Programs. 3 Credits.

An overview of student affairs administrative practices, including planning models, budgeting, policy development, program development, facility management, and team building. Admission by permission of instructor.

EDUC 6530. Intercultural Campus Leadership. 3 Credits.

This course is designed to explore intercultural leadership skills through the lens of understanding group identity differences, multicultural competence, and the foundations of effective advocacy for social justice. Lectures, readings, class discussions, written assignments, and experiential activities are used to promote an understanding of intercultural leadership skills to help create inclusive learning environments. The course explores how oppression and privilege relate to differences based on gender, race and ethnicity, sexual orientation, and (dis)ability. Students also study how these identities intersect with each other.

EDUC 6540. Group and Organizational Theories. 3 Credits.

Review of major organizational theories inside and outside higher education, including systems, institutional, cultural, cognitive, environmental, ecological, as well as power and influence.

EDUC 6550. Assessment in Higher Education. 3 Credits.

Key concepts in the assessment of outcomes in higher education and in student affairs. History of the assessment movement in higher education, strategies and methods for measuring outcomes of the college experience, identifying the limitations of operational processes that can be improved, and current issues in measuring student success in higher education.

EDUC 6555. Higher Education Policy. 3 Credits.

Assessment of policies that impact higher education, including the relationship of K-12 policy to higher education. Policy networks and mechanisms of policymaking. Policy development and assessment.

EDUC 6560. Legal Problems in Higher Education. 3 Credits.

Investigation of legal problems in higher education related to the legal structure of higher education, religious concerns, students, faculty, and academic programs.

EDUC 6565. Financing Higher Education. 3 Credits.

Analysis of private, state, federal, and other revenue sources; strategic planning, program budgets, and financial methods and practices.

EDUC 6570. Educational Planning. 3 Credits.

An examination of the planning movement in education: its historical development and the recent shift in premises, context, and expectations. Different approaches to the planning process; its role in research; and overview of main analytical techniques currently in use.

EDUC 6572. Dynamics of Change. 3 Credits.

An analysis of the process of change, particularly as it relates to educational policy. Comparison of theories; analytical tools; historical precedents; examples of federal education policies.

EDUC 6575. Personnel Administration. 3 Credits.

Human resource management: planning, recruitment, selection, placement and induction, staff development, rewards, and negotiations. Issues and legislation that influence personnel functions and policy; communication skills for human resource leadership.

EDUC 6579. Managing Multicultural Environments. 3 Credits.

Application of multicultural research in identifying key elements for managing diverse environments, communicating with families, planning professional development activities, and increasing student learning.

EDUC 6585. Master's Internship in Higher Education Administration. 3-6 Credits.

Supervised field experience in higher education settings. Admission by permission of instructor.

EDUC 6590. Capstone in Higher Education Administration. 0 Credits.

The capstone is designed to promote the integration of the core curriculum and practitioner experiences of the Master's degree program in Higher Education Administration, and to prepare for student transition to a professional student affairs or academic affairs position following completion of the degree. Restricted to students in the MAEd&HD in higher education administration program.

EDUC 6601. International and Comparative Education. 3 Credits.

Theoretical foundations of comparative and international education; systematic investigation of the structure and practices of selected representative school systems in different parts of the world. Emphasis on development of methodologies for comparative study.

EDUC 6602. Regional Studies in International Education. 3 Credits.

In-depth study of education in a selected region of the world. Structures and issues facing education systems in social, political, economic, cultural, and historical context. Prospects of education for human national development. May be repeated for credit provided the region differs.

EDUC 6610. Programs and Policies in International Education. 3 Credits.

Overview of policies and programmatic responses to issues in international education. Topics include education and development, international higher education and student services, and education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6615. Internationalizing U.S. Schools. 3 Credits.**EDUC 6620. Strategies and Analysis in International Education. 3 Credits.**

Strategies for improving education in international contexts. Topics include education and development, international higher education and student services, or education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6630. International Experiences. 1-6 Credits.

Study and research in a foreign country as part of a group program. Admission may require permission of the instructor.

EDUC 6631. Internship: International Education. 1-6 Credits.

Service in an international education institution or related individually designed program planned to enable the student to connect theory to practice. Admission may require permission of instructor. May be repeated for credit.

EDUC 6640. Selected Topics in International Education. 3 Credits.

Current trends, themes, and issues in international education. May be repeated for credit provided the topic differs.

EDUC 6650. Education and National Development. 3 Credits.

The role education plays in the process of national development in advanced industrial societies and societies moving to industrialism.

EDUC 6660. Capstone in International Education. 3 Credits.

Review of core topics in international education and completion of major supervised project or paper. Taken near the end of the master's program in lieu of the Comprehensive Examination.

EDUC 6701. Museums as Institutions I: Fundamentals. 3 Credits.

An overview of the museum as an environment for learning, considering the influence of institutional history and organizational structure on the museum's mission of serving the public.

EDUC 6702. Facilitating Museum Learning I: Fundamentals. 3 Credits.

Theory of and practice in the development of communication skills in the museum. Educational concepts; teaching strategies and techniques; institutional liaison and group process.

EDUC 6703. Museum Audiences. 3 Credits.

A survey of the museum's diverse audience, emphasizing implications for effective programming, with attention to audience research.

EDUC 6704. Facilitating Museum Learning II: Field Placement and Seminar. 3-6 Credits.

Supervised placement in local educational institutions. On-campus seminar focuses on human development and learning theory. Placement requires a 16 hour per week commitment.

EDUC 6705. Museums as Institutions II: Field Placement and Seminar. 6 Credits.

Supervised placement in area museums and related organizations where students carry out projects in cooperation with the site. On-campus seminar includes presentations by leading practitioners. Placement requires a commitment of 32 hours per week. Restricted to museum education students. Prerequisites: EDUC 6701, 6702, 6703 and 6704.

EDUC 6706. Evaluating Museum Learning. 3 Credits.

Evaluation and research methods appropriate to the museum setting. Review of research on museum audiences; designing exhibition and program evaluations.

EDUC 6707. Museum Proposal Writing. 3 Credits.

Preparation of proposals for museums seeking support from public and private funders. Proposals are developed in cooperation with local museums.

EDUC 6709. Interpretation in the Historic House Museum. 3 Credits.

Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Same as AMST 6709. Admission by permission of instructor.

EDUC 6710. Museums and Technology. 3 Credits.

Applications of technology that link the public with the museum: Internet exhibitions, interactive computer programs, video conferencing, the electronic classroom. Guest lectures, field trips, and group projects.

EDUC 6711. Museum as a Learning Environment. 3 Credits.

Exploration of why visitors frequent museums and how they create personal meaning. Approaches to support the audience's engagement with the museum's resources.

EDUC 6801. Prelude to Experiential Education and Jewish Cultural Arts. 1 Credit.

Theme-based orientation to the program in experiential education and Jewish cultural arts and to the metropolitan Washington, DC, Jewish community. Includes extensive site visits. Restricted to students in the experiential education and Jewish cultural arts program.

EDUC 6802. Finale in Experiential Education and Jewish Cultural Arts. 1 Credit.

Theme-based orientation to the program in experiential education and Jewish cultural arts and to the metropolitan Washington, DC, Jewish community. Students plan and implement extensive site visits. Restricted to students in their final semester of the experiential education and Jewish cultural arts major. Prerequisite: EDUC 6801.

EDUC 6803. Introduction to Experiential Jewish Education. 4 Credits.

Introduction to the theory and practice of experiential Jewish education in a variety of settings, addressing the relationship of education to identity development. Includes a fieldwork experience.

EDUC 6804. Applied Research in Experiential Jewish Education. 3 Credits.

Overview of research methods employed in experiential Jewish educational settings and their various applications to practice. Prerequisite: EDUC 6803 Introduction to Experiential Jewish Education.

EDUC 6805. Capstone in Experiential Education and Jewish Cultural Arts. 3 Credits.

Six-week, full-time internship at leading Jewish cultural institutions in the United States and abroad. Restricted to students in the experiential education and Jewish cultural arts program.

EDUC 6806. Jews, Social Justice, and Activism. 3 Credits.

Critical examination of the important place of social activism, civic engagement, and community service in American Jewish life.

EDUC 6807. Fieldwork in Experiential Jewish Education. 3 Credits.

Sixteen-week, part-time internship at leading Jewish organizations or institutions. Restricted to students in the master's degree in experiential Jewish education program.

EDUC 6810. Paideia and Jewish Education. 2 Credits.

Analysis of the ancient Greek concept of paideia and its implications for the theory and practice of contemporary experiential Israel education.

EDUC 6811. Foundations of Contemporary Israel. 3 Credits.

Key questions and concepts surrounding Israel's history, and Israeli society, politics, and culture, from 1948 to present. Restricted to students in the graduate certificate in Israel education program.

EDUC 6812. American Jews and Modern Israel. 2 Credits.

The relationships of young American Jews, and the American Jewish community more broadly, to the modern State of Israel, particularly in the context of new political and ideological dynamics in the United States and Israel.

EDUC 6813. The Israel Educational Experience. 4 Credits.

Held in Israel over an eight-day period. Students learn about issues that characterize contemporary Israeli society and apply this learning to educational programming. Restricted to students in the graduate certificate in Israel education program.

EDUC 6840. Introduction to Improvement Science in Education. 3 Credits.

The process and application of improvement science to complex educational problems.

EDUC 6841. Inquiry Tools Supporting Improvement Science. 3 Credits.

The means by which improvement science uses and adapts to a range of established qualitative and quantitative tools, processes, and methods to support educator inquiry within the context of K-12 school settings.

EDUC 6842. Teacher Leadership through Improvement Science. 3 Credits.

Improvement science practices that facilitate teacher leadership; dispositions, knowledge, processes, and relationships supportive of teacher leaders working in different school contexts.

EDUC 6843. Improvement Science as Educational Change. 3 Credits.

Improvement science as a staged, interpretive educational change process; diverse role group perspectives; past and current reforms efforts.

EDUC 6998. Thesis Research. 3 Credits.

Thesis research.

EDUC 6999. Thesis Research. 3 Credits.

EDUC 8100. Experimental Courses. 1-12 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 8101. Research and Independent Study. 1-3 Credits.

Review of literature. Preparation of a dissertation proposal and a manuscript of publishable quality.

EDUC 8110. Advanced Study: Ideas, Issues, and Practices in Education. 3 Credits.

For precandidates for the EdD Alternative means of responding to the complexities of the educational process. Topics vary but concern education as an individual process and as sociocultural preservation and renewal. May be repeated for credit.

EDUC 8120. Group Comparison Designs and Analyses. 3 Credits.

Designs and analyses to assess differences for more than two groups when compared on one dependent variable. Fixed, random, and mixed effects ANOVA and ANCOVA models within factorial design, multiple comparison tests, and introduction to regression analysis. Prerequisites: EDUC 6116.

EDUC 8122. Qualitative Research Methods. 3 Credits.

A general introduction to several major qualitative research traditions (e.g., biography, grounded theory, ethnography, phenomenology, and case study). Application of qualitative research design and procedures, including preliminary data collection, analysis, and writing.

EDUC 8130. Survey Research Methods. 3 Credits.

Techniques used to collect an array of information from a large number of people through structured interviews and mailed, e-mailed, or web-based questionnaires. Defining the research question and design; sampling, survey development, data collection procedures, pretesting, and data handling. Prerequisite: EDUC 8120, EDUC 8122.

EDUC 8131. Case Study Research Methods. 3 Credits.

Techniques used to examine one or a few complex cases, collecting data from several types of sources and by several methods. The course covers design, data collection, and data analysis/integration. Prerequisite: EDUC 8122.

EDUC 8140. Ethnographic Research Methods. 3 Credits.

Techniques used to examine systematically the contemporary daily life of a given group in its natural setting, focusing on culture—the recurring patterns of thought and social relations. Issues of research design and data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8142. Phenomenological Research Methods. 3 Credits.

Techniques used to elicit and recognize perceptions, interpretations, motives, expectations, and imaginations. The framing of appropriate research questions, data collection and analysis, and the statement of conclusions. Prerequisite: EDUC 8122.

EDUC 8144. Discourse Analysis. 3 Credits.

Techniques used to examine verbal and nonverbal communication to understand identity, beliefs, intentions, relationships, and culture. The framing of appropriate research questions; data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8147. Critical Methodologies in Educational Research. 3 Credits.

Theoretical foundations of multiple critical research traditions; researcher responsibility, power and the construction of knowledge; scholarly research in design, practice, and report, drawing upon relevant critical epistemologies. Prerequisite: EDUC 8122.

EDUC 8148. Qualitative Data Collection. 3 Credits.

Identification of appropriate data sources, participant recruitment, mechanics of data collection, and research protocol development. Conducting observations, interviews, focus groups, and other ethnographic methods. Prerequisite: EDUC 8122.

EDUC 8149. Qualitative Data Analysis. 3 Credits.

Analysis of ethnographic and other forms of qualitative data in educational research. Interpretive strategies for analyzing qualitative data. Prerequisite: EDUC 8122.

EDUC 8170. Educational Measurement. 3 Credits.

Classical and modern measurement theory, item response theory, and factor analysis. Educational and psychological instrument development and validation. Interpretation of scale scores and assessment of instrument adequacy. Prerequisites: EDUC 8120. Recommended background: EDUC 6112 or equivalent.

EDUC 8171. Predictive Designs and Analyses. 3 Credits.

Techniques used to assess how independent variables are related to one dependent variable. Multiple linear regression, logistic regression, ordinal regression, and non-linear regression. Appropriate research questions, data interpretation, and design within generalized linear modeling. Prerequisites: EDUC 8120.

EDUC 8172. Multivariate Analysis. 3 Credits.

Techniques for assessment of relationships among multiple independent variables and dependent variables. Multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), discriminant analysis, and exploratory factor analysis. Prerequisite: EDUC 8171.

EDUC 8173. Structural Equation Modeling. 3 Credits.

Multivariate techniques used for assessment of structural (causal) relations among latent (unobserved) variables with multiple observed indicators: observed and latent variable path analysis and confirmatory factor analysis. Latent means analysis and latent growth modeling. Prerequisite: EDUC 8171.

EDUC 8174. Hierarchical Linear Modeling. 3 Credits.

Techniques appropriate for analyses of hierarchically structured data. Theoretical concepts of hierarchical linear models (HLM); social and behavioral research; popular HLM software such as HLMwin; and large scale datasets. Prerequisites: EDUC 8171.

EDUC 8175. Item Response Theory. 3 Credits.

Conceptual, mathematical, and applied issues in item response theory. Dichotomous models, item response theory software used for estimation and model fit, test construction, differential item functioning, and item response theory equating. Prerequisites: EDUC 8170.

EDUC 8177. Assessment Engineering. 3 Credits.

In-depth coverage of topics related to assessment engineering, including cognitive model development using cognitive diagnostic assessment and formative assessment modeling, item model development using auto item generation, and automated test assembly and psychometric model development using computer adaptive testing. Introduction to current assessment engineering and educational big-data analytic applications. Prerequisites: EDUC 8170.

EDUC 8179. Capstone Project in Assessment, Testing, and Measurement in Education. 3,6 Credits.

Multifaceted assessment that serves as a culminating academic and intellectual experience for students during the end of their academic program. The capstone project is similar to a thesis or dissertation but may take a variety of forms. Permission of the instructor required prior to enrollment. Prerequisite: EDUC 8170.

EDUC 8240. Organizational Theory and Leadership in Education. 3 Credits.

Theories and models examining how pk-12 school organizations are part of larger bureaucratic structures and how micro processes that help the overall organization function occur. Restricted to students in the EdD in educational leadership and administration program.

EDUC 8268. Leadership Theory for Education. 3 Credits.

Historical and contemporary theories of leadership through the lens of education; leadership, adaptive leadership, and power analysis.

EDUC 8270. Fundamentals of Educational Planning. 3 Credits.

The planning movement in education at the federal, state, division, and building levels; strategic, short-term, and long-term planning processes for school and educational leaders.

EDUC 8271. Education Policy for School Leaders. 3 Credits.

The interactions of policy development, interpretation, and implementation at different levels of the system; how policy actors draw upon different values to advance and critique current problem formulations and related solutions in education.

EDUC 8276. Seminar: Administration and Supervision. 1-12 Credits.**EDUC 8277. Advanced Instructional Leadership for School Improvement. 3 Credits.**

Introduction to the role of the instructional leader from school and district perspectives. Students gain theoretical and practical skills and knowledge in areas including instructional improvement; education reform; accountability; conditions for improvement; and planning and sustaining change.

EDUC 8280. Critical Review of Educational Leadership Literature. 1,3 Credit.

The techniques, tools, and presentation of critical reviews and syntheses of educational literature used to inform forthcoming research. Systematic mapping of what is known and deriving research questions, conceptual frameworks, and applicable methods. Prerequisite: an approved dissertation topic or permission of instructor.

EDUC 8320. The Politics of Education. 3 Credits.

Examination of the contextual factors (political, economic, and historical) and the nature of political decision making on education issues, primarily at the state and local level. Prerequisite: EDUC 6371.

EDUC 8321. Economics of Education. 3 Credits.

Application of economic theory and analysis to education problems and policies; analysis of contemporary education reforms adopted to improve educational outcomes. Prerequisites: EDUC 6371 and EDUC 8171.

EDUC 8322. Education Policy Implementation. 3 Credits.

The evolution and implementation of education policies. Analysis of policy implementation at varying governance levels and types of educational systems. Policy is analyzed as a process and as it interacts with organizational, social, economic, and political factors. Prerequisites: EDUC 6371.

EDUC 8323. Policies of Education Equity. 3 Credits.

Analysis of the development, implementation, and evaluation of education equity policies, with consideration of their context, formulation, and application. Prerequisites: EDUC 6371 and EDUC 8171.

EDUC 8325. Policy Design: Accountability in Education. 3 Credits.

Models of educational accountability and their implementation within the broader U.S. education system; approaches to accountability, including contemporary policies such as market-based systems, regulatory approaches, and professional accountability. Prerequisite: EDUC 6371.

EDUC 8329. Seminar in Program Evaluation. 3 Credits.

Contemporary problems and issues in evaluation of social programs: design, implementation, analysis, and utilization. Prerequisite: EDUC 6381 and approval of instructor.

EDUC 8334. Doctoral Internship in Educational Policy. 3-6 Credits.

Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8340. Methods of Policy Analysis in Education. 3 Credits.

Methods of analysis used in the study of educational policy issues; policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisites: EDUC 6116 and EDUC 6371.

EDUC 8345. Advanced Studies in Educational Policy Analysis. 1-12 Credits.

The process by which education policies are designed, adopted, and implemented by education systems. Case studies of specific policies, examining their assumptions and objectives, the criteria for assessing their effectiveness, and their governance at federal, state, and local levels. Prerequisite: EDUC 6371, EDUC 8120, or permission of instructor.

EDUC 8505. Seminar: Higher Education Administration. 1-12 Credits.**EDUC 8510. Administration and Organization of Higher Education. 3 Credits.**

Organizational characteristics and administrative nature of colleges and universities; challenges and opportunities for governance; cultures, norms, and changes in higher education organizations.

EDUC 8515. Comparative and International Higher Education. 3 Credits.

An exploration of cultural, theoretical, and disciplinary perspectives of international higher education through a comparative lens.

EDUC 8520. Theories for Research on College Students. 3 Credits.

Theoretical approaches used to study college students; competing frameworks and the contributions of emergent approaches to understanding college students.

EDUC 8525. College and University Curriculum. 3 Credits.

Development, patterns, creative design, issues, problems, evaluation, and trends in the higher education curriculum.

EDUC 8530. Leadership in Higher Education. 3 Credits.

Cognitive leadership theory as articulated in higher education: what leadership is, how it works, how it is practiced, how it is considered by scholars and practitioners, and how it is researched.

EDUC 8540. History of Higher Education. 3 Credits.

History, philosophy, scope, purpose, present status, programs, and trends in higher education in the United States.

EDUC 8555. Policy Analysis in Higher Education. 3 Credits.

The intricacies of major policy debates in higher education, focusing on policy framing, goals, solutions, and implementation.

EDUC 8560. Case Studies in Higher Education Administration. 3 Credits.

An analysis of case studies related to administrative functions in colleges and universities.

EDUC 8565. College and University Governance. 3 Credits.

Organizational and administrative structures, patterns, and relationships in higher education.

EDUC 8566. Higher Education Finance. 3 Credits.

Fundamental concepts in higher education finance; state finance and policy issues; and the impact of financial decisions made at the federal, state, and institutional levels on faculty and students.

EDUC 8580. The Community/Junior College. 3 Credits.

The two-year college as it relates to secondary education, four-year colleges, and universities. Objectives, curricula, students, faculty, legal concerns, and special problems of two-year colleges.

EDUC 8582. Administration and Governance of Two-Year Colleges. 3 Credits.

A study of the community/junior college, focusing on administrative and governance patterns and national, regional, state, and local influences, as well as the theory and structure of two-year college organization.

EDUC 8585. Doctoral Internship in Higher Education Administration. 3-6 Credits.

Service in a higher education situation directed by the University and the cooperating institution to integrate theory and practice. Admission by permission of instructor.

EDUC 8594. Current Issues in Higher Education. 3 Credits.

Analysis of contemporary issues in higher education practice and scholarship.

EDUC 8701. Education Policy Design. 3 Credits.

Processes and practices of policy planning and design in a system of federal, state and local control; effect of federal actions on the work of state and local educators; the state role in shaping federal education policies.

EDUC 8702. Evidence in Education Policymaking. 3 Credits.

Review of theory and research on evidence-informed policymaking and the practical skills of drafting evidence-informed policy initiatives; integrating research with other types of evidence to understand policy problems and formulate responses.

EDUC 8703. Implementation for Education Policymakers. 3 Credits.

The challenge of designing and implementing policy with attention to implementation. Review of research on the organizational, social, and political factors that influence implementation and case study analyses of successful and unsuccessful policy implementation.

EDUC 8704. Advocacy and Strategic Communications. 3 Credits.

The ways in which public discourse and political advocacy shape policy making and implementation; framing policy issues, advancing policy objectives, and engaging stakeholders and members of the media.

EDUC 8998. Pre-Dissertation Seminar. 3-6 Credits.

Required of all departmental EdD degree candidates. Approval of the dissertation research proposal by the dissertation committee is necessary for successful completion of the seminar. Admission by permission of instructor.

EDUC 8999. Dissertation Research. 3,6 Credits.

Prerequisite: EDUC 8998.

HUMAN AND ORGANIZATIONAL LEARNING

GRADUATE

Graduate certificates

- Graduate Certificate in design and assessment of adult learning (p. 670)
- Graduate Certificate in global leadership in teams and organizations (p. 671)
- Graduate Certificate leadership development (p. 674)
- Graduate Certificate in organizational learning and change (p. 674)

Master's programs

- Master of Arts in Education and Human Development in the field of organizational leadership and learning (p. 652)
- Master of Arts in Education and Human Development individualized program (p. 637)

Doctoral program

- Doctor of Education in the field of human and organizational learning (p. 663)

FACULTY

Professors D. Burley, E. Goldman, S. Khilji

Associate Professors A. Casey, M. Cseh, R. Korte, E. Scully-Russ (*Chair*), J. Storberg-Walker

Assistant Professor Y. Nakamura, S. Ray

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOL 0920. Continuing Research - Master's. 1 Credit.

HOL 0940. Cont. Res. - Doctoral. 1 Credit.

HOL 5099. Variable Topics. 1-99 Credits.

HOL 6100. Special Workshop. 1-12 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 6101. Research and Independent Study. 1-3 Credits.

Preparation of an in-depth project under the guidance of a faculty member. The course is arranged individually with the program advisor.

HOL 6700. Human Behavior and Learning in Organizations. 3 Credits.

How individuals and groups learn and interact within organizations and how organizations function and learn. Motivation, group dynamics, leadership, systems theory, organizational culture, and change.

HOL 6701. Adult Learning. 3 Credits.

Premises and theories used to meet learning needs of adults. Overview of various learning theories and the impact of various stages of adult development on learners. Topics including self-directed learning, accommodating individual learning needs, and creation of effective learning techniques. Same as HDEV 6701.

HOL 6702. Organizational Change. 3 Credits.

Assessing organizational conditions; operations, problems (human, structural, and systemic), and the process of collecting and interpreting information.

HOL 6703. Consulting Skills. 3 Credits.

Concepts, methods, and skills required for effective consultation in organizations, as either an internal or an external consultant; meeting the human needs in organizations while improving performance and productivity. Students undertake a consulting project in an organization.

HOL 6704. Leadership in Organizations. 3 Credits.

Developments in theory and research centered on organizational leadership. Emphasis on various types of leadership including transformational, responsible, authentic, and ethical.

HOL 6705. Strategic Change. 3 Credits.

Overview of best practices for organizing and managing people and organizations to compete successfully. Leading an organization through a process of self-examination, redesign, and change that results in sustained effectiveness, learning, and high performance.

HOL 6706. Current Issues in Organizational Leadership. 3 Credits.

Current issues and future trends in organizational leadership. Students gather data and analyze key topics associated with areas such as talent management, leading through demographic shifts, leadership in a globalized world, leading global change, and developing new forms of leadership, ethics, and sustainability.

HOL 6707. Organizational Learning. 3 Credits.

Learning in an organizational context. Processes through which the organization as a system learns, unlearns, changes, and disseminates information. Organizational learning theories address the processes and barriers of gathering, using, developing, and retaining knowledge in organizations.

HOL 6708. Global Leadership. 3 Credits.

The changes taking place in organizations due to the process of globalization and the requirements for leadership. The changing global environment, how those changes influence operational and strategic issues within global organizations, and how a leader can better understand the global environment to help organizations meet these new challenges.

HOL 6709. Leadership Development. 3 Credits.

Theories of and processes used in leader/leadership development; effects of leadership development on the individual and its importance to organizations. Prerequisite: HOL 6704.

HOL 6710. Globalization, Change, and Learning. 3 Credits.

With learning as the coping strategy, focus on how policymakers and global leaders can be helped to take advantage of the opportunities and address the challenges that globalization presents.

HOL 6712. Diversity, Equity and Inclusion in Organizations. 3 Credits.

Developments in the theory of diversity, equity, and inclusion (DEI). Practice of diversity management as an integrative, structural, and social change effort within organizations. Prerequisites: HOL 6700, HOL 6702, HOL 6704, and HOL 6746.

HOL 6720. Advanced Strategies for Adult Learning. 3 Credits.

Theoretical and practical strategies of adult learning in various settings, including corporate environments. Learning strategies, such as creative thinking and self-directed learning. Critical adult learning issues.

HOL 6721. Assessing the Impact of Organizational Change Using Qualitative and Quantitative Methods. 3 Credits.

Knowledge and skills needed to evaluate the impact and return on investment of change efforts; planning and conducting systematic evaluations of change efforts, including the choice, development, and use of various tools for measuring individual, group, and organizational change; assessing the success of the planned change.

HOL 6724. Increasing the Capacity to Learn. 3 Credits.

Identification of actions that can help increase the capacity to learn. Emphasis on experimental learning and critical reflection.

HOL 6725. Internship in Organizational Leadership and Learning. 3-6 Credits.

Supervised experience in selected areas of leadership, learning, and/or change. Admission by permission of the program advisor.

HOL 6726. Curriculum Design for Adult Learners. 3 Credits.

Exploration of theories, methods, and models of curriculum design for adult learners. Application of major design steps. Restricted to students in the master teacher leadership development program. Prerequisite: HOL 6701.

HOL 6727. Assessment of Adult Learning. 3 Credits.

Exploration of the major methods used to assess adult learning in classroom and workplace environments; means of ensuring the validity and reliability of the major methods. Restricted to students in the master teacher leadership development program. Prerequisite: HOL 6701.

HOL 6742. Design of Adult Learning Interventions. 3 Credits.

Designing and implementing adult learning programs. Topics include instructional design techniques, designing effective programs, program planning and marketing techniques, and conducting needs assessments and evaluations of adult learning programs.

HOL 6743. Action Learning. 3 Credits.

Processes, principles, and skills necessary to participate in and lead both single- and multiple-problem action learning sets. The six dimensions of action learning; educational psychological, political, sociological, and management theories underlying action learning.

HOL 6744. Meaningful Workplaces. 3 Credits.

Characteristics of the humane organization and of meaningful work. Intrinsic motivation, work-life balance, and the workplace community.

HOL 6745. Technology and Human Resource Development. 3 Credits.

How technology can best be utilized in the HRD environment. Discussion of CBT, use of the Internet for instruction, and distance learning techniques.

HOL 6746. Work Groups and Teams in Organizations. 3 Credits.

Exploration of the nature of work groups and teams as they are utilized in organizational settings. Group and team dynamics, facilitating and leading skills, and group roles and culture.

HOL 6747. International and Multicultural Issues in Organizations. 3 Credits.

The impact of culture and globalization on U.S. and international human and organizational learning programs and practices. Adult learning and organizational change approaches that develop and utilize the synergy of a global workforce.

HOL 6998. Thesis Research. 3 Credits.

Thesis research.

HOL 6999. Thesis Research. 3 Credits.

Thesis research.

HOL 8100. Special Topics in Human and Organizational Learning - Doctoral Studies. 3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 8101. Research and Independent Study. 1-3 Credits.

HOL 8700. Foundations of Human and Organizational Learning. 3 Credits.

The study of individuals and their interactions within an organizational context. Overview of key theories in leadership, systems theory, group dynamics, learning, organizational culture, and motivational theory. The use of research in human and organizational learning.

HOL 8701. Theory, Research, and Practice in Adult Learning and Development. 3 Credits.

Learning theories as applied to adults in individual and group learning transactions; effect of age on learning; psychological, physical, and social environments in adult education situations.

HOL 8702. Theory and Design of Organizational Diagnosis and Development. 3 Credits.

Focus on various paradigms through which organizations and their functions may be viewed; a variety of analytical models of organizations; techniques for assessing systems; application of analysis techniques.

HOL 8703. Human Systems Change. 3 Credits.

The classical and contemporary ideas related to social systems change; the relation of these ideas to current issues in organizations.

HOL 8704. Leadership Theory, Research, and Practice. 3 Credits.

Leadership in organizations with a focus on transformational leadership. Historical review of leadership theory and research; current developments in understanding leadership. Students examine their own leadership style and plan for continued development as a leader.

HOL 8705. Organizational Culture. 3 Credits.

Theory and research on organizational culture, from the multidisciplinary seminal works in anthropology, psychology, sociology, and management to current day theorizing and empirical research on culture. The rituals, values, and behaviors that differentiate cultural groups and the way cultural identities manifest themselves in organizational practices; and how organizational culture evolves and its relationship to other organizational phenomena such as innovation, strategy, sensemaking, and performance. Current trends in organizational culture theorizing.

HOL 8706. Interdisciplinary Readings in Human and Organizational Learning. 3 Credits.

Seminal works from various disciplines related to current research and practice.

HOL 8707. Advanced Organizational Learning. 3 Credits.

The psychological and sociological paradigms associated with the learning of a collective whole.

HOL 8708. Introduction to Doctoral Research. 3 Credits.

An introduction to scholarly inquiry for doctoral students. The role of the scholar-practitioner; types of scholarly inquiry and their components; diverse paradigms used to frame scholarly inquiry; and critical thinking skills for evaluating research in human and organizational learning.

HOL 8720. Seminar: Applied Research in Human and Organizational Learning. 3 Credits.

Identification of initial constructs and theories that support the identified research interest, with a problem statement and critical analysis of research reports and review of research literature.

HOL 8721. Practicum in Human and Organizational Learning. 3-6 Credits.

HOL 8722. Seminar: Advanced Issues in Human and Organizational Learning. 1-12 Credits.

Forum in which candidates critically examine relevant classic and contemporary literature, with analysis and synthesis to defend their research questions and conceptual frameworks.

HOL 8723. Organizations and Strategy in Human Resource Systems. 3 Credits.

Overview of paradigms, theories, models, and constructs of organizations and strategy to understand organizations and their environments.

HOL 8724. Creating and Planning Doctoral Research. 3 Credits.

Students learn to develop an evidence-based problem statement, design a conceptual framework, craft a research question, and conduct a literature review. Fundamental principles of both qualitative and quantitative research and various research strategies and designs.

HOL 8725. Integration of Theory, Research and Practice. 3 Credits.

Provides students with the opportunity to apply adult learning principles explored in the curriculum towards an integration and synthesis of the knowledge base in human and organizational studies. Aids in preparation for the comprehensive examinations and subsequently, dissertation development.

HOL 8741. Managerial and Organizational Cognition. 3 Credits.

The emerging field of collective cognition in organizations, including theoretical foundations and seminal and current literature on knowledge structures and their role in strategy formation, organizational change, and sensemaking.

HOL 8742. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/HDEV 8253.

HOL 8746. Work Groups and Teams in Organizations. 3 Credits.

Theoretical understanding and practical considerations of working with groups and teams. Group dynamics, facilitating and leading groups, and member roles. Group facilitation techniques across different group settings and environments.

HOL 8997. Preparation and Delivery of Doctoral Research. 3 Credits.

Students develop and present a mock dissertation proposal, receiving feedback from faculty and colleagues in order to refine their proposal. Prerequisites: none. Recommended background: Students are expected to have developed a literature review, conceptual framework, and research question for their dissertation research prior to enrolling in this class.

HOL 8998. Predissertation Seminar. 3-6 Credits.

Platform for further development of the dissertation proposal.

HOL 8999. Dissertation Research. 3,6 Credits.

Prerequisite: HOL 8998.

SPECIAL EDUCATION AND DISABILITY STUDIES

GRADUATE

Graduate certificates

- Autism Spectrum Disorders (<http://bulletin.gwu.edu/education-human-development/certificate/autism-spectrum-disorders/>)
- Brain Injury: Educational and Transition Services (<http://bulletin.gwu.edu/education-human-development/certificate/brain-injury-educational-transition-services/>)
- Special Education for Culturally and Linguistically Diverse Learners (<http://bulletin.gwu.edu/education-human-development/certificate/special-education-culturally-linguistically-diverse-learners/>)

- Transition Special Education (<http://bulletin.gwu.edu/education-human-development/certificate/secondary-special-education-transition-services/>)

Master's programs

- Master of Arts in Education and Human Development in the field of early childhood special education (p. 643)
- Master of Arts in Education and Human Development in the field of interdisciplinary secondary transition services (p. 648)
- Master of Arts in Education and Human Development in the field of secondary special education (p. 654)
- Master of Arts in Education and Human Development in the field of special education for children with emotional and behavioral disabilities (p. 654)
- Master of Arts in Education and Human Development in the field of special education for culturally and linguistically diverse learners (p. 655)
- Master of Arts in Education and Human Development individualized program (p. 637)

Post-master's program

- Education Specialist in the field of special education (p. 660)

Doctoral program

- Doctor of Education in the field of special education (p. 665)

FACULTY

Professor M. Freund

Associate Professors J. Frey, L. Rice (*Chair*), E. Tuckwiller (*Assistant Chair*)

Assistant Professors D. Gresham, K. Ihrig, J. Kester

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPED 0920. Continuing Research - Master's. 1 Credit.

SPED 0940. Continuing Research - Doctoral. 1 Credit.

SPED 5099. Variable Topics. 1-99 Credits.

SPED 6100. Selected Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes. Credit cannot be earned for this course and CNSL 6100, CPED 6100, CPED 6199.

SPED 6101. Research and Independent Study. 1-3 Credits.

Individual study or research under guidance of staff member. Permission of the advisor required prior to enrollment. May be repeated for credit.

SPED 6201. Overview and Legal Issues in Educating Exceptional Learners. 3 Credits.

Survey course to acquaint prospective teachers with special education and to help them become aware of the various educational modifications necessary to accommodate children with special needs in a school program.

SPED 6202. Research and Current Trends in Special Education: Teacher Decision Making. 3 Credits.

Using a data-driven framework for assessing evidence-based practices in special education and competency in understanding, collecting, analyzing, and communicating relevant data.

SPED 6203. Research and Practice: Diagnostic Reading for Exceptional Learners. 3 Credits.

Understanding the reading process and knowledge of diagnostic measures and instructional interventions to promote reading competency for students with disabilities.

SPED 6210. Universal Design for Learning and Assessment. 3 Credits.

Overview and introduction to universal design for learning, including contemporary issues, applications of digital and assistive technologies, and tools for developing a comprehensive plan for implementation.

SPED 6214. Applied Research in Secondary Transition Practices. 3 Credits.

Students develop applied research knowledge and skills in the field of secondary transition; evaluate evidence-based transition practices to ensure positive post-school outcomes of youth with disabilities; and conduct, evaluate, and use inquiry to guide professional practices and interventions.

SPED 6221. Accessing Community Systems for Individuals with Disabilities. 3 Credits.

Overview of access to community systems and service delivery for individuals with special needs and their families. Material fee.

SPED 6222. Legal Issues and Public Policy for Individuals With Disabilities. 3 Credits.

Examination, interpretation, and analysis of legislation and policies affecting the education and career development of individuals with disabilities. Emphasis on federal legislation in the context of national policy reform in disability services. Material fee.

SPED 6223. Introduction to Brain Injury: Programs, Policies, and Resources. 3 Credits.

An overview of acquired brain injury and its effects; current trends in the field, related policy, research, and development of new resources.

SPED 6224. Brain Function and Impact of Brain Injury on Learning and Education. 3 Credits.

Provides an in-depth understanding of neuroanatomy related to the impact of brain injury on child and adolescent development and learning to prepare educators to participate in educational assessment and planning.

SPED 6227. Technology in Vocational Evaluation. 3 Credits.

Introduction to an array of assistive technology services and products facilitating professional interventions and vocational evaluation procedures; application to the assessment of persons with disabilities. Material fee.

SPED 6228. Community-Based Assessment and Work Sample Development. 3 Credits.

Introduction to community-based vocational appraisal methods; development of job training analysis skills, labor market surveys, work samples; requirements of The Americans with Disabilities Act; incorporation of assistive technology; classroom theory and field work. Material fee.

SPED 6229. Interpretation and Application of Academic and Vocational Assessment Information. 3 Credits.

Specific strategies and techniques to analyze, interpret, and synthesize assessment information for the development of comprehensive academic/vocational profiles for adolescents and adults with disabilities. Observation and recording procedures, report development, and postassessment conferencing are emphasized. Material fee.

SPED 6230. Vocational Assessment of Individuals with Disabilities. 3-6 Credits.

Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as CNSL 6130.

SPED 6231. Curriculum and Instructional Methods in Special Education and Transition. 3 Credits.

Techniques and processes used in programming for the needs of individuals with disabilities as they prepare for inclusion at the secondary level, transition to postsecondary programs, and employment; skills related to professional liaison and support roles in the design of curriculum and instructional strategies for students with disabilities. Material fee.

SPED 6232. Foundations in Special Education, Career Development, and Transition. 3 Credits.

Overview of historical, theoretical, and philosophical foundations of career development and transition. Explores directions for career development/transition practices in the context of educational reform and social and political change. Material fee.

SPED 6233. Curriculum in Special Education. 3 Credits.

Theory and practice in planning, implementing, and evaluating curriculum for individuals with disabilities; techniques for modifying curriculum and materials for individualized programming. Field-site curriculum implementation is required. Materials fee.

SPED 6234. Seminar in Advanced Writing and Professional Presentation. 3-6 Credits.

Analysis and development of advanced professional writing skills, including literature synthesis, persuasive writing, and proposal writing. Material fee.

SPED 6235. Employment Models for Individuals with Disabilities. 3 Credits.

Rationale, occupational resources, and programming strategies for job placement and the development and coordination of employment programs for individuals with disabilities. Material fee.

SPED 6236. Introduction to Career and Career-Technical Education and Transition Services. 3-6 Credits.

Introduction to programs and services that provide career development and transition planning for individuals with disabilities. Material fee.

SPED 6237. Learning Strategies, Assessment, and Instruction for Individuals with Learning Disabilities. 3-6 Credits.

Theory and practice in evidence-based reading interventions. Learning strategies; content enhancement focused on literacy and self-determination. Material fee.

SPED 6238. Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.

Introduction to the academic, cognitive, social, and emotional characteristics of individuals with learning disabilities; etiological theories; educational service delivery models, with particular emphasis on the adolescent with learning disabilities. Policy issues, continuum of services, and the transition from school to post-school environments. Material fee.

SPED 6239. Teaching and Collaboration for Professionals Working with Students with Disabilities. 3 Credits.

Attitudes and beliefs regarding team teaching, collaboration, and inclusionary environments; interpersonal communication, the dynamics of collaborative teams, and environments in which special educators work. Materials fee.

SPED 6240. Family Support and Guidance in Special Education. 3 Credits.

The developmental process of parenting and how that process is affected by having a child with developmental delay or disability. Family systems theory, stress and coping mechanisms, and communication and support strategies. Material fee.

SPED 6242. Neurodevelopmental Assessment and Programming for Infants and Toddlers with Disabilities. 3 Credits.

Application of the neurodevelopmental model to techniques for developing and implementing educational programs for infants and toddlers with disabilities. SPED 6263 or SPED 6268 may be taken as a corequisite. Material fee. Prerequisites: SPED 6263 or SPED 6268; or permission of the instructor.

SPED 6243. Developmental Assessment of Infants. 3 Credits.

Theory and current practice in the assessment of infants with or at risk for developmental disabilities. Material fee.

SPED 6244. Ethical Considerations in Neonatal and Infant Intervention. 3 Credits.

Overview of the major ethical issues involved in neonatal and infant intervention. The impact of recent and emerging technological innovations considered from medical, legal, ethical, and psychosocial perspectives. Material fee.

SPED 6245. Developmental Implications of Prematurity and Risk. 3 Credits.

Causes of prematurity. Conditions that place children at developmental and educational risk.

SPED 6253. Introduction to Autism Spectrum Disorders. 3 Credits.

Overview of autism spectrum disorders with a focus on etiology, characteristics, and evidence-based practices. Topics include defining, assessing, accommodating, and instructing students with autism spectrum disorders.

SPED 6254. Autism Spectrum Disorders and Transition to Employment and Post-Secondary Life. 3 Credits.

The policies, principles, models, and processes involved in job development, job accommodations and modifications, and employment and post-secondary placement services for individuals with autism and related disabilities. Legislation is reviewed in terms of its impact on placement of persons with autism who transition into the workplace and/or post-secondary education.

SPED 6255. Collaboration with Systems and Families. 3 Credits.

Overview of models and strategies for coordinating services across disciplines and among school and community agencies for special populations. Emphasis on interdisciplinary team coordination, communication, decision making, planning, and follow-up for individuals with disabilities. Material fee.

SPED 6260. Developmental Assessment in Special Education. 3 Credits.

Key issues of effective collaboration, culture, and school-family partnerships in special education explored through a framework of educational research best practice.

SPED 6261. Practicum: Methods and Materials for Young Children with Disabilities. 3,6 Credits.

Implementation of educational strategies and materials, including designing and developing teaching materials, classroom teaching, feedback and evaluation with professor. A seminar accompanies this clinical experience.

SPED 6262. Formal Assessment of Young Children with Disabilities. 3 Credits.

Weekly seminar designed to prepare early childhood special educators to translate formal assessment data into instructional programming. Requires fieldwork with children. Material fee. Prerequisite: SPED 6260 .

SPED 6263. Development of the Infant with Special Needs. 3 Credits.

The processes of normal infant development and interrelationships among areas of development; relationship of these processes to the growth and development of infants with or at risk for developmental disabilities. Material fee.

SPED 6264. Medical and Genetic Conditions of Infants and Children with Developmental Disabilities. 3 Credits.

Introduction to medical and genetic conditions that affect the cognitive, language, and social development of infants and children with developmental disabilities.

SPED 6266. The Development of Language and Literacy. 3 Credits.

Within the context of typical and atypical development, the impact of various disabilities on language and literacy development. Material fee.

SPED 6267. Instructional and Assistive Technology in Early Childhood Special Education. 2,3 Credits.

Instructional strategies and assistive technology and their implications and uses for young children (0 to 5 yrs) in a wide variety of environments. Lectures, laboratory, and demonstrations. Material fee.

SPED 6268. Development of Children and Youth with Disabilities. 3 Credits.

Theories of human growth and development are considered as a framework for examination of typical and atypical development of children and youth. Material fee.

SPED 6269. Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities. 3 Credits.

An in-depth examination of the causes and characteristics of various disabilities. Current principles and approaches to intervention are examined. Material fee.

SPED 6272. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.

Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as CPED 6172. Material fee.

SPED 6273. Impact of Culture on Education. 3 Credits.

The impact of culture and ethnicity on educational experiences. The relationship between school culture in the United States, one's own culture(s), and the cultures of diverse populations existing within our schools. Values, norms, rules, ethics, beliefs, attitudes, expectations, and assumptions of various cultures. Material fee.

SPED 6274. In-Service Planning/Programmng. 3 Credits.

SPED 6275. The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends. 3 Credits.

Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Same as CPED 6175. Material fee.

SPED 6276. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.

Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Same as CPED 6176. Material fee.

SPED 6277. Teaching Culturally and Linguistically Diverse Students with Disabilities. 3 Credits.

Methods and materials for teaching students with disabilities who are English language learners. Classroom management, instructional and assessment strategies, materials and curricula, and collaborating with families and communities to meet the cultural, linguistic, academic, social, and emotional needs of students in various settings. Material fee.

SPED 6280. Developmental Assessment of Adolescents. 3 Credits.

Formal and informal psychoeducational assessment; assessment instruments commonly used with upper-elementary, junior, and senior high school students; the writing of psychoeducational reports. Material fee.

SPED 6283. The Urban Impact on Children and Youth with Disabilities. 3 Credits.

Effects of the total environment in which inner-city children live on their ability to learn and their cognitive, social-behavioral, and physical/health development. Material fee.

SPED 6288. Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.

An in-depth examination of typical and atypical growth and development, psychiatric diagnosis and psychosocial development issues, and general and specific characteristics of the student with serious emotional disabilities. May be repeated for credit. Material fee.

SPED 6290. Affective Development and Behavior Management in Special Education. 3 Credits.

Theory, programming, and behavior management strategies from theoretical and practical points of view. Material fee.

SPED 6299. Federal Education Policy Institute. 3 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6990. Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher. 3-6 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6991. Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher. 3-6 Credits.

Continuation of SPED 6990. Graduate students become the primary teaching team in the classroom with ongoing supervision. Graduate students plan and apply psychoeducational teaching strategies with children with emotional and behavioral disabilities. Refinement of instructional and behavior management strategies. Weekly seminar continues. Material fee.

SPED 6992. Behavior Management Practicum: Adolescents with Disabilities. 3 Credits.

Field-based examination of theory of behavior development and techniques for classroom management. Material fee.

SPED 6993. Internship: Teaching Young Children with Disabilities. 3,6 Credits.

Supervised internship in early childhood special education. Weekly seminar. Material fee.

SPED 6994. Internship: Early Intervention. 3-6 Credits.

Supervised internship in early intervention. Weekly seminar. Material fee.

SPED 6995. School- and Community-Based Internship in Special Education and Transition. 1-9 Credits.

A 50- to 450-hour supervised internship in school- and community-based settings involved in career, vocational, and transition services.

SPED 6996. Teaching Internship in Transition Special Education. 3-6 Credits.

Supervised teaching internship; seminar required. Permission of the instructor required prior to enrollment. Material fee.

SPED 6997. Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities. 3-6 Credits.

Supervised internship and weekly seminar. A full-time, field-based teaching experience working with students with disabilities who are English language learners. Writing an appropriate IEP, interacting with families and communities, and planning and implementing instructional approaches and strategies. Material fee.

SPED 8100. Selected Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

SPED 8101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with program advisor.

SPED 8301. Research Seminar in Special Education. 1-12 Credits.

Participation in a small group with a selected faculty member; research on and discussion of an area of common interest. Permission of the instructor required prior to enrollment.

SPED 8303. Administration and Supervision of Special Education. 3 Credits.

Philosophy and nature of special education; program organization, administration, and development. Surveying local needs; program evaluation and supervision. Permission of the instructor required prior to enrollment. Material fee.

SPED 8304. Research and Trends in Special Education. 3 Credits.

Emphasis on topical research issues, problems of conducting research, and research syntheses. Material fee.

SPED 8305. Foundations of Neuroscience in Special Education. 3 Credits.

Develops understanding of the neurological bases of sensation and perception, object recognition, control of motor action, learning and memory, emotion and language, attention, consciousness and cognitive control, and social cognition.

SPED 8306. Advanced Study in Development Science and Variance I: The Early Years. 3 Credits.

Consideration of cognitive neuroscience research on developmental issues of infancy and early years; assessment, identification, and related prevention and intervention. Prerequisite: SPED 8305.

SPED 8308. Preparation for the Professoriate in Special Education. 3 Credits.

Philosophical, ethical, and methodological aspects of personnel preparation in university and field-based programs; opportunities for practice in pedagogical design and delivery. Material fee.

SPED 8310. Advanced Study in Development Science and Variance II: The Later Years. 3 Credits.

Consideration of cognitive neuroscience research on adolescent development, including executive functioning, self-regulation, atypicality in learning, social and emotional behavior, motivation, and attention. Prerequisite: SPED 8306.

SPED 8311. Doctoral Proseminar: Scholarly Writing in Applied Settings. 3 Credits.

Professional writing enrichment course that builds upon recent approaches to scholarly writing instruction and adapts them to the level of skill required of graduate and advanced graduate students. Prerequisite: SPED 8310.

SPED 8343. Psychoeducational Diagnosis in Special Education. 3 Credits.

The range of diagnostic and intervention strategies applicable to the student who presents psychosocial and related learning difficulties. Permission of the instructor required prior to enrollment. Material fee.

SPED 8345. Consultation and the Change Process. 3 Credits.

Consultation models from organizational development, organizational psychology, and mental health applied to professional practice in education and special education. Material fee.

SPED 8352. Disability and Public Policy. 3 Credits.

Overview of current legislation and public policy affecting education, employment, and civil rights of individuals with disabilities. The evolution of disability policies and their relationship to principles of social justice. Material fee.

SPED 8353. Post-Master's Internship in Special Education. 1-6 Credits.

Supervised professional internship in college teaching, administration, supervision, research, or policymaking. Internships are individually arranged. Permission of the instructor required prior to enrollment.

SPED 8354. Doctoral Internship: Special Education. 1-6 Credits.

Supervised professional internship in research college teaching, administration, policymaking, or private agency function. Permission of the advisor required prior to enrollment.

SPED 8360. Interdisciplinary Techniques in the Diagnostic Process in Special Education. 3 Credits.

Application of theoretical concepts of assessment; development of assessment programs; interpretation and application of interdisciplinary diagnostic evaluations. Material fee. Prerequisites: SPED 6260 and permission of the instructor.

SPED 8998. Doctoral Seminar in Special Education. 3-6 Credits.

Review of literature in a topical area; preparation of a dissertation proposal and a manuscript of publishable quality. Permission of the instructor and major advisor required prior to enrollment. Material fee.

SPED 8999. Dissertation Research. 3,6 Credits.

Prerequisite: SPED 8998.

MASTER'S PROGRAMS

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Master of Arts in Education and Human Development

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Combined programs

- Dual Bachelor of Arts with a major in English and a Master of Education in the field of secondary education with a concentration in English (p. 656)
- Dual Bachelor of Arts with a major in history and a Master of Education in the field of secondary education with a concentration in social studies (p. 656)
- Dual Bachelor of Arts with a major in Spanish and Latin American languages, literatures, and cultures, and Master of Education in secondary education with a concentration in foreign language education (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in elementary education and Graduate Certificate in incorporating international perspectives in education (IIPE) (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in secondary education and Graduate Certificate in incorporating international perspectives in education (IIPE) (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in elementary education and Graduate Certificate in TESOL (p. 657)
- Dual Master of Arts in Education and Human Development in the field of curriculum and instruction with a concentration in secondary education and Graduate Certificate in TESOL (p. 658)
- Dual Master of Arts in Education and Human Development in the field of International Education and Graduate

Certificate in assessment, testing, and measurement (ATM) (p. 658)

- Dual Master of Arts in Education and Human Development in the field of international education and Graduate Certificate in incorporating international perspectives in education (IIPE) (p. 658)
- Dual Master of Arts in Education and Human Development in the field of international education and Graduate Certificate in TESOL (p. 658)
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MASTER OF EDUCATION IN THE FIELD OF ELEMENTARY EDUCATION

The master of education in the field of elementary education degree program is designed for those with an undergraduate degree in the arts and sciences. The program includes coursework for students who wish to become eligible for licensure/certification for teaching at the elementary school level (grades 1 to 6). Additional coursework in content areas may be needed to meet specific jurisdictional requirements for licensure/certification.

Visit the program website (<http://gsehd.gwu.edu/programs/elementary-education/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits in required courses and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
Foundations		
CPED 6604	Perspectives in American Education	
CPED 6606	Theories of Learning and Development	
CPED 6608	Development and Diversity	
SPED 6290	Affective Development and Behavior Management in Special Education	
Methodology		

CPED 6410	Reading Children's Literature across the Curriculum
CPED 6412	Elementary School Curriculum and Methods (Math)
CPED 6412	Elementary School Curriculum and Methods (Science)
CPED 6412	Elementary School Curriculum and Methods (Language Arts)
CPED 6412	Elementary School Curriculum and Methods (Social Studies)
CPED 6623	Foundations of Reading Development
EDUC 6114	Introduction to Quantitative Research
Internship	
CPED 6635	Professional Internship in Elementary Education (taken for 6 credits)

Successful completion of comprehensive examination.

MASTER OF EDUCATION IN THE FIELD OF SECONDARY EDUCATION

Graduate students become part of a diverse community of scholars and teachers dedicated to the improvement of teaching and learning in public schools. The Graduate School of Education and Human Development's secondary education program opens the door to a broad range of teaching possibilities. A variety of concentrations are available: Languages: Arabic; Chinese; French; German; Latin; Spanish; Russian Humanities: English; English as a Second Language; Social Studies Math and Sciences: Biology; Chemistry; Computer Science; General Science; Mathematics; Physics The program is approved by the State Education Agency-Board of Education of the District of Columbia and is part of the GSEHD unit accredited by the National Council for Accreditation of Teacher Education (NCATE). The program offers many regional partnerships and opportunities for tuition assistance, flexible scheduling and self-paced learning.

Visit the program website (<http://gsehd.gwu.edu/programs/secondary-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits (36 credits for the ESL concentration), including the required core courses and all courses and elective credits indicated in one concentration.

In addition, all students must complete a teaching portfolio and the relevant teacher licensure assessments, the latter of which

are required by the District of Columbia Educator Licensure Services Office.

Code	Title	Credits
Required core		
CPED 6339	Teachers as Researchers	
CPED 6340	Teacher Leadership in Education	
CPED 6507	Instructional Models and Classroom Management	
CPED 6606	Theories of Learning and Development	
CPED 6608	Development and Diversity	
6 credits in one or 3 credits in both of the following courses:		
CPED 6532	Professional Internship in Middle School Education	
CPED 6534	Professional Internship in Secondary Education (taken twice)	

Concentrations

Code	Title	Credits
English concentration		
CPED 6546	Teaching English in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Electives		
3 credits of electives selected in consultation with program advisor		
ESL concentration		
Required		
CPED 6176	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6557	Second Language Acquisition	
CPED 6627	Teaching Second Language Reading and Writing	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT, INDIVIDUALIZED PROGRAM

The master of arts in education and human development individualized degree program provides students with an opportunity to develop a program of study that cuts across existing fields, both within the Graduate School of Education and Human Development (GSEHD) and between GSEHD and other schools and departments of the University as well as the Consortium of Universities. It is designed to meet specific career and professional objectives of applicants who have unique needs. The flexible program structure can be tailored to prepare for new and emerging fields in education and human development. This program is available (with program advisor approval) within or across the five departments within GSEHD.

Visit the Graduate School of Education and Human Development website (<https://gsehd.gwu.edu/programs/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits distributed as outlined below, with the approval of the faculty program advisor:

Code	Title	Credits
3 credits in research courses		
27 credits in courses that meet student's program goals and objectives		
All work toward the degree must be specified at the time the initial program is developed.		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF ASSESSMENT, TESTING, AND MEASUREMENT IN EDUCATION

Develop the expertise to analyze fifth graders in a school district, all workers at a company, everyone taking a graduate entrance exam, or a sampling of patients in a counseling lab. Assessment, testing, and measurement (ATM) in education combines statistical analysis, testing theory, the study of human behavior, educational measurement, and evaluation into the science of measuring educational/behavioral factors such as learning, preference, aptitude, and personality. Specialists in this field (psychometricians) design tests that collect empirical data and quantify the personal characteristics of individuals, comparing those results within or across populations.

Code	Title	Credits
Foreign language concentration		
Required		
CPED 6551	Second Language Instructional Methods	
CPED 6557	Second Language Acquisition	
CPED 6627	Teaching Second Language Reading and Writing	
Code	Title	Credits
General science concentration		
Required		
CPED 6547	Teaching Science in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Elective		
3 credits in electives courses selected in consultation with program advisor		
Code	Title	Credits
Mathematics concentration		
Required		
CPED 6550	Teaching Mathematics in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Electives		
3 credits in elective courses selected in consultation with program advisor		
Code	Title	Credits
Social studies concentration		
Required		
CPED 6548	Teaching Social Studies in Secondary Schools	
CPED 6691	Interdisciplinary Adolescent Literacies	
Electives		
3 credits of elective courses selected in consultation with program advisor		

This master's program is designed for individuals who are entering or advancing in positions associated with assessment, testing, and measurement in diverse settings. The program offers some of the nation's premier graduate training in psychometric and statistical methods taught by faculty who are engaged in world-class research. Students are provided mentorship through all phases of the research process and become trained in modern analytical methods.

Visit the program website (<http://gsehd.gwu.edu/programs/assessment-testing-and-measurement-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 24 credits in required courses, 6 credits in elective courses, and completion of a written qualifying examination.

Code	Title	Credits
Required		
EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8175	Item Response Theory	
EDUC 8177	Assessment Engineering	
EDUC 8179	Capstone Project in Assessment, Testing, and Measurement in Education (taken for 6 credits)	
Electives		
6 credits in approved electives		
Elective courses should be selected in consultation with the program advisor.		
A written qualifying exam (administered during the early spring semester by an ATM committee).		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CLINICAL MENTAL HEALTH COUNSELING

One of the first programs of its kind, this course of study prepares students to work in social services agencies,

employment centers and substance abuse programs. It takes an integrated approach to counseling research and practice.

The course of study includes classroom, laboratory and field-site education and training. The program includes a two-semester internship. Interns deliver counseling services, under supervision, both in the program's Community Counseling Services Center and at health and human services agencies in the community.

Visit the program website (<http://gsehd.gwu.edu/programs/clinical-mental-health-counseling/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits, including 57 credits in required courses and 3 credits in elective courses; completion of 600 hours in internships and 100 hours in a practicum; and successful completion of a pre-practicum portfolio and a comprehensive examination.

Code	Title	Credits
Required		
CNSL 6114	Introduction to Research and Evaluation in Counselor Education	
CNSL 6151	Professional and Ethical Orientation to Counseling	
CNSL 6153	Counseling Interview Skills	
CNSL 6154	Theories and Techniques of Counseling	
CNSL 6155	Career Counseling	
CNSL 6157	Individual Assessment in Counseling	
CNSL 6161	Group Counseling	
CNSL 6163	Social and Cultural Dimensions - CNS	
CNSL 6169	Counseling Substance Abusers	
CNSL 6171	Family Counseling	
CNSL 6173	Diagnosis and Treatment Planning	
CNSL 6174	Trauma and Crisis Intervention	
CNSL 6185	Internship in Counseling	
CNSL 6186	Advanced Internship in Counseling	
CNSL 6268	Foundations of Clinical Mental Health Counseling	
HDEV 6108	Life Span Human Development	
HDEV 6109	Child Development	

or HDEV 6110	Adolescent Development
or HDEV 8244	Adult and Aging Development
CNSL 6269	Practicum I in Counseling
CNSL 6721	Advanced Clinical Skills

Elective

3 credits in elective courses selected in consultation with the program advisor.

Portfolio and comprehensive examination requirements

Successful completion of pre-practicum portfolio requirements as outlined in the counseling and human development master's student handbook.

Successful completion of the counselor preparation comprehensive examination.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF REHABILITATION COUNSELING WITH LICENSURE ELIGIBILITY

For those facing physical, mental, emotional, or social challenges, rehabilitation counselors offer hope and empowerment. For individuals and their families, these counselors serve as a source of personal support and guidance thus enhancing their quality of life. Ranked 3rd in the nation by U.S. News and World Report and accredited by the Council for Accreditation of Counseling and Related Educational Programs (CACREP), GW's Rehabilitation Counseling with Licensure Eligibility program prepares you to become a skillful Rehabilitation Counselor.

Through intensive coursework, practicum and internship experiences in federal, state, and private settings, and mentoring relationships, you will be able to integrate the critical knowledge and clinical skills necessary to be fully prepared for professional practice. This program encompasses a wide range of counseling theories and practices, including multicultural counseling, attitudinal and environmental barriers for people with disabilities, rehabilitation services, case management, medical and psychosocial aspects of disability, job placement and ethical standards for rehabilitation counselors. Graduates of this program are eligible to apply for licensure and for Certification as a Rehabilitation Counselor (CRC), as well as both public and private employment opportunities. While in the program, students participate in GW's mentorship program. This program pairs you with program graduates who are now working in a variety of

industries to help you network while you engage in first-hand learning.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-rehabilitation-counseling-licensure-eligibility/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits in required courses. In addition, students are required to complete 600 hours in internships (300 hours in each of CNSL 6185 and CNSL 6186) and 100 hours as part of a practicum.

Code	Title	Credits
Required		
CNSL 6114	Introduction to Research and Evaluation in Counselor Education	
CNSL 6151	Professional and Ethical Orientation to Counseling	
CNSL 6153	Counseling Interview Skills	
CNSL 6154	Theories and Techniques of Counseling	
CNSL 6155	Career Counseling	
CNSL 6157	Individual Assessment in Counseling	
CNSL 6161	Group Counseling	
CNSL 6163	Social and Cultural Dimensions - CNS	
CNSL 6171	Family Counseling	
CNSL 6173	Diagnosis and Treatment Planning	
CNSL 6174	Trauma and Crisis Intervention	
CNSL 6185	Internship in Counseling	
CNSL 6186	Advanced Internship in Counseling	
CNSL 6269	Practicum I in Counseling	
CNSL 6270	Practicum II in Counseling	
CNSL 6376	Foundations of Rehabilitation Counseling	
CNSL 6378	Disability Management and Psychosocial Rehabilitation	
CNSL 6380	Job Placement and Supported Employment	

CNSL 6381	Medical and Psychosocial Aspects of Disabilities
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HDEV 6108	Life Span Human Development
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MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF REHABILITATION COUNSELING

The rehabilitation counseling master's program encompasses a wide range of rehabilitation counseling issues, theories, and practices, including multicultural counseling, attitudinal and environmental barriers for people with disabilities, rehabilitation services, case management, medical and psychosocial aspects of disability, job placement, and ethical standards for rehabilitation counselors. Accredited by the The Council for Accreditation of Counseling & Related Educational Programs (CACREP), prepares you to become a skillful Rehabilitation Counselor.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-rehabilitation-counseling/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits in required courses. In addition, students are required to complete 600 hours in internships (300 hours each in CNSL 6185 and CNSL 6186) and 100 hours as part of a practicum.

Code	Title	Credits
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Required

CNSL 6114	Introduction to Research and Evaluation in Counselor Education
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CNSL 6151	Professional and Ethical Orientation to Counseling
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CNSL 6153	Counseling Interview Skills
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CNSL 6154	Theories and Techniques of Counseling
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CNSL 6155	Career Counseling
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CNSL 6157	Individual Assessment in Counseling
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CNSL 6161	Group Counseling
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CNSL 6163	Social and Cultural Dimensions - CNS
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CNSL 6185	Internship in Counseling
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CNSL 6186	Advanced Internship in Counseling
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CNSL 6269	Practicum I in Counseling
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CNSL 6376	Foundations of Rehabilitation Counseling
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CNSL 6378	Disability Management and Psychosocial Rehabilitation
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CNSL 6380	Job Placement and Supported Employment
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CNSL 6381	Medical and Psychosocial Aspects of Disabilities
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HDEV 6108	Life Span Human Development
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MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION

The program examines research and reflective practice related to curriculum, teaching and learning, teacher education and broader educational policies. The program applies curriculum and instruction research and practice in the context of educational reform for diverse student populations. Students become part of a community that links scholars with practicing professionals, policymakers and educational organizations. Master's degree students may choose to work toward improving their practice or conduct research within subject domains of K-12 curriculum or with a concentration in elementary education, reading and literacy, or secondary education.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for additional information.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN ELEMENTARY EDUCATION

The dual master of arts in education and human development in the field of curriculum and instruction with a concentration in elementary education and graduate certificate in teaching English to speakers of other languages (TESOL) program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. The 12 credits earned in the certificate program may be applied toward the master's. The addition of

the TESOL certificate is designed to prepare pre-service and in-service teachers for working with English learners in classrooms in and beyond the United States.

Visit the program website (<http://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>)for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 9 credits in core courses, 15 credits in courses in the concentration, 9 credits in elective courses, and successful completion of the master of arts in education and human development comprehensive examination.

Code	Title	Credits
Elementary education concentration		
CPED 6225	Introduction to International Curricula	
CPED 6305	Foundations of Curriculum Theory	
CPED 6606	Theories of Learning and Development	
EDUC 6615	Internationalizing U.S. Schools	
Electives		
9 credits in elective courses selected in consultation with the program advisor.		
Other requirements		
Successful completion of the master of arts in education and human development comprehensive examination.		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN INTERDISCIPLINARY STUDIES OF LITERACY AND READING EDUCATION

The master of arts in education and human development in the field of curriculum and instruction with a concentration in interdisciplinary studies of literacy and reading education degree program prepares teachers, education professionals, and others with diverse experiences for leadership roles in school and out-of-school settings. The program incorporates traditional and novel contemporary aspects of literacy curriculum and instruction and provides pathways to becoming reading specialists and literacy coaches. Study in theories and practices in the arts, humanities, museums and informal

learning environments, and digital technologies prepares educators for new teaching and learning opportunities.

Visit the program website (<http://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 9 credits in core course, 21 credits in courses in the concentration, successful completion of the master of arts in education and human development comprehensive examination, and completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office.

Code	Title	Credits
Interdisciplinary studies of literacy and reading education concentration		
CPED 6223	Interdisciplinary Elementary School Literacies	
CPED 6289	New Literacies Coach and Reading Specialist	
CPED 6292	Practicum 2: Leadership in Interdisciplinary Literacies	
CPED 6624	Foundations and Research of Literacy and Reading Education	
CPED 6626	Practicum 1: Reading Diagnosis, Assessment, and Solutions	
CPED 6628	Literacies in Informal Learning Environments	
CPED 6691	Interdisciplinary Adolescent Literacies	
Other requirements		
Successful completion of the master of arts in education and human development comprehensive examination.		

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN JEWISH EDUCATION

The master of arts in curriculum and pedagogy with a concentration in Jewish education prepares pre-service and in-service educators to master curriculum development and teaching strategies generally and in the specific disciplines of Bible, rabbinics, and Jewish history. The program also includes research in Jewish experiential education with an understanding that successful educators appreciate educational growth inside and beyond the classroom. The degree offers internship opportunities to help students integrate and implement their learning with their practice while benefiting from mentor evaluation and assessment. Students also have elective options to develop arenas of specific interest. This program does not lead to teacher licensure.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 9 credits in core courses, 18 credits in courses in the concentration, 3 credits in elective courses, and successful completion of the master of arts in education and human development comprehensive examination.

Code	Title	Credits
Jewish education concentration		
CPED 6131	Teaching Jewish History to Middle and High School Students	
CPED 6132	Strategies for Teaching Biblical Texts	
CPED 6133	Rabbinic Judaism and the Teaching of Rabbinic Texts	
CPED 6134	Practicum in Jewish Education (taken for 2 credits)	
CPED 6305	Foundations of Curriculum Theory	
EDUC 6803	Introduction to Experiential Jewish Education (taken for 4 credits)	
Electives		
3 elective credits selected from the following in consultation with the advisor:		

CPED 6606	Theories of Learning and Development
EDUC 6630	International Experiences
HDEV 6109	Child Development
HDEV 6110	Adolescent Development

Comprehensive examination

Successful completion of the master of arts in education and human development comprehensive examination.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF CURRICULUM AND INSTRUCTION WITH A CONCENTRATION IN SECONDARY EDUCATION

The master of arts in education and human development in the field of curriculum and instruction with a concentration in secondary education degree program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership.

Students in this program also can enroll in and receive a graduate certificate in either:

- Incorporating International Perspectives in Education (IIPE) (p. 672) or
- Teaching English Speakers of Other Languages (TESOL) (p. 676).

Certain credits are applied toward both the master's degree and the certificate.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 9 credits in core courses, 27 credits in the concentration, and successful completion of a comprehensive examination.

Code	Title	Credits
Secondary education concentration		
CPED 6305	Foundations of Curriculum Theory	

The remaining 21 credits should be selected in consultation with the departmental advisor.

Master of Arts in Education and Human Development comprehensive exam required.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EARLY CHILDHOOD SPECIAL EDUCATION

The early childhood special education program offers a non-categorical program that prepares students to work with children who are typically developing, those with disabilities and their respective families. Graduates who focus on the birth-to-age-3 group work in home-based early intervention programs, Early Head Start or developmental clinics, and can pursue a concentration in infant special education. A 3-to-5-year-old focus prepares graduates to teach special education preschool or Head Start or to consult with community-based inclusive preschools. Those interested in teaching kindergarten through third grade are prepared to work in special education resource rooms or inclusive classrooms.

Program graduates meet the competencies recommended by NAEYC and DEC in the following areas:

- Child development and learning
- Curriculum development and implementation
- Working with families
- Assessment of young children
- Cultural, linguistic and economic diversity
- Assistive and instructional technology
- A concentration in infant special education is also offered.

Visit the program website (<http://gsehd.gwu.edu/programs/masters-early-childhood-special-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 39 credits. Successful completion of the master of arts in education and human development comprehensive examination and completion of the relevant teacher licensure assessments (see below) are required.

Code	Title	Credits
Core		
EDUC 6114	Introduction to Quantitative Research	

SPED 6222 Legal Issues and Public Policy for Individuals With Disabilities

SPED 6240 Family Support and Guidance in Special Education
or SPED 6100 Selected Topics

SPED 6261 Practicum: Methods and Materials for Young Children with Disabilities

SPED 6266 The Development of Language and Literacy

SPED 6268 Development of Children and Youth with Disabilities

SPED 6269 Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities

SPED 6290 Affective Development and Behavior Management in Special Education

CPED 6622 Foundations of Reading Development

SPED 6260 Developmental Assessment in Special Education

SPED 6262 Formal Assessment of Young Children with Disabilities

SPED 6993 Internship: Teaching Young Children with Disabilities (taken for six credits)

Master of Arts in Education and Human Development comprehensive exam required

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATION POLICY STUDIES

The program is designed for students who wish to develop skills in policy research, program evaluation, and the technical, political, and managerial aspects of education policy. Emphasis is placed on developing both an understanding of the political and social environments affecting education policy and the competencies needed to develop policy options, analyze their potential, select the most promising, implement policies effectively, and evaluate impacts. Internships are offered in a variety of federal, state, and local agencies. The 36-credit-hour program includes 12 elective credits that can be used

for courses, independent research, and internships in federal, state, or professional organizations.

Visit the program website (<http://gsehd.gwu.edu/programs/masters-education-policy-studies/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6114	Introduction to Quantitative Research	
or EDUC 6116	Introduction to Educational Statistics	
EDUC 6314	History of American Education Reform	
EDUC 6368	Leadership and Education	
EDUC 6371	Education Policy	
EDUC 6381	Program Evaluation: Theory and Practice	
EDUC 6388	Analysis of Education Policy Issues	
EDUC 8122	Qualitative Research Methods	
One of the following		
EDUC 6601	International and Comparative Education	
EDUC 6602	Regional Studies in International Education	
EDUC 6610	Programs and Policies in International Education	
EDUC 6650	Education and National Development	
Electives		
12 credits in elective courses selected in consultation with the program advisor.		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATIONAL LEADERSHIP AND ADMINISTRATION

GW's educational leadership and administration program has garnered national recognition from the Educational Leadership Constituent Council (ELCC) and is nationally accredited and

recognized as a program of distinction by the National Council for Accreditation of Teacher Education (NCATE).

The program has been designed for the working professional in the K-12 arena and diverse school communities interested in various school-based and central office leadership and supervisory positions, increased responsibility in teaching, and advanced levels of professional responsibility.

The program is designed to meet the required credits, courses, and field experiences that are part of the administrative licensure process in the District of Columbia, Commonwealth of Virginia, and many other states. Graduates are prepared for positions of assistant principal, principal, and instructional supervision.

Visit the program website (<http://gsehd.gwu.edu/programs/educational-leadership-administration-0/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
EDUC 6114	Introduction to Quantitative Research	
EDUC 6232	Supervision of Curriculum, Instruction, and Assessment	
EDUC 6234	Foundations of K-12 Educational Leadership	
EDUC 6236	School Law and Policy	
EDUC 6238	Leadership for Equity and Social Justice	
EDUC 6240	Instructional Leadership for School Improvement	
EDUC 6242	Administrative Issues in Education	
EDUC 6244	School, Family, and Community Engagement	
EDUC 6246	School Finance and Resource Management for School Leaders	
EDUC 6287	Internship: Administration (taken for 3 credits)	

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EDUCATIONAL TECHNOLOGY LEADERSHIP

The program is founded on three beliefs: that leadership skills and technological competence are fundamental to the appropriate and successful utilization of technologies in educational settings; that access to the requisite knowledge should be universal, despite the barriers of distance, personal physical limitations and lifestyle; and that educational technologies focus on improving human performance and learning. The program is guided by commitment to continuing improvement as technology changes through:

- The development and delivery of effective distance education methods
- Support services for the distance-learning community
- Influence upon the creation of knowledge and practices
- The development of leaders in the global expansion of educational technology
- Emphasis on the interaction of individual, corporate, governmental and educational interests.

Visit the program website (<http://gsehd.gwu.edu/programs/educational-technology-leadership/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 24 credits in required courses and 12 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6114	Introduction to Quantitative Research	
or EDUC 6116	Introduction to Educational Statistics	
EDUC 6368	Leadership and Education	
EDUC 6401	Foundations in Educational Technology	
EDUC 6402	Trends and Issues in Educational Technology	
EDUC 6403	Educational Hardware Systems	
EDUC 6404	Managing Computer Applications	
EDUC 6405	Developing Multimedia Materials	
EDUC 6406	Instructional Design	
Elective		

Four of the following

EDUC 6371	Education Policy
EDUC 6421	Critical Issues in Distance Education
EDUC 6422	Instructional Needs Assessment and Analysis
EDUC 6425	Developing Effective Training with Technology
EDUC 6426	Computer Interface Design for Learning
EDUC 6427	Advanced Instructional Design
EDUC 6428	Developing Digital Professional Portfolios

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF HIGHER EDUCATION ADMINISTRATION

Students in the master's program in higher education administration (HEA) acquire the skills and knowledge needed for success in their chosen field. They undertake coursework, internships and other professional opportunities.

The HEA master's program is designed to provide students with the skills and knowledge for successful work in entry- and mid- career professional positions in institutions of higher education, post-secondary education and other related organizations. Students participate in active coursework, field-experiences/internships, and other professional opportunities so that they may become engaged and thoughtful practitioners in higher education and student affairs. To prepare students for professional requirements, the master's program provides four concentrations in student affairs administration, higher education policy & finance, college & university administration, and international higher education.

Students in the master's program acquire the skills and knowledge needed for success in their chosen field. They undertake coursework, internships and other professional opportunities.

Visit the program website (<http://gsehd.gwu.edu/programs/higher-education-administration-0/>) for additional information.

ADMISSIONS

Admission Fall - Rolling admissions (January 15 to be
deadlines: considered for merit-based tuition support)

Standardize test scores: Either the GRE general test (institutional code 5246) or the Miller Analogies Test (institutional code 1047) is required. May be waived for applicants with a cumulative undergraduate GPA of 3.3 or above.

Recommendations: Two (2) recommendations (preferably one from a faculty member and the other from a professional supervisor) required:

Prior academic records: Transcripts are required from all colleges and universities attended, whether or not credit was earned, the program was completed, or the credit appears as transfer credit on another transcript. Unofficial transcripts from all colleges and universities attended should be uploaded to your online application. Official transcripts are required only of applicants who are offered admission.

Transcripts from institutions outside the United States must be accompanied by an official transcript evaluation from an accredited independent evaluating agency. Please be sure you request a detailed evaluation that includes all course titles, credit hours, grade-point average (GPA), United States degree equivalency, and date of degree conferral. Please see the list of acceptable foreign credential evaluation services.

Statement of purpose: In an essay of 250 to 500 words, state your purpose in undertaking graduate study at George Washington University, describing your academic objectives, research interests, and career plans. Also discuss your related qualifications, including collegiate, professional, and community activities and any other substantial accomplishments not already mentioned in the application.

Additional requirements: A resumé is required.

International applicants only: Please review International Applicant Information (<https://graduate.admissions.gwu.edu/international-student-application-requirements>) (<https://graduate.admissions.gwu.edu/international-student-application-requirements/>) carefully for details on required documents, earlier deadlines for applicants requiring an I-20 or DS-2019 from GW, and English language requirements.

Supporting documents not submitted online should be mailed to:

Office of Graduate Admissions
Graduate School of Education and Human Development
The George Washington University
2136 G Street, NW
Washington, DC 20052

Contact for questions:

gsehdadm@gwu.edu ~ 202-994-9283 (phone) ~ 202.994.7207 (fax)

9:30 am – 6:00 pm, Monday through Friday

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 12 credits in required core courses, 12 credits in one concentration (15 credits in student affairs administration), 6 credits in elective courses (3 in student affairs administration), and a capstone project.

Code	Title	Credits
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Required

EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
or EDUC 6116	Introduction to Educational Statistics	

EDUC 6500	Introduction to Student Affairs and Higher Education	
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EDUC 6510	Administration of Higher Education	
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EDUC 6585	Master's Internship in Higher Education Administration	
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EDUC 6590	Capstone in Higher Education Administration (Taken for 0 credits)	
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Code	Title	Credits
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General administration concentration:

EDUC 6540	Group and Organizational Theories	
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EDUC 6560	Legal Problems in Higher Education	
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EDUC 6555	Higher Education Policy	
or EDUC 6565	Financing Higher Education	

EDUC 8560	Case Studies in Higher Education Administration	
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Electives

6 credits in elective courses to be selected in consultation with the advisor.

Code	Title	Credits
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Higher education policy and finance concentration:

EDUC 6555	Higher Education Policy	
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EDUC 6565	Financing Higher Education	
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EDUC 6560	Legal Problems in Higher Education	
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Electives

6 credits in elective courses to be selected in consultation with the advisor.

Code	Title	Credits
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International education concentration:

EDUC 6602	Regional Studies in International Education	
or EDUC 6615	Internationalizing U.S. Schools	
or EDUC 6630	International Experiences	
EDUC 6610	Programs and Policies in International Education	
EDUC 6620	Strategies and Analysis in International Education	
EDUC 8560	Case Studies in Higher Education Administration	

Electives

6 credits in elective courses to be selected in consultation with the advisor.

Code	Title	Credits
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Student affairs administration concentration:

EDUC 6520	Foundations of College Student Development	
EDUC 6525	Managing College Student Services Programs	
EDUC 6530	Intercultural Campus Leadership	
EDUC 6540	Group and Organizational Theories	
EDUC 6585	Master's Internship in Higher Education Administration	

Electives

3 credits in elective courses to be selected in consultation with the advisor.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF EXPERIENTIAL JEWISH EDUCATION

GW's program in experiential education and Jewish cultural arts, the only master's degree of its kind in the United States, offers an intensive 13-month, cross-disciplinary curriculum in Jewish cultural arts, experiential Jewish education, and museum education. At GW, content and creativity go hand in hand.

Experiential Jewish education courses provide the tools to integrate Jewish culture and the arts into the lives of contemporary audiences. Museum education courses offer a hands-on approach to experiential education through site visits and projects.

The program prepares the next generation of professionals and cultural leaders in Jewish museums, JCCs, college campus organizations, foundations, summer camps, and Jewish cultural arts management.

Visit the program website (<http://gsehd.gwu.edu/programs/experiential-education-jewish-cultural-arts/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 9 credits in required core courses, 9 credits in specialization courses, and 12 credits in elective courses.

Code	Title	Credits
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Core courses

EDUC 6810	Paideia and Jewish Education	
EDUC 6803	Introduction to Experiential Jewish Education	
EDUC 6804	Applied Research in Experiential Jewish Education	

Specialization

Students complete one of the 9-credit streams outlined below or another combination of courses totalling 9 credits selected in consultation with the program advisor.

Jewish cultural arts stream

JSTD 6201	Jewish Life in Contemporary America	
JSTD 6202	Multiple Lives: The Fate of Jewish Cultural Expression	

JSTD 6211	Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience
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Israel education stream

EDUC 6811	Foundations of Contemporary Israel
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EDUC 6812 American Jews and Modern Israel

EDUC 6813	The Israel Educational Experience
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Social justice and community engagement stream

JSTD 6201	Jewish Life in Contemporary America
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EDUC 6806 Jews, Social Justice, and Activism

MGT 6285	Social Entrepreneurship (or approved elective)
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Electives

12 credits selected from the following:

EDUC 6805 Capstone in Experiential Education and Jewish Cultural Arts

EDUC 6807 Fieldwork in Experiential Jewish Education

and/or 6 to 12 credits of approved professional or academic specialization courses selected in consultation with the program advisor.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF INTERDISCIPLINARY SECONDARY TRANSITION SERVICES

The online master of arts in education and human development in interdisciplinary secondary transition services prepares you to be a change agent in teaching, leadership and support roles. The master's program will also assist youth with disabilities and at-risk youth to make successful transitions through high school to post-secondary education, employment and independent adulthood.

The program meets the Transition Guideposts of the U.S. Department of Labor National Collaborative on Workforce & Disability for Youth (NCWD-Youth) and the CEC Advanced Knowledge and Skills Base for Transition Specialists (2008).

This nationally-recognized program provides critical knowledge and experience in the ever-emerging field of secondary transition based upon legislative requirements, research, and evidence-based practices. With a strong social justice focus, you are prepared to effectively lead quality

transition programs and services for all youth with disabilities in various settings.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-interdisciplinary-secondary-transition-services/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 30 credits in required courses and 6 credits in a field of specialization, and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
SPED 6210	Universal Design for Learning and Assessment	
SPED 6214	Applied Research in Secondary Transition Practices	
SPED 6222	Legal Issues and Public Policy for Individuals With Disabilities	
SPED 6230	Vocational Assessment of Individuals with Disabilities (taken for 3 credits)	
SPED 6231	Curriculum and Instructional Methods in Special Education and Transition	
SPED 6233	Curriculum in Special Education	
SPED 6235	Employment Models for Individuals with Disabilities	
SPED 6236	Introduction to Career and Career-Technical Education and Transition Services	
SPED 6255	Collaboration with Systems and Families	
SPED 6995	School- and Community-Based Internship in Special Education and Transition	
6 credits in one area of specialization:		
Acquired brain injury specialization		
SPED 6223	Introduction to Brain Injury: Programs, Policies, and Resources	
SPED 6224	Brain Function and Impact of Brain Injury on Learning and Education	
or		
Autism spectrum disorder specialization		

SPED 6253	Introduction to Autism Spectrum Disorders
SPED 6254	Autism Spectrum Disorders and Transition to Employment and Post-Secondary Life

Comprehensive examination

Successful completion of a comprehensive examination is required of all students.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF INTERNATIONAL EDUCATION

Enrolled students, representing interests as far-ranging as educational programs for children in Ghana to international study programs in Asia, learn about traditions and systems of education in other nations and cultures. They also acquire skills and experience relevant to working in these programs. A growing number of internship opportunities, both in the United States and abroad, are made available to our students, who consistently earn prestigious full-time positions after graduation. The international education program boasts highly placed alumni in organizations such as USAID, the World Bank, the Agency for Educational Development, Save the Children, the Academy for Educational Development and the Institute of International Education, as well as in governments and universities all over the world. International education program faculty regularly draws on local experts and professionals from around the District of Columbia to enhance the curriculum. The program offers expertise in three areas: education and development, global education, and international higher education.

Students in this program also can enroll in and receive a graduate certificate in either:

- Assessment Testing and Measurement in Education (p. 668)
- Incorporating International Perspectives in Education (IIPE) (p. 672) or
- Teaching English Speakers of Other Languages (TESOL) (p. 676).

Certain credits are applied toward both the master's degree and the certificate.

Visit the program website (<http://gsehd.gwu.edu/programs/international-education/>) for additional information.

REQUIREMENTS

Required: 30 credits, including 18 credits in required courses, 9 credits in courses in a specialization, and 3 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
or EDUC 6114	Introduction to Quantitative Research	
or		
EDUC 6116	Introduction to Educational Statistics	
And five of the following:		
EDUC 6601	International and Comparative Education	
EDUC 6602	Regional Studies in International Education	
EDUC 6610	Programs and Policies in International Education	
EDUC 6620	Strategies and Analysis in International Education	
EDUC 6630	International Experiences	
EDUC 6631	Internship: International Education	
EDUC 6640	Selected Topics in International Education	
EDUC 6660	Capstone in International Education	
Education and Development Study Stream		
EDUC 6610	Programs and Policies in International Education (Policy Issues in International Education: Developing Countries)	
EDUC 6620	Strategies and Analysis in International Education (Planning Education Reform in Developing Countries)	
Global Education Study Stream		
EDUC 6610	Programs and Policies in International Education (Migration and Mobility: Exploring Citizenship and Education in the Global Era)	
EDUC 6615	Internationalizing U.S. Schools	
International Higher Education Stream		

EDUC 6610 Programs and Policies in International Education (International Higher Education)

EDUC 6620 Strategies and Analysis in International Education (Managing Study Abroad and International Student Offices)

Specialization

9 credits in a professional, academic, or regional specialization selected in consultation with the program advisor.

Elective

3 credits of approved electives selected in consultation with the program advisor.

Up to 6 additional credits of internship may be required for students who do not have international education related experience.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF LANGUAGE EDUCATION, TEACHING WORLD LANGUAGES K-12 LICENSURE CONCENTRATION

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional requirements are listed below.

Code	Title	Credits
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Required core courses

CPED 6551	Second Language Instructional Methods	
CPED 6557	Second Language Acquisition	
CPED 6606	Theories of Learning and Development	
CPED 6608	Development and Diversity	
CPED 6176	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
CPED 6627	Teaching Second Language Reading and Writing	
EDUC 6114	Introduction to Quantitative Research	

or EDUC 6112 Foundations of Assessment, Testing, and Measurement in Education

or CPED 6339 Teachers as Researchers

or a course approved by the advisor.

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional program requirements are listed below.

Code	Title	Credits
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Required for the concentration

6 credits in courses selected from the following:

CPED 6532	Professional Internship in Middle School Education	
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CPED 6534	Professional Internship in Secondary Education	
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CPED 6635	Professional Internship in Elementary Education	
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3 credits in elective courses selected from the following in consultation with academic advisor

CHIN 6201	Second Language Acquisition of Mandarin Chinese	
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CPED 6100	Special Topics	
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CPED 6239	Practicum in Curriculum and Instruction	
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CPED 6624	Foundations and Research of Literacy and Reading Education	
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EDUC 6610	Programs and Policies in International Education	
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EDUC 6615	Internationalizing U.S. Schools	
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SPED 6290	Affective Development and Behavior Management in Special Education	
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Additional program requirements

Completion of appropriate Praxis assessment.

Completion of the Oral Proficiency Interview (OPI).

Demonstration of language and culture knowledge through the undergraduate transcript and/or written reflection.

Completion of a portfolio, which serves in lieu of a comprehensive examination.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF LANGUAGE EDUCATION, TEACHING WORLD LANGUAGES NON-LICENSURE CONCENTRATION

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional requirements are listed below.

Code	Title	Credits
Required core courses		
CPED 6551	Second Language Instructional Methods	
CPED 6557	Second Language Acquisition	
CPED 6606	Theories of Learning and Development	
CPED 6608	Development and Diversity	
CPED 6176	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
CPED 6627	Teaching Second Language Reading and Writing	
EDUC 6114	Introduction to Quantitative Research	
or EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
or CPED 6339	Teachers as Researchers	
or a course approved by the advisor.		

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional program requirements are listed below.

Code	Title	Credits
Required for the concentration		
9 credits in courses selected from the following in consultation with the academic advisor:		
CHIN 6201	Second Language Acquisition of Mandarin Chinese	
CPED 6100	Special Topics	

CPED 6239	Practicum in Curriculum and Instruction
CPED 6624	Foundations and Research of Literacy and Reading Education
EDUC 6610	Programs and Policies in International Education
EDUC 6615	Internationalizing U.S. Schools
SPED 6290	Affective Development and Behavior Management in Special Education

Additional program requirements

Demonstration of language and culture knowledge through the undergraduate transcript and/or written reflection.

Completion of a portfolio, which serves as a comprehensive examination

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF LANGUAGE EDUCATION, TESOL K-12 LICENSURE CONCENTRATION

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional requirements are listed below.

Code	Title	Credits
Required core courses		
CPED 6551	Second Language Instructional Methods	
CPED 6557	Second Language Acquisition	
CPED 6606	Theories of Learning and Development	
CPED 6608	Development and Diversity	
CPED 6176	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
CPED 6627	Teaching Second Language Reading and Writing	
EDUC 6114	Introduction to Quantitative Research	
or EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	

or CPED 6339 Teachers as Researchers

or a course approved by the advisor.

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional program requirements are listed below.

Code	Title	Credits
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Required for the concentration

CPED 6556	Linguistic Applications in English as a Second Language	
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6 credits in courses selected from the following in consultation with the advisor:

CPED 6532	Professional Internship in Middle School Education	
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CPED 6534	Professional Internship in Secondary Education	
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CPED 6635	Professional Internship in Elementary Education	
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Additional program requirements

Completion of appropriate PRAXIS assessments.

Completion of a portfolio, which serves in lieu of a comprehensive examination.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF LANGUAGE EDUCATION, TESOL NON-LICENSURE CONCENTRATION

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 21 credits in required core courses and a 9-credit concentration. Additional requirements are listed below.

Code	Title	Credits
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Required core courses

CPED 6551	Second Language Instructional Methods	
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CPED 6557	Second Language Acquisition	
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CPED 6606	Theories of Learning and Development	
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CPED 6608	Development and Diversity	
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CPED 6176	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
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CPED 6627	Teaching Second Language Reading and Writing	
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EDUC 6114	Introduction to Quantitative Research	
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or EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education	
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or CPED 6339	Teachers as Researchers	
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or a course approved by the advisor.

Code	Title	Credits
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Required for the concentration

CPED 6556	Linguistic Applications in English as a Second Language	
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6 credits in courses selected from the following list in consultation with the advisor:

CHIN 6201	Second Language Acquisition of Mandarin Chinese	
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CPED 6100	Special Topics	
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CPED 6239	Practicum in Curriculum and Instruction	
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CPED 6624	Foundations and Research of Literacy and Reading Education	
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EDUC 6610	Programs and Policies in International Education	
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EDUC 6615	Internationalizing U.S. Schools	
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SPED 6290	Affective Development and Behavior Management in Special Education	
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Additional requirement

Successful completion of a portfolio, which serves as a comprehensive examination.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF ORGANIZATIONAL LEADERSHIP AND LEARNING

Students in the organizational leadership and learning master's program focus on increasing the learning capacity of individuals, teams, and organizations to optimize growth and effectiveness. In coursework, students learn about

interrelationships among people, organizations, and learning resulting in leaders with high self/others-awareness. The program includes a solid foundation in organization, leadership, and concepts with an applied emphasis. Electives are chosen with an adviser in the areas of organizational development, human performance and learning or training/development and may include two courses from other departments within the university or from the Washington Metropolitan Area Consortium of Universities.

Visit the program website (<http://gsehd.gwu.edu/programs/organizational-leadership-learning/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 21 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
HOL 6700	Human Behavior and Learning in Organizations	
HOL 6701	Adult Learning	
HOL 6702	Organizational Change	
HOL 6704	Leadership in Organizations	
HOL 6709	Leadership Development	
HOL 6721	Assessing the Impact of Organizational Change Using Qualitative and Quantitative Methods	
HOL 6746	Work Groups and Teams in Organizations	
Electives		
9 credits in elective courses, selected in consultation with advisor		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SCHOOL COUNSELING

The master's program in school counseling includes classroom, laboratory and field-site education and training. The program also includes a two-semester internship during which interns deliver counseling services under supervision both in the program's Community Counseling Services Center, a fully equipped training facility, and at schools in the community. Accredited by the Council for the Accreditation of Counseling and Related Education Programs (CACREP) and the National

Council for the Accreditation of Teacher Education (NCATE), the program emphasizes reflective practice, innovate inquiry and responsible social action.

Visit the program website (<http://gsehd.gwu.edu/programs/school-counseling/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits, including 54 credits in required courses and 6 credits in elective courses. Three elective credits must be from either a child development or an adolescent development course.

Students also must complete 600 hours as part of the required internships (300 hours in each of CNSL 6185 and CNSL 6186) and 100 hours as part of the required practicum (CNSL 6269).

Code	Title	Credits
Required		
CNSL 6114	Introduction to Research and Evaluation in Counselor Education	
CNSL 6151	Professional and Ethical Orientation to Counseling	
CNSL 6153	Counseling Interview Skills	
CNSL 6154	Theories and Techniques of Counseling	
CNSL 6155	Career Counseling	
CNSL 6157	Individual Assessment in Counseling	
CNSL 6161	Group Counseling	
CNSL 6163	Social and Cultural Dimensions - CNS	
CNSL 6169	Counseling Substance Abusers	
CNSL 6171	Family Counseling	
CNSL 6173	Diagnosis and Treatment Planning	
CNSL 6174	Trauma and Crisis Intervention	
CNSL 6185	Internship in Counseling	
CNSL 6186	Advanced Internship in Counseling	
CNSL 6269	Practicum I in Counseling	
CNSL 6466	Foundations of School Counseling K-12	
CNSL 6467	Coordination of Comprehensive School Counseling Services	
HDEV 6108	Life Span Human Development	
Electives		

6 credits in elective courses selected in consultation with advisor.

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SECONDARY SPECIAL EDUCATION

GW's nationally recognized secondary special education (SSE) master's program has a strong focus on social justice, and graduates of this program are effective advocates for enhanced learning, classroom experiences, and outcomes for all students. The program focuses on preparing teachers to work in secondary (middle and high) schools and results in teacher licensure in addition to the master's degree. The SSE model is an innovative approach to prepare special education teachers who have the knowledge and skills to be psychoeducators. The program addresses teacher and student well being, efficacy, resilience, and social emotional competence, factors that lead to improved social-emotional learning and academic performance among students and teachers. The program also bridges best practice and new learning in adolescent development to optimize how teachers design and deliver innovative instruction in classrooms to maximize student engagement and learning. A small cohort design provides significant mentoring and support. Graduates of this program are highly sought after for post-program employment, as well as demonstrate teacher-retention rates many times higher than the national average.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-secondary-special-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits in required courses, successful completion of a master's comprehensive examination, and completion of the relevant teacher licensure assessments (see below).

Code	Title	Credits
Required		
SPED 6201	Overview and Legal Issues in Educating Exceptional Learners	
SPED 6203	Research and Practice: Diagnostic Reading for Exceptional Learners	
SPED 6231	Curriculum and Instructional Methods in Special Education and Transition	
SPED 6236	Introduction to Career and Career-Technical Education and Transition Services	

SPED 6238	Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities
SPED 6239	Teaching and Collaboration for Professionals Working with Students with Disabilities
SPED 6280	Developmental Assessment of Adolescents
SPED 6288	Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities
SPED 6290	Affective Development and Behavior Management in Special Education
SPED 6992	Behavior Management Practicum: Adolescents with Disabilities
SPED 6996	Teaching Internship in Transition Special Education

Comprehensive examination

Successful completion of a comprehensive examination is required of all students.

Teacher Licensure

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SPECIAL EDUCATION FOR CHILDREN WITH EMOTIONAL AND BEHAVIORAL DISABILITIES

The Graduate School of Education and Human Development offers a 39-credit-hour master's degree program for teachers of students with emotional and behavioral disabilities (EBD) in a professional development school model. Graduate students complete a two-semester clinical internship at a regional partner school during the day and attend courses at night. Student interns receive intensive video supervision on site and participate in a learning community to improve outcomes of elementary-aged students with the primary diagnosis of EBD.

Visit the program website (<http://gsehd.gwu.edu/programs/special-education-children-emotional-behavioral-disorders/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 34 credits in required courses, successful completion of the master of arts in education and human development comprehensive examination, and completion of the relevant teacher licensure assessments (see below).

Code	Title	Credits
Required		
CPED 6224	Diagnostic Teaching of Reading: K-6	
CPED 6412	Elementary School Curriculum and Methods (taken for 4 credits)	
SPED 6201	Overview and Legal Issues in Educating Exceptional Learners	
SPED 6202	Research and Current Trends in Special Education: Teacher Decision Making	
SPED 6238	Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities	
SPED 6239	Teaching and Collaboration for Professionals Working with Students with Disabilities	
SPED 6260	Developmental Assessment in Special Education	
SPED 6288	Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities	
SPED 6290	Affective Development and Behavior Management in Special Education	
SPED 6990	Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher	
SPED 6991	Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher	
Master of Arts in Education and Human Development comprehensive exam		
Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office		

MASTER OF ARTS IN EDUCATION AND HUMAN DEVELOPMENT IN THE FIELD OF SPECIAL EDUCATION FOR CULTURALLY AND LINGUISTICALLY DIVERSE LEARNERS

The master's program in special education for culturally and linguistically diverse learners is one the few programs in the country that prepares educators to meet the cultural, language, social, and learning needs of a growing number of culturally and linguistically diverse, and/or exceptional students. The program emphasizes culturally responsive instruction, assessment and service practices in order to prepare professionals to distinguish—and differentiate appropriately—between students with a disability and students who are in the process of second language acquisition. The master's program combines 45 credit hours of coursework with field-based experience and mentoring. It is nationally recognized by NCATE and leads to K-12 certification in ESOL, special education and bilingual special education.

Visit the program website (<http://gsehd.gwu.edu/programs/special-education-culturally-linguistically-diverse-learners/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits in required courses; and successful completion of the master of arts in education and human development comprehensive examination; and completion of the relevant teacher licensure assessments (see below).

Code	Title	Credits
Required		
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6627	Teaching Second Language Reading and Writing	
EDUC 6114	Introduction to Quantitative Research	
SPED 6266	The Development of Language and Literacy	
SPED 6268	Development of Children and Youth with Disabilities	

SPED 6275	The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends
SPED 6276	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student (taken twice)
SPED 6277	Teaching Culturally and Linguistically Diverse Students with Disabilities
SPED 6997	Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities (taken for 3 credits)
Master of Arts in Education and Human Development comprehensive exam required	

Completion of the relevant teacher licensure assessments (i.e., PRAXIS) required by the District of Columbia Educator Licensure Services Office

MASTER OF ARTS IN TEACHING IN THE FIELD OF MUSEUM EDUCATION

Our graduates come from diverse academic and professional backgrounds. They qualify for positions in art, history or science museums; children's museums; zoos; aquariums and historical societies or sites. With the assistance of a strong alumni base and valuable relationships with local professionals, about 85 percent of the Museum Education Program's graduates from the past decade currently hold museum education or related positions. They most often serve as directors of education, with many becoming museum directors. Graduates also hold positions in professional associations, government agencies, private foundations, schools and universities.

Visit the program website (<http://gsehd.gwu.edu/programs/museum-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 27 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
EDUC 6701	Museums as Institutions I: Fundamentals	
EDUC 6702	Facilitating Museum Learning I: Fundamentals	
EDUC 6703	Museum Audiences	

EDUC 6704	Facilitating Museum Learning II: Field Placement and Seminar (taken for 6 credits)
EDUC 6705	Museums as Institutions II: Field Placement and Seminar (taken for 6 credits)
EDUC 6706	Evaluating Museum Learning
EDUC 6707	Museum Proposal Writing

Electives

6 credits in elective courses.

Elective courses should be selected in consultation with the program advisor.

DUAL BA WITH A MAJOR IN ENGLISH AND MED IN THE FIELD OF SECONDARY EDUCATION WITH A CONCENTRATION IN ENGLISH

The Columbian College of Arts and Sciences and the Graduate School of Education and Human Development offer a dual bachelor of arts with a major in English (p. 248) and master of education in secondary education with a concentration in English (p. 636) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

DUAL BA WITH A MAJOR IN HISTORY AND MED IN THE FIELD OF SECONDARY EDUCATION WITH A CONCENTRATION IN SOCIAL STUDIES

The Columbian College of Arts and Sciences and the Graduate School of Education and Human Development offer a dual bachelor of arts with a major in history (p. 308) and master of education in secondary education with a concentration in social studies (p. 636) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-secondary-education/>) for additional information.

DUAL BA WITH A MAJOR IN SPANISH AND LATIN AMERICAN LANGUAGES, LITERATURES, AND CULTURES AND MED IN SECONDARY EDUCATION WITH A CONCENTRATION IN FOREIGN LANGUAGE EDUCATION

Columbian College's Department of Romance, German, and Slavic Languages and Literatures and the Graduate School of Education and Human Development offer a dual bachelor of arts with a major in Spanish (p. 464) and master of education in the field of secondary education with a concentration in foreign language education (p. 636). Undergraduate students take 6 graduate credits as part of their degree program, thereby decreasing the number of credits normally required for the master's degree. Students in the combined program must complete all requirements for both degrees. By completing the requirements for the MEd, students are eligible for K-12 licensure in world language teaching, Spanish.

Students apply for and gain admission to the master's program in their junior year, assuming they are progressing satisfactorily in meeting Spanish content area requirements. Consult Spanish & Latin American Languages, Literatures & Cultures (<https://rgsll.columbian.gwu.edu/spanish/>) for more details.

DUAL MAED&HD IN CURRICULUM AND INSTRUCTION, ELEMENTARY EDUCATION CONCENTRATION, AND GRADUATE CERTIFICATE IN INCORPORATING INTERNATIONAL PERSPECTIVES IN EDUCATION

The dual master of arts in education and human development in the field of curriculum and instruction with a concentration in elementary education (p. 640) and graduate certificate in incorporating international perspectives in education (p. 672) (IIPE) program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. The 12 credits earned in the certificate program may be applied toward the master's. The addition of the IIPE certificate is designed to allow students to pursue individual interests while providing a foundation in internationalization as it relates to school systems and the development of curriculum in K-12 settings.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for more details.

DUAL MAED&HD IN CURRICULUM AND INSTRUCTION, ELEMENTARY EDUCATION CONCENTRATION, AND GRADUATE CERTIFICATE IN TESOL

The dual master of arts in education and human development in the field of curriculum and instruction with a concentration in elementary education (p. 640) and graduate certificate in teaching English to speakers of other languages (p. 676) (TESOL) program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. The 12 credits earned in the certificate program may be applied toward the master's. The addition of the TESOL certificate is designed to prepare pre-service and in-service teachers for working with English learners in classrooms in and beyond the United States.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for more details.

DUAL MAED&HD IN CURRICULUM AND INSTRUCTION, SECONDARY EDUCATION CONCENTRATION, AND GRADUATE CERTIFICATE IN INCORPORATING INTERNATIONAL PERSPECTIVES IN EDUCATION

The dual master of arts in education and human development in the field of curriculum and instruction with a concentration in secondary education (p. 642) and graduate certificate in incorporating international perspectives in education (p. 672) (IIPE) program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. The 12 credits earned in the certificate program may be applied toward the master's. The addition of the IIPE certificate is designed to allow students to pursue individual interests while providing a foundation in internationalization as it relates to school systems and the development of curriculum in K-12 settings.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for more details.

DUAL MAED&HD IN CURRICULUM AND INSTRUCTION, SECONDARY EDUCATION CONCENTRATION, AND GRADUATE CERTIFICATE IN TESOL

The dual MAEd&HD in the field of curriculum and instruction with a concentration in secondary education (p. 642) and graduate certificate in teaching English to speakers of other languages (TESOL) (p. 676) program prepares teachers and other educational personnel for increased responsibilities in the planning, implementation, research, and evaluation of curriculum and instruction. The program of study includes curriculum development, research and evaluation of instructional practice, teacher education, work with special populations, and school policy and leadership. The addition of the TESOL certificate is designed to prepare pre-service and in-service teachers for working with English learners in classrooms within and beyond the United States.

The 12 credits required for the certificate may be applied toward the master's degree program requirements. Students in the combined program must complete all requirements for both the MAEd&HD and the certificate.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-curriculum-and-instruction/>) for more details.

DUAL MAED&HD IN INTERNATIONAL EDUCATION AND GRADUATE CERTIFICATE IN ASSESSMENT, TESTING, AND MEASUREMENT

The dual MAEd&HD in the field of international education (p. 649) and graduate certificate in assessment, testing, and measurement (p. 668) (ATM) is designed for individuals who are entering or advancing in positions associated with training, education, adult learning, and development activities in diverse settings that require international and intercultural understanding. Students are equipped with the knowledge and skills to become informed and active scholar-practitioners in international education, with opportunities to specialize in international higher education, international education development, and global education. The addition of the ATM certificate is designed to prepare students with specific research skills in measurement and assessment.

The 12 credits earned in the graduate certificate may be counted toward requirements for the master's degree. All requirements for both programs must be fulfilled.

Visit program website (<https://gsehd.gwu.edu/programs/masters-international-education/>) for additional information.

DUAL MAED&HD IN INTERNATIONAL EDUCATION AND GRADUATE CERTIFICATE IN INCORPORATING INTERNATIONAL PERSPECTIVES IN EDUCATION

The dual MAEd&HD in the field of international education (p. 649) and graduate certificate in incorporating international perspectives in education (p. 672) (IPE) program is designed for individuals who are entering or advancing in positions associated with training, education, adult learning, and development activities in diverse settings that require international and intercultural understanding. Students are equipped with the knowledge and skills to become informed and active scholar-practitioners in international education, with opportunities to specialize in international higher education, international education development, and global education. In addition, students acquire tools, methods, and habits of analysis that enable them to play a variety of roles as leaders and change agents. The addition of the IPE certificate is designed to allow students to develop specialized knowledge of internationalization as it relates to school systems and the development of internationalized curriculum in K-12 settings.

The 12 credits earned in the graduate certificate may be counted toward requirements for the master's degree. All requirements for both programs must be fulfilled.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-international-education/>) for more details.

DUAL MAED&HD IN THE FIELD OF INTERNATIONAL EDUCATION AND GRADUATE CERTIFICATE IN TESOL

Enrolled students, representing interests as far-ranging as educational programs for children in Ghana to international study programs in Asia, learn about traditions and systems of education in other nations and cultures. They also acquire skills and experience relevant to working in these programs.

A growing number of internship opportunities, both in the United States and abroad, are made available to our students, who consistently earn prestigious full-time positions after graduation. The international education program boasts highly

placed alumni in organizations such as USAID, the World Bank, the Agency for Educational Development, Save the Children, the Academy for Educational Development and the Institute of International Education, as well as in governments and universities all over the world.

International education program faculty regularly draws on local experts and professionals from around the District of Columbia to enhance the curriculum. The program offers expertise in three areas: education and development, global education, and international higher education.

Visit the program website (<https://gsehd.gwu.edu/programs/masters-international-education/>) for more details.

JOINT MAED&HD IN HIGHER EDUCATION ADMINISTRATION AND JURIS DOCTOR

The Graduate School of Education and Human Development (GSEHD) in cooperation with the Law School offers a joint master of education and human development (MAEd&HD) in the field of higher education administration (p. 645) and juris doctor (JD) (<https://www.law.gwu.edu/juris-doctor/>) degree program. Students must be admitted separately to each program and must fulfill all requirements for each degree. GSEHD accepts up to 6 credits of law courses toward requirements for the MAEd&HD and the Law School accepts up to 12 credits in GSEHD courses towards requirements for the JD. The degrees are conferred simultaneously once all requirements have been met.

Visit the Graduate School of Education and Human Development (<https://gsehd.gwu.edu/programs/juris-doctoratemasters-higher-education-administration/>) and Law School (<https://www.law.gwu.edu/juris-doctor/>) websites for additional information.

JOINT MAED&HD IN THE FIELD OF EDUCATION POLICY STUDIES AND JURIS DOCTOR

The close connection between law and public policy is well established and is increasingly leading law students and education students into seeking careers in public policy. Law and education policy have long had strong interconnections, and GW's Graduate School of Education and Human Development (GSEHD) continues to engage in activities that address the cross-section of education policy and law.

This program joins the Graduate School of Education and Human Development Education Policy Program (p. 643) (MAEd&HD) and the JD (<https://www.law.gwu.edu/juris-doctor/>) in the GW Law School. The Master of Arts in Education and Human Development degree in Education Policy requires 36 credits and, similar to the other joint degrees, the Law School accepts 12 credits of Education Policy courses toward

the 84-credit requirement for graduation. Similarly, the Graduate School of Education and Human Development also accepts 12 credits in the Law School toward the MAEd&HD. In addition to the required eight courses for the MAEd&HD, Education Policy and other GSEHD potential elective courses are required to complete the Masters in Education Policy degree.

Students who enroll full-time in the joint JD/MAEd&HD program should normally be able to complete both degrees in four years. During their first year, students are in residence at the GW Law School, taking exclusively first-year law courses. Thereafter, students take a mix of classes in both the Law School and GSEHD.

Visit the Graduate School of Education and Human Development (<https://gsehd.gwu.edu/programs/juris-doctor-masters-education-policy/>) and Law School (<https://www.law.gwu.edu/juris-doctor/>) websites for additional information.

EDUCATION SPECIALIST PROGRAMS

Education Specialist Programs

- Education Specialist in the field of educational leadership and administration (p. 659)
- Education Specialist in the field of special education (p. 660)

Visit the Graduate School of Education and Human Development (<https://gsehd.gwu.edu/programs/>) website for additional information.

EDUCATION SPECIALIST IN THE FIELD OF EDUCATIONAL LEADERSHIP AND ADMINISTRATION

GW's Educational Leadership and Administration program has garnered national recognition from the Educational Leadership Constituent Council (ELCC) and is nationally accredited and recognized as a program of distinction by the National Council for Accreditation of Teacher Education (NCATE).

The programs have been designed for the working professional in the K-12 arena and diverse school communities interested in various school-based and central office leadership and supervisory positions, increased responsibility in teaching, and advanced levels of professional responsibility.

The Master of Arts in Education and Human Development, the Post-Master's Certificate, and the Education Specialist (Ed.S.) degrees have been designed to meet the required credits, courses, and field experiences that are part of the administrative licensure process in the District of Columbia,

Commonwealth of Virginia, and many other states. Graduates are prepared for positions of assistant principal, principal and instructional supervision.

Visit the program website (<http://gsehd.gwu.edu/programs/education-specialist-educational-leadership-and-administration/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
EDUC 6232	Supervision of Curriculum, Instruction, and Assessment	
EDUC 6234	Foundations of K-12 Educational Leadership	
EDUC 6236	School Law and Policy	
EDUC 6238	Leadership for Equity and Social Justice	
EDUC 6240	Instructional Leadership for School Improvement	
EDUC 6244	School, Family, and Community Engagement	
EDUC 6246	School Finance and Resource Management for School Leaders	
EDUC 6270	Education Policy for School Leaders	
EDUC 6272	Leading Evidence-Based Action Research for School Improvement	
EDUC 6287	Internship: Administration	

EDUCATION SPECIALIST IN THE FIELD OF SPECIAL EDUCATION

The educational specialist (EdS) in the field of special education degree program offers advanced study for students with master's degrees in education who seek further professional preparation in the various subfields of special education and disability studies. Specific programs are developed in concert with faculty advisors and consist of a minimum of 30 graduate credits.

Visit the program website (<https://gsehd.gwu.edu/academics/#spededucationanddisabilitystudies>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in a program developed in consultation with the advisor. This program must include at least 12 credits in graduate courses in the following general areas:

- Background and general principles of the field of study.
- An area of specialization.
- Research methods.
- Professional internship.

DOCTORAL PROGRAMS

Doctoral Programs

- Doctor of Education in the field of curriculum and instruction (p. 660)
- Doctor of Education in the field of educational leadership and administration (p. 661)
- Doctor of Education in the field of higher education administration (p. 662)
- Doctor of Education in the field of human and organizational learning (p. 663)
- Doctor of Education in the field of special education (p. 665)
- Doctor of Philosophy in the field of counseling (p. 667)
- Doctor of Philosophy in the field of education (p. 666)

Visit the Graduate School of Education and Human Development (<https://gsehd.gwu.edu/programs/>) website for additional information.

DOCTOR OF EDUCATION IN THE FIELD OF CURRICULUM AND INSTRUCTION

The doctoral program in curriculum and instruction examines research and reflective practice related to curriculum, teaching and learning, teacher education, and broader educational policies.

The program applies curriculum and instruction research and practice in the context of educational reform for diverse student populations. Students become part of a community that links scholars with practicing professionals, policymakers, and educational organizations.

Doctoral students conduct research and critically examine curriculum, teaching, and learning processes. They gain knowledge about assessment and the characteristics and politics of learning environments. Students can also gain understanding through linkages with arts and sciences, opportunities for additional learning in the disciplines, or internships in local schools and agencies.

Visit the program website (<http://gsehd.gwu.edu/programs/curriculum-instruction/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education programs (p. 604).

A minimum of 48 credits, successful completion of a master's comprehensive examination, and an approved dissertation proposal.

Code	Title	Credits
Required		
CPED 8325	Curriculum Theory	
CPED 8330	Foundations of Education Research in Curriculum and Instruction	
CPED 8331	Seminar in Teaching	
CPED 8334	Seminar in Learning	
Doctoral Internship		
CPED 8354	Doctoral Internship: Teacher Education (taken for 6 to 9 credits)	
Electives		
3 to 6 credits in elective courses selected in consultation with advisor.		
Research Methods		
EDUC 8120	Group Comparison Designs and Analyses *	
EDUC 8122	Qualitative Research Methods	
3 credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8172	Multivariate Analysis	

EDUC 8173	Structural Equation Modeling
EDUC 8174	Hierarchical Linear Modeling
EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering

Dissertation	
CPED 8998	Doctoral Seminar in Curriculum and Instruction (taken for 3 credits)
CPED 8999	Dissertation Research (taken for a minimum of 12 credits to meet program requirements)

An approved dissertation proposal is required.

Comprehensive Examination

Successful completion of a comprehensive examination is required.

*Prerequisite statistics courses must be taken during the master's degree program or must be completed prior to taking required advanced courses. For students who have not had an introductory statistics course or do not feel confident in their understanding and application of basic statistical techniques (i.e., through one way analysis of variance), EDUC 6116 should be completed prior to enrolling in EDUC 8120.

DOCTOR OF EDUCATION IN THE FIELD OF EDUCATIONAL LEADERSHIP AND ADMINISTRATION

The doctoral program in educational leadership and administration program has garnered national recognition from the Educational Leadership Constituent Council (ELCC) and is nationally accredited and recognized as a program of distinction by the National Council for Accreditation of Teacher Education (NCATE).

The programs have been designed for the working professional in the K-12 arena and diverse school communities interested in various school-based and central office leadership and supervisory positions, increased responsibility in teaching, and advanced levels of professional responsibility.

The doctoral program offers a premier degree preparing candidates to achieve high-level success in a K-12 school setting. With an emphasis on promoting high student achievement through teacher mentoring, problem-solving, and data analysis, the program will prepare you for a leadership position in a school setting of your choice. Researchers and practitioners who aspire to high levels of responsibility in educational organizations will develop leadership skills through

coursework, seminars, research associations with faculty, and self-directed activities. This academically rigorous program prepares graduates for leadership responsibilities

Visit the program website (<https://gsehd.gwu.edu/programs/doctorate-educational-leadership-and-administration/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education programs (p. 604).

A minimum of 48 credits, successful completion of a comprehensive examination, and an approved dissertation proposal.

Code	Title	Credits
Required		
EDUC 6116	Introduction to Educational Statistics	
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
EDUC 8240	Organizational Theory and Leadership in Education	
EDUC 8268	Leadership Theory for Education	
EDUC 8270	Fundamentals of Educational Planning	
EDUC 8271	Education Policy for School Leaders	
EDUC 8276	Seminar: Administration and Supervision	
EDUC 8277	Advanced Instructional Leadership for School Improvement	
EDUC 8280	Critical Review of Educational Leadership Literature	
Advanced Research		
3 credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	

EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
EDUC 8172	Multivariate Analysis
EDUC 8173	Structural Equation Modeling
EDUC 8174	Hierarchical Linear Modeling
EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering

Dissertation

EDUC 8998	Pre-Dissertation Seminar
EDUC 8999	Dissertation Research (taken for a minimum of 12 credits)

An approved dissertation proposal is required.

Comprehensive Examination

Successful completion of a comprehensive examination is required.

DOCTOR OF EDUCATION IN THE FIELD OF HIGHER EDUCATION ADMINISTRATION

The doctoral program in higher education administration is designed to prepare leaders within the field of higher education. Students complete seated and online coursework to develop the knowledge, skills, and background useful for serving in advanced and senior level academic, administrative, and research roles in 2-year and 4-year institutions of higher education, national and international associations, government agencies, and other post-secondary educational settings. The program provides a high-quality, fast-paced scholarly experience in which students can integrate theory and research seamlessly with practice.

Visit the program website (<http://gsehd.gwu.edu/programs/higher-education-administration/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education program (p. 604).

A minimum of 53 credits and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
EDUC 8505	Seminar: Higher Education Administration	
EDUC 8510	Administration and Organization of Higher Education	
EDUC 8515	Comparative and International Higher Education	
EDUC 8520	Theories for Research on College Students	
EDUC 8525	College and University Curriculum	
EDUC 8530	Leadership in Higher Education	
EDUC 8555	Policy Analysis in Higher Education	
EDUC 8566	Higher Education Finance	
Electives		
2 credits selected in consultation with advisor		
Research		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
3 credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8172	Multivariate Analysis	
EDUC 8173	Structural Equation Modeling	
EDUC 8174	Hierarchical Linear Modeling	
EDUC 8175	Item Response Theory	
EDUC 8177	Assessment Engineering	

Dissertation

EDUC 8280 Critical Review of Educational Leadership Literature

EDUC 8998 Pre-Dissertation Seminar (taken for 3 credits)

EDUC 8999 Dissertation Research (minimum 12 credits needed to complete requirement)

An approved dissertation proposal is required.

Comprehensive examination

Successful completion of a comprehensive examination is required.

DOCTOR OF EDUCATION IN THE FIELD OF HUMAN AND ORGANIZATIONAL LEARNING

Human and organizational learning is an interdisciplinary approach that offers insights about people facing complex issues concerning individual and organizational effectiveness. The doctor of education degree in human and organizational learning provides professionals, managers, and consultants with a foundation in relevant theories, concepts and practices.

The program focuses on the inter-relationships among people, organizations and learning while utilizing systemic change processes. Theory, research, and practice are balanced throughout the curriculum. Students are encouraged to form communities to provide collective support, promote action learning, and model a learning culture.

Visit the program website (<http://gsehd.gwu.edu/programs/human-organizational-learning/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education program (p. 604).

60 credits in coursework, a dissertation, and successful completion of a comprehensive examination.

The doctor of education (EdD) in the field of human and organizational learning program is available in two formats, the Main Campus program and the Executive Leadership program, as outlined below:

Main Campus Program

Code	Title	Credits
Required		
HOL 8700	Foundations of Human and Organizational Learning	
HOL 8701	Theory, Research, and Practice in Adult Learning and Development	
HOL 8703	Human Systems Change	
HOL 8704	Leadership Theory, Research, and Practice	
HOL 8724	Creating and Planning Doctoral Research	
Research methods		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
HOL 8720	Seminar: Applied Research in Human and Organizational Learning	
HOL 8722	Seminar: Advanced Issues in Human and Organizational Learning (taken for 3 credits)	
3 credits from the following:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8172	Multivariate Analysis	
EDUC 8173	Structural Equation Modeling	
EDUC 8174	Hierarchical Linear Modeling	
EDUC 8175	Item Response Theory	
EDUC 8177	Assessment Engineering	
Dissertation		

HOL 8998 Predissertation Seminar (taken for 3 credits)

HOL 8999 Dissertation Research (taken for a minimum of 12 credits)

An approved dissertation proposal required.

Electives

15 credits in elective courses selected in consultation with advisor.

Comprehensive examination

Successful completion of comprehensive examination is required.

Executive Leadership Program

Code	Title	Credits
Required		
HOL 8100	Special Topics in Human and Organizational Learning - Doctoral Studies (taken for 3 credits)	
HOL 8700	Foundations of Human and Organizational Learning	
HOL 8701	Theory, Research, and Practice in Adult Learning and Development	
HOL 8702	Theory and Design of Organizational Diagnosis and Development	
HOL 8703	Human Systems Change	
HOL 8704	Leadership Theory, Research, and Practice	
HOL 8705	Organizational Culture	
HOL 8720	Seminar: Applied Research in Human and Organizational Learning	
HOL 8721	Practicum in Human and Organizational Learning (taken for 6 credits)	
HOL 8722	Seminar: Advanced Issues in Human and Organizational Learning (taken for 3 credits)	
HOL 8724	Creating and Planning Doctoral Research	
Research methods		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	

3 credits from the following:

EDUC 8100	Experimental Courses
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8142	Phenomenological Research Methods
EDUC 8144	Discourse Analysis
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
EDUC 8172	Multivariate Analysis
EDUC 8173	Structural Equation Modeling
EDUC 8174	Hierarchical Linear Modeling
EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering

Dissertation

HOL 8998 Predissertation Seminar (taken for 3 credits)

HOL 8999 Dissertation Research (taken for a minimum of 12 credits)

An approved dissertation proposal is required.

Comprehensive examination

Successful completion of a comprehensive examination is required.

DOCTOR OF EDUCATION IN THE FIELD OF SPECIAL EDUCATION

The doctoral program in special education utilizes a transdisciplinary approach to the preparation of special education scholars and leaders. The program is designed to support the development of doctoral students as they acquire knowledge in the fields of neuroscience, cognitive psychology, and the developmental sciences in an effort to meaningfully translate that knowledge to the most pressing issues to special education today.

The program works closely with Graduate School of Education and Human Development's Center for Applied Developmental Science and Neuroeducation to provide research and internship opportunities for students to translate and apply neuroscience research related to learning for diverse populations. Students collaborate with faculty in the areas of

early intervention and early childhood education, secondary and transition to post-secondary education, culturally and linguistically diverse learners with exceptionalities, and students with various disabilities, such as those with emotional and behavioral challenges. The Center also seeks students who can advance research with transdisciplinary partners to improve outcomes for children and families.

Visit the program website for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

The requirements for the Doctor of Education program (p. 604).

54 credits, including 12 credits in foundation courses, a minimum 15 credits in research courses including 3 credits in advanced research, a 3-credit internship, 9 credits in elective courses, a minimum 15 credits in dissertation courses, and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
Neuroscience Foundations (6 credits)		
SPED 8306	Advanced Study in Development Science and Variance I: The Early Years	
SPED 8310	Advanced Study in Development Science and Variance II: The Later Years	
Leadership Foundations (6 credits)		
SPED 8308	Preparation for the Professoriate in Special Education	
SPED 8352	Disability and Public Policy	
Research Tools (15 credits)		
SPED 8304	Research and Trends in Special Education (Literature Review)	
EDUC 6116	Introduction to Educational Statistics	
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
Level B advanced research elective		
3 credits selected from the following in consultation with advisor:		
EDUC 8100	Experimental Courses	
EDUC 8130	Survey Research Methods	

EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8142	Phenomenological Research Methods
EDUC 8144	Discourse Analysis
EDUC 8170	Educational Measurement
EDUC 8171	Predictive Designs and Analyses
EDUC 8172	Multivariate Analysis
EDUC 8173	Structural Equation Modeling
EDUC 8174	Hierarchical Linear Modeling
EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering

Internship

SPED 8354 Doctoral Internship: Special Education

Interdisciplinary electives

9 credits in interdisciplinary elective courses selected from the following in consultation with the advisor:

SPED 6299	Federal Education Policy Institute
SPED 8303	Administration and Supervision of Special Education
SPED 8311	Doctoral Proseminar: Scholarly Writing in Applied Settings
SPED 8345	Consultation and the Change Process

Dissertation

SPED 8998	Doctoral Seminar in Special Education
SPED 8999	Dissertation Research (minimum 12 credits needed to complete requirement)

taken for a minimum of 12 credits

Comprehensive examination

Successful completion of a comprehensive examination is required.

DOCTOR OF PHILOSOPHY IN EDUCATION

The doctor of philosophy (PhD) in education degree program is designed to create opportunities for cross-disciplinary research by concentrating on critical national and global

problems in which education and human development play a significant role. To adequately address issues, scholars require both a strong foundation in education as well as theoretical and disciplinary grounding in multiple disciplines. The PhD program is distinguished by four characteristics: candidates apply to a cross-disciplinary research team that is focused on a critical problem related to education and human development; approaches to the research problems require a cross-disciplinary lens; students engage in individual and collaborative research throughout their program; and candidates aspire to careers in which the production of research is paramount.

Visit the program website (<https://gsehd.gwu.edu/programs/#crossdisciplinary>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits in required courses and successful completion of the comprehensive examination.

The requirements of the Doctor of Philosophy program (p. 604).

Code	Title	Credits
Required		
Educational foundations		
SEHD 8100	Special Topics (taken four times)	
Research methods		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8122	Qualitative Research Methods	
6 credits from the following		
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
EDUC 8140	Ethnographic Research Methods	
EDUC 8142	Phenomenological Research Methods	
EDUC 8144	Discourse Analysis	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8172	Multivariate Analysis	
EDUC 8173	Structural Equation Modeling	
EDUC 8174	Hierarchical Linear Modeling	

EDUC 8175	Item Response Theory
EDUC 8177	Assessment Engineering
SEHD 8100	Special Topics

Cross-disciplinary concentration

24 credits in graduate-level courses determined in consultation with the advisor at the time of admission. Course selections are determined by the focus of the cross-disciplinary research team and the specific interests of the student.

Dissertation

SEHD 8999 Dissertation Research (taken for a minimum of 12 credits.)

Second-year research project, an oral defense of both dissertation proposal and dissertation, and successful completion of a comprehensive examination are required.

DOCTOR OF PHILOSOPHY IN THE FIELD OF COUNSELING

The doctor of philosophy in counseling degree program balances training in rigorous research with advanced counseling and supervision. Graduates typically serve in faculty positions in universities, or in leadership positions in counseling practices.

The program offers challenging coursework and continued development of counseling and counseling supervision skills at the Graduate School of Education and Human Development's Community Counseling Service Center (<https://gsehd.gwu.edu/ccsc/>). Designed to be completed in three to four years, the program builds students' knowledge and capacity to conduct research, publish, provide advanced counseling services, develop counseling supervision skills, and teach at the graduate level. Faculty expertise is represented in several areas including trauma, human sexuality, child and adolescent development, ethics and counselor development, grief and loss, substance abuse, and multicultural counseling. The program is accredited by the Council for the Accreditation of Counseling and Related Educational Programs (CACREP).

Visit the program website (<http://gsehd.gwu.edu/programs/counseling/>) for additional information.

REQUIREMENTS

Applicants must possess a master's degree by the time they start the program. If the master's degree is not CACREP-accredited, then significant master's-level course work will be added to the program plan described below.

The following requirements must be fulfilled:

A minimum of 75 credits, including 33 credits in core courses, 12 credits in research courses, 6 credits in human development courses, 9 credits in an area of specialization, 15 credits in dissertation courses, and successful completion of the comprehensive examination.

Requirements of the Doctor of Philosophy (<http://bulletin.gwu.edu/education-human-development/#doctoraltext>) program.

Code	Title	Credits
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Counseling core

CNSL 8251	Advanced Psychopathology and Pharmacology	
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CNSL 8252	Leadership and Advocacy in Counseling	
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CNSL 8254	Advanced Multicultural Counseling	
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CNSL 8255	Supervision in Counseling	
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CNSL 8256	Doctoral Practicum in Counseling (taken for a total of 6 credits)	
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CNSL 8257	Doctoral Internship in Teaching	
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CNSL 8258	Advanced Theories of Counseling	
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CNSL 8259	Doctoral Internship in Supervision I	
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CNSL 8260	Doctoral Internship in Supervision II	
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CNSL 8961	Doctoral Internship in Research (taken for 3 credits)	
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Research

EDUC 8120	Group Comparison Designs and Analyses *	
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EDUC 8122	Qualitative Research Methods	
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EDUC 8171	Predictive Designs and Analyses	
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One of the following courses selected in consultation with the advisor to coordinate with the dissertation:

EDUC 8100	Experimental Courses (taken for 3 credits)	
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EDUC 8130	Survey Research Methods	
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EDUC 8131	Case Study Research Methods	
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EDUC 8140	Ethnographic Research Methods	
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EDUC 8142	Phenomenological Research Methods	
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EDUC 8144	Discourse Analysis	
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EDUC 8170 Educational Measurement

EDUC 8172 Multivariate Analysis

EDUC 8173 Structural Equation Modeling

EDUC 8174 Hierarchical Linear Modeling

EDUC 8175 Item Response Theory

EDUC 8177 Assessment Engineering

Human development emphasis

Two of the following courses:

HDEV 6129 Cultural Effects on Human Development

HDEV 8100 Issues and Special Topics in Human Development (taken for 3 credits)

HDEV 8241 Emotional and Cognitive Development

HDEV 8244 Adult and Aging Development

HDEV 8253 Work, Identity, and Adult Development

Area of specialization

9 credits in courses selected in consultation with the advisor.

Dissertation

CNSL 8998 Predissertation Seminar

CNSL 8999 Dissertation Research (taken for a minimum total of 12 credits.)

An approved dissertation proposal is required.

Comprehensive examination

Successful completion of a comprehensive examination is required.

*Prerequisite statistics courses must have been taken during the student's master's degree program or must be completed prior to taking required advanced courses. For students who have not had an introductory statistics course, have not had such a course in recent years, or do not feel confident in their understanding and application of basic statistical techniques (i.e. through one-way analysis of variance), EDUC 6116 Introduction to Educational Statistics should be completed prior to enrolling in EDUC 8120 Group Comparison Designs and Analyses.

GRADUATE CERTIFICATE PROGRAMS

Graduate Certificates

- Assessment, testing, and measurement in education (p. 668)
- Autism spectrum disorders (p. 669)
- Brain injury: educational and transition services (p. 669)
- Counseling and life transitions (p. 670)
- Design and assessment of adult learning (p. 670)
- Educational technology leadership (p. 671)
- Global leadership in teams and organizations (p. 671)
- Incorporating international perspectives in education (p. 672)
- Instructional design (p. 672)
- Israel education (p. 673)
- Job development and placement (p. 673)
- Leadership development (p. 674)
- Literacy education (p. 674)
- Organizational learning and change (p. 674)
- Special education for culturally and linguistically diverse learners (p. 675)
- STEM master teacher (p. 675)
- Teaching English to speakers of other languages (p. 676)
- Teaching strategies and classroom management for Jewish studies educators (p. 676)
- Transition special education (p. 677)

Post-Master's Certificates

- Advanced practice of education policy (p. 677)
- Counseling (p. 677)
- Educational leadership and administration (p. 678)

Visit the Graduate School of Education and Human Development (<https://gsehd.gwu.edu/programs/>) website for more information.

GRADUATE CERTIFICATE IN ASSESSMENT, TESTING, AND MEASUREMENT IN EDUCATION

Develop the expertise to analyze fifth graders in a school district, all workers at a company, everyone taking a graduate entrance exam, or a sampling of patients in a counseling lab. Assessment, Testing, and Measurement (ATM) in Education combines statistical analysis, testing theory, the study of human behavior, educational measurement, and evaluation into the science of measuring educational/behavioral factors such as learning, preference, aptitude, and personality. Specialists in this field (psychometricians) design tests that collect empirical

data and quantify the personal characteristics of individuals, comparing those results within or across populations.

The 24-credit hour certificate program is designed for individuals strengthening their skill set to include data analysis in an educational setting.

Visit the program website (<http://gsehd.gwu.edu/programs/graduate-certificate-assessment-testing-and-measurement-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required:		
EDUC 8120	Group Comparison Designs and Analyses	
EDUC 8170	Educational Measurement	
EDUC 8171	Predictive Designs and Analyses	
EDUC 8175	Item Response Theory	
or EDUC 8177	Assessment Engineering	

GRADUATE CERTIFICATE IN AUTISM SPECTRUM DISORDERS

The certificate program is designed for individuals with a bachelor's or master's degree that are interested in focusing on a multi-intervention approach to instructing students with Autism Spectrum Disorders.

Graduates of this program will be able to more effectively address the following issues in working with children with Autism Spectrum Disorders: (1) academic achievement and study skills commensurate with their cognitive strength; this will provide the widest range of options of college and career choices, (2) social skills for navigating all of the environments in which they live, work, and play, and (3) problem-solving strategies that enable them to respond flexibly and successfully to challenging situations.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-autism-spectrum-disorders/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
SPED 6240	Family Support and Guidance in Special Education	
SPED 6253	Introduction to Autism Spectrum Disorders	
SPED 6260	Developmental Assessment in Special Education	
SPED 6261	Practicum: Methods and Materials for Young Children with Disabilities (3 credits)	
SPED 6290	Affective Development and Behavior Management in Special Education	

GRADUATE CERTIFICATE IN BRAIN INJURY: EDUCATIONAL AND TRANSITION SERVICES

This is a 15-credit program, which many graduates use to increase their professional opportunities and develop a specialty in managing the educational needs of individuals who have suffered brain injury.

Two delivery modes are available to students who qualify for the program, and a limited number of partial scholarships are offered depending upon current funding from external sources.

We also offer a master's program in Transition Special Education with an emphasis in acquired brain injury.

The program is based on coursework that has been offered since 1992 through the GSEHD master's program in transition special education with an emphasis in acquired brain injury. It is offered in collaboration with the GW Center for Education and Human Services in Acquired Brain Injury (CEHSABI)

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-brain-injury-transition-services/>) for additional information

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
SPED 6223	Introduction to Brain Injury: Programs, Policies, and Resources	

SPED 6224	Brain Function and Impact of Brain Injury on Learning and Education
SPED 6231	Curriculum and Instructional Methods in Special Education and Transition
SPED 6240	Family Support and Guidance in Special Education
SPED 6255	Collaboration with Systems and Families

GRADUATE CERTIFICATE IN COUNSELING AND LIFE TRANSITIONS

The graduate certificate in Counseling & Life Transitions equips students with a range of skills that can be used to assist the community in coping with the different transitions that may occur in their lives. Students may choose to focus in one of three concentrations: Career & Workforce Development, Grief, Loss & Life Transition, and Counseling Culturally and Linguistically Diverse Persons.

Career & Workforce Development: This certificate prepares career practitioners to assist students, workers, employers, and retirees navigate the challenges that are inherent in a global workplace.

Grief, Loss & Life Transition: This certificate prepares counselors with the knowledge to effectively and compassionately counsel the chronically ill, dying, their caregivers, bereaved loved ones, or to work with others facing difficult life transitions such as unemployment. This specialized program is ideal for counselors, social workers, clergy, and other professionals who work with those facing loss and life transitions.

Counseling Culturally & Linguistically Diverse Persons: This certificate expands the skills of counselors, teachers, and other professionals' to better understand cultural and linguistic diversity within the workplace, school, and community settings, and, in the process, enhance their understanding of their own psycho-social identity.

Visit the program website (<http://gsehd.gwu.edu/programs/graduate-certificate-counseling-and-life-transitions/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 3 credits in a required course and 9 credits in elective courses.

Code	Title	Credits
Required		
HDEV 6108	Life Span Human Development	
Electives		

Three elective courses selected in consultation with the advisor to be taken in one of the following specializations:

Grief, loss, and life transitions

CNSL 6100	Special Workshop (Grief, Loss, and Life Transitions Focus)
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CNSL 6170	Grief and Loss
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CNSL 6175	Living and Dying: A Counseling Perspective
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CNSL 6177	Spirituality and Loss
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CNSL 6179	Children and Loss
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Career and workforce development

CNSL 6155	Career Counseling
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CNSL 6190	Advanced Career Counseling
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CNSL 6188	Systems in Career Counseling Development
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CNSL 6189	Career Development and the Contemporary Workforce
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CNSL 8253	Work, Identity, and Adult Development
or HDEV 8253	Work, Identity, and Adult Development

CNSL 6100	Special Workshop (Career Counseling Focus)
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Human development

CNSL 6161	Group Counseling
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CNSL 8253	Work, Identity, and Adult Development
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CNSL 6154	Theories and Techniques of Counseling
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CNSL 6155	Career Counseling
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CNSL 6170	Grief and Loss
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CNSL 6179	Children and Loss
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HDEV 6109	Child Development
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HDEV 6110	Adolescent Development
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HDEV 6701	Adult Learning
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GRADUATE CERTIFICATE IN DESIGN AND ASSESSMENT OF ADULT LEARNING

This certificate program teaches skills for designing, developing, delivering and evaluating workplace-learning

interventions. Each course in the program is part of the existing curriculum for the master's degree in human resource development (HRD). Upon completion of the certificate, students may choose to continue in the master's program, at which point they would be required to submit an application and meet entrance requirements. All coursework completed in the certificate will transfer into the master's program.

The certificate in design and assessment of adult learning is a four-course program (12 credits total) that can be completed in two semesters.

Visit the G (<https://gsehd.gwu.edu/programs/#educationalleadership>) graduate School of Education and Human Development website (<https://gsehd.gwu.edu/programs/#humanamporganizationallearning>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
HOL 6701	Adult Learning	
HOL 6721	Assessing the Impact of Organizational Change Using Qualitative and Quantitative Methods	
HOL 6742	Design of Adult Learning Interventions	
Electives		
One 3-credit elective course selected in consultation with the advisor.		

GRADUATE CERTIFICATE IN EDUCATIONAL TECHNOLOGY LEADERSHIP

The program is founded on three beliefs: that leadership skills and technological competence are fundamental to the appropriate and successful utilization of technologies in educational settings; that access to the requisite knowledge should be universal, despite the barriers of distance, personal physical limitations and lifestyle; and that educational technologies focus on improving human performance and learning. The program is guided by commitment to continuing improvement as technology changes through:

- The development and delivery of effective distance education methods

- Support services for the distance-learning community
- Influence upon the creation of knowledge and practices
- The development of leaders in the global expansion of educational technology
- Emphasis on the interaction of individual, corporate, governmental and educational interests.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-educational-leadership-technology/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
EDUC 6368	Leadership and Education	
EDUC 6401	Foundations in Educational Technology	
EDUC 6402	Trends and Issues in Educational Technology	
or EDUC 6403	Educational Hardware Systems	
or EDUC 6421	Critical Issues in Distance Education	
EDUC 6404	Managing Computer Applications	
or EDUC 6428	Developing Digital Professional Portfolios	
EDUC 6405	Developing Multimedia Materials	
or EDUC 6425	Developing Effective Training with Technology	
EDUC 6406	Instructional Design	

GRADUATE CERTIFICATE IN GLOBAL LEADERSHIP IN TEAMS AND ORGANIZATIONS

Theory, research and practice are balanced throughout the curriculum in order to enable students to develop and implement strategies that increase organizational development and learning. The program of study includes international company site visits, cultural exchanges, world-renowned faculty and guest speakers. With courses offered at sites in Asia, Europe, Africa and South America, students go beyond classroom learning to developing their own global competence through actionable learning around the world.

The four-course, 12-credit program in Global Leadership in Teams and Organizations meets four times a year. Two classes are offered in Ashburn as well as overseas which allows students the option of taking two, three or four courses

overseas. The courses take place at the Virginia Campus and affiliate sites in Asia, Europe, and South America.

This program benefits mid to senior level executives who are charged with leading in international and multinational organizations. Current students looking for interesting electives may take the individual courses for their master's or doctoral programs.

Visit the G (<https://gsehd.gwu.edu/programs/#educationalleadership>)raduate School of Education and Human Development website (<https://gsehd.gwu.edu/programs/#humanamporganizationallearning>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
HOL 6704	Leadership in Organizations	
HOL 6706	Current Issues in Organizational Leadership	
HOL 6746	Work Groups and Teams in Organizations	
HOL 6747	International and Multicultural Issues in Organizations	

GRADUATE CERTIFICATE IN INCORPORATING INTERNATIONAL PERSPECTIVES IN EDUCATION

The certificate program is designed for individuals with a bachelor's or master's degrees who are interested in learning about internationalization and how to incorporate global perspectives into curriculum, pedagogy, and school policy and practice.

Courses provide students with a foundation in internationalization, as it relates to school systems and the development of curriculum in K-12 settings. Upon completion of the certificate, students can apply to one of the Graduate School of Education and Human Development's Master's programs. All 12 certificate credits may transfer into one of these degree programs upon admission.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-incorporating-international-perspectives-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
CPED 6305	Foundations of Curriculum Theory	
EDUC 6615	Internationalizing U.S. Schools	
Elective		
6 credits from the following:		
CPED 6225	Introduction to International Curricula	
CPED 6557	Second Language Acquisition	
CPED 6608	Development and Diversity	
CPED 6627	Teaching Second Language Reading and Writing	
EDUC 6602	Regional Studies in International Education (Comparative Solutions to Common Educational Problems)	
EDUC 6602	Regional Studies in International Education (Education and Modernization in Asia)	
EDUC 6602	Regional Studies in International Education (Education and Transition in Eastern Europe and the former Soviet Union)	
EDUC 6602	Regional Studies in International Education (Education and Equality in Latin America and the Caribbean)	
EDUC 6602	Regional Studies in International Education (Education and Tradition in Islamic Societies)	
EDUC 6602	Regional Studies in International Education (Education and Diversity in Europe and the EU)	
EDUC 6640	Selected Topics in International Education (Citizen, Culture, Language and Nation-building in the Global Era)	

GRADUATE CERTIFICATE IN INSTRUCTIONAL DESIGN

From the assessment of needs and the analysis of learning objectives to the rapid-development of instructional materials

and their evaluation, the certificate program prepares students to apply the theories, principles, models, tools and techniques of systematic instructional design in diverse organizational settings.

Throughout this 18-credit certificate program, students have numerous opportunities to integrate their professional experiences into their learning, apply their course assignments to their current professional activities and actively engage with other professionals in the development of valued instructional design proficiencies.

Students who complete the Instructional Design Certificate will:

- Apply foundational instructional design principles to the design, development and implementation of learning activities in their workplace
- Demonstrate an ability to lead the design of effective instruction through proficient planning, development, evaluation and management
- Demonstrate a comprehensive knowledge of numerous theories, principles, models, tools and techniques that can be applied to the systematic design of instruction
- Demonstrate their capacity to successfully lead all phases of an instructional design project

Having created one of the first online graduate programs in the United States, the experienced Educational Technology Leadership Program faculty and staff ensures flexibility along with meaningful substance and engaging online participation.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-instructional-design/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6401	Foundations in Educational Technology	
EDUC 6405	Developing Multimedia Materials	
EDUC 6406	Instructional Design	
EDUC 6422	Instructional Needs Assessment and Analysis	
EDUC 6426	Computer Interface Design for Learning	
EDUC 6427	Advanced Instructional Design	

GRADUATE CERTIFICATE IN ISRAEL EDUCATION

Students in the graduate certificate in Israel education program sharpen their knowledge of Israel and Zionism by taking part in two special seminars as well as monthly webinars. Special emphasis is placed on connecting new content with innovative approaches for dissemination. Cohort members apply what they have learned to develop and test curricular or other educational projects for use in the setting in which they teach or work.

Visit the program website (<https://www.theicenter.org/initiative/professional-certificate/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
EDUC 6803	Introduction to Experiential Jewish Education	
EDUC 6810	Paideia and Jewish Education	
EDUC 6811	Foundations of Contemporary Israel	
EDUC 6812	American Jews and Modern Israel	
EDUC 6813	The Israel Educational Experience	

GRADUATE CERTIFICATE IN JOB DEVELOPMENT AND PLACEMENT

Offered online and on campus

The graduate certificate in job development and placement is ideal for a variety of professionals in state, federal, nonprofit, and community-based rehabilitation. Students delve into the social and cultural dimensions of rehabilitation counseling, as well as job development and job placement methods and techniques. The curriculum provides specialized experiential learning opportunities by integrating classroom course work with hands-on experience through a required 50-hour practicum.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-job-development-job-placement/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
CNSL 6130	Vocational Assessment of Individuals with Disabilities	
or SPED 6230	Vocational Assessment of Individuals with Disabilities	
CNSL 6163	Social and Cultural Dimensions - CNS	
CNSL 6376	Foundations of Rehabilitation Counseling	
CNSL 6380	Job Placement and Supported Employment	

In addition to the required coursework, students are required to complete a 50-hour supervised practicum in a vocational rehabilitation agency (public or community partner program) to gain job development and job placement experience. The practicum must be completed within one year from date of entry to the program in order for the student to complete all requirements in the allowed period and receive the certificate. Students should consult with the program coordinator and/or academic advisor prior to beginning the practicum.

GRADUATE CERTIFICATE IN LEADERSHIP DEVELOPMENT

The graduate certificate in leadership development provides in-depth understanding of organizations as human systems and the practical knowledge required to improve organizational effectiveness through leadership and training. Students explore leadership as an individual ability as well as an organizational learning and development process.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-leadership-development/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 6 credits in required courses, and 9 credits in elective courses.

Code	Title	Credits
Required		
HOL 6700	Human Behavior and Learning in Organizations	
or HOL 6701	Adult Learning	
HOL 6704	Leadership in Organizations	
Electives		

9 credits in elective courses selected in consultation with the advisor.

GRADUATE CERTIFICATE IN LITERACY EDUCATION

The graduate certificate in literacy education provides students opportunities to learn about teaching and learning principles of interdisciplinary reading, writing, and viewing texts in and out of schools. Coursework takes advantage of resources near campus, such as national museums, memorials, and the Library of Congress.

Please visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-literacy-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses and completion of a portfolio to be evaluated during the final semester of study.

Code	Title	Credits
Required		
Courses must be taken in the order shown.		
CPED 6691	Interdisciplinary Adolescent Literacies	
CPED 6622	Foundations of Reading Development	
CPED 6223	Interdisciplinary Elementary School Literacies	
CPED 6628	Literacies in Informal Learning Environments	

GRADUATE CERTIFICATE IN ORGANIZATIONAL LEARNING AND CHANGE

This certificate provides an in-depth understanding of how a learning focus helps organizations improve their performance and create sustainable change. This is one of the largest programs of its kind in the United States. It is active in advancing research and practice within the human resource development field. Each course in the program is part of the existing curriculum for the master's degree in human resource development.

Upon completion of the certificate, students may choose to continue in the master's program, at which time they would be required to submit an application and meet entrance requirements. All coursework completed in the certificate will transfer into the master's program. The certificate in

organizational learning and change is a four-course (12 credits total) program that can be completed in two semesters. Courses are:

HOL 6702 – Organizational Diagnosis and Development

HOL 6704 – Leadership in Organizations

HOL 6703 – Consulting Skills for Organizational Learning and Change

HOL 6707 – Organizational Learning

The certificate is also offered at the GW Hampton Roads Center.

Visit the program website (<http://gsehd.gwu.edu/programs/graduate-certificate-organizational-learning-and-change/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
HOL 6702	Organizational Change	
HOL 6703	Consulting Skills	
HOL 6704	Leadership in Organizations	
HOL 6707	Organizational Learning	

GRADUATE CERTIFICATE IN SPECIAL EDUCATION FOR CULTURALLY AND LINGUISTICALLY DIVERSE LEARNERS

Offered online and on campus

The graduate certificate in special education for culturally and linguistically diverse learners is designed to enhance skills to meet the needs of students with diverse cultural and linguistic backgrounds and those with varying social and learning abilities. Students focus on the inter-relationships of school, home, and community to improve the quality of education for children with diverse needs. A holistic approach to the curriculum utilizes the latest research, theory, and data-driven best practices to prepare you to empower and improve the quality of learning for children with diverse needs.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-special-education-culturally-and-linguistically-diverse-learners/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 6 credits in required courses and 12 credits in electives.

Code	Title	Credits
Required		
SPED 6276	Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student	
SPED 6277	Teaching Culturally and Linguistically Diverse Students with Disabilities	
Electives		
12 credits from the following:		
CPED 6221	Developmental Reading: Emergent Literacy	
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6627	Teaching Second Language Reading and Writing	
SPED 6266	The Development of Language and Literacy	
SPED 6268	Development of Children and Youth with Disabilities	
SPED 6272	Strategies for Inclusion: Addressing the Needs of Diverse Learners	
SPED 6275	The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends	

GRADUATE CERTIFICATE IN STEM MASTER TEACHER

The STEM Master Teacher Graduate Certificate provides current K-12 science and mathematics teachers with 12 hours of credit-bearing coursework that offers advanced techniques and approaches to STEM instruction, curriculum, and assessment. The certificate focuses on topics of importance to local districts including best math and science practices.

Visit the program website (<http://gsehd.gwu.edu/programs/graduate-certificate-stem-teaching/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
CPED 6701	Arts in the STEM Curriculum	
CPED 6702	Integrating Engineering in the Math and Science Classroom	
CPED 6703	Advanced STEM Teaching Methods	
Elective		
One of the following:		
CPED 6367	Perspectives and Research in Teaching Science	
CPED 6370	Perspectives and Research in Teaching Mathematics	
CPED 8309	Supervising Preservice Clinical Experience	

Students may apply courses toward the Master of Arts in Education and Human Development in the field of Curriculum and Instruction.

Students may apply courses toward the Master of Arts in Education and Human Development in the field of Curriculum and Instruction.

GRADUATE CERTIFICATE IN TEACHING ENGLISH TO SPEAKERS OF OTHER LANGUAGES

Offered online and on campus

The Graduate Certificate in Teaching English Speakers of Other Languages (TESOL) prepares educators to work with English learners in both U.S. and international contexts. Coursework provides students with knowledge of applied linguistics, language acquisition theories, and methods of teaching. Students have opportunities to apply foundational concepts in TESOL through critical discussions about issues facing English learners in today's classrooms and direct experiences in classrooms in and around the nation's capital. Dual enrollment

options enable students to earn the Graduate Certificate as part of selected Masters programs.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-teaching-english-speakers-other-languages-tesol/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
CPED 6551	Second Language Instructional Methods	
CPED 6556	Linguistic Applications in English as a Second Language	
CPED 6557	Second Language Acquisition	
CPED 6627	Teaching Second Language Reading and Writing	

GRADUATE CERTIFICATE IN TEACHING STRATEGIES AND CLASSROOM MANAGEMENT FOR JEWISH STUDIES EDUCATORS

Students completing the Online Certificate in Teaching Strategies & Classroom Management for Jewish Educators will: Examine, reflect, and demonstrate an understanding of the essential questions and approaches for pedagogy in Jewish education, including: a conceptual basis in formal education - both within and beyond their specific content expertise - and be able to integrate hands-on learning components within formal classroom instruction.

The capacity to analyze, explore, explain and interpret Jewish texts in a variety of disciplines and apply critical thinking in the selection of material when creating curricula. Have the ability to be reflective on their knowledge and understandings and apply a deeper level of analysis and critique by: Examining and reflecting on the interconnections between effective instruction and positive classroom management.

Engaging in reflective writings in response to course readings and experiences. Leading and participating in giving feedback and critiques to discussion-board prompts. Will be knowledgeable and effective leaders in their profession by: Engaging in individual inquiry into questions that explore issues related to teachers and teaching. Planning, implementing, and evaluating learning activities that apply research-based practices. Linking instructional and management strategies to specific content and thinking goals.

After completion of the certificate, Jewish educators who pursue the work will possess the pedagogical skills needed to teach content specific to a Jewish studies curriculum.

Visit program website (<https://gsehd.gwu.edu/programs/graduate-certificate-teaching-strategies-classroom-management-jewish-studies-educators/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses and a portfolio.

Code	Title	Credits
Required		
CPED 6131	Teaching Jewish History to Middle and High School Students	
CPED 6132	Strategies for Teaching Biblical Texts	
CPED 6133	Rabbinic Judaism and the Teaching of Rabbinic Texts	
CPED 6507	Instructional Models and Classroom Management	

In addition, students must successfully complete a portfolio consisting of representative works from each of the four required courses.

GRADUATE CERTIFICATE IN TRANSITION SPECIAL EDUCATION

Offered online

Empowering Youth to Lead a Better Future Earn your Graduate Certificate in Transition Special Education from the George Washington University (GW) and gain the required knowledge, skills and competencies to assist youth and young adults with disabilities as they transition to postsecondary opportunities. In the special education transition certificate program, you will focus on social justice as you join a community of transition leaders from across the country, learning to design and implement transition and career assessment strategies to help ensure the success of youth as they transition to adult life.

Visit the program website (<https://gsehd.gwu.edu/programs/graduate-certificate-transition-special-education/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
SPED 6230	Vocational Assessment of Individuals with Disabilities	
SPED 6233	Curriculum in Special Education	
or SPED 6235	Employment Models for Individuals with Disabilities	
SPED 6236	Introduction to Career and Career-Technical Education and Transition Services	
SPED 6255	Collaboration with Systems and Families	

POST-MASTER'S CERTIFICATE IN ADVANCED PRACTICE OF EDUCATION POLICY

The Advanced Practice of Education Policy Post-Master's Certificate prepares the next generation of policy leaders to take on today's complex education challenges. This distinctive, practice-oriented graduate certificate trains students in theories and tools of policy design, development of evidence-informed solutions, negotiation of the political context, strategic communications and other skills of professional practice in policy. Leveraging the resources of GW and experts in the surrounding community, program participants develop deeper knowledge, connections and skills to expand educational excellence and equity.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
EDUC 8701	Education Policy Design	
EDUC 8702	Evidence in Education Policymaking	
EDUC 8703	Implementation for Education Policymakers	
EDUC 8704	Advocacy and Strategic Communications	

POST-MASTER'S CERTIFICATE IN COUNSELING

A variety of counseling programs are designed to prepare students to become skilled professional practitioners in an expansive range of counseling specialties, including school

counseling, clinical mental health counseling, rehabilitation counseling and career and workforce development, among others.

Our esteemed faculty members hold leadership positions in national counseling associations and can help you build networks that will last a lifetime. The post-masters certificate in counseling is designed to allow students who have obtained a 48 credit Masters in counseling to gain additional credits necessary for licensure.

Please visit the program website (<http://gsehd.gwu.edu/programs/post-masters-certificate-counseling/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
CNSL 6169	Counseling Substance Abusers	
CNSL 6171	Family Counseling	
CNSL 6175	Living and Dying: A Counseling Perspective	
CNSL 6190	Advanced Career Counseling	

POST-MASTER'S CERTIFICATE IN EDUCATIONAL LEADERSHIP AND ADMINISTRATION

GW's Educational Leadership and Administration program has garnered national recognition from the Educational Leadership Constituent Council (ELCC) and is nationally accredited and recognized as a program of distinction by the National Council for Accreditation of Teacher Education (NCATE).

The programs have been designed for the working professional in the K-12 arena and diverse school communities interested in various school-based and central office leadership and supervisory positions, increased responsibility in teaching, and advanced levels of professional responsibility.

The Post-Master's Certificate program in Educational Leadership and Administration is designed for individuals who have teaching credentials, hold a master's degree from an accredited institution and are seeking licensure in administration in order to be qualified for a position as assistant principal, principal or central office supervisor. The program

is designed to give prospects with masters' degrees a second option for licensure.

Visit the program website (<http://gsehd.gwu.edu/programs/post-masters-certificate-educational-leadership-and-administration/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EDUC 6232	Supervision of Curriculum, Instruction, and Assessment	
EDUC 6234	Foundations of K-12 Educational Leadership	
EDUC 6236	School Law and Policy	
EDUC 6240	Instructional Leadership for School Improvement	
EDUC 6246	School Finance and Resource Management for School Leaders	
EDUC 6287	Internship: Administration	

SCHOOL OF ENGINEERING AND APPLIED SCIENCE

Dean John Lach

Associate Deans C.E. Korman, B. Narahari, R. Riffat

The School of Engineering and Applied Science (SEAS) was organized in 1884 as the Corcoran Scientific School of Columbia University, named in honor of William W. Corcoran, president of the University's Board of Trustees from 1869 to 1888. The School was among the first to accept women for degree candidacy in engineering. While the organization and offerings of the School have evolved over the years, throughout most of its history its programs have been characterized by an emphasis on principles guiding the advancement of technology.

The School offers the bachelor of arts, bachelor of science, master of engineering, master of science, doctor of engineering, doctor of philosophy, and the professional degrees of engineer and applied scientist through its six departments—Biomedical Engineering, Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management and Systems Engineering, and Mechanical and Aerospace Engineering. In addition, the School offers several graduate certificate programs, as well as dual bachelor's/master's degree programs.

Research centers and institutes provide opportunities for students and faculty to strengthen ties with counterparts in government and industry and contribute to the development and harnessing of emerging technology. Extensive and varied laboratories and computing facilities support the academic programs. The School strongly supports co-curricular activities to broaden and deepen its students' overall educational programs, including an extensive array of internship opportunities at government laboratories and private companies in the Washington, DC, area and elsewhere. Other co-curricular opportunities include engineering-type team competitions, research projects, and the SEAS student government organization, the Engineers' Council.

REGULATIONS

Undergraduate Programs

University Regulations

All SEAS students are required to review the University Regulations (<http://bulletin.gwu.edu/university-regulations/>) as outlined in the Bulletin, as they are responsible for understanding and adhering to this document.

Advising

SEAS practices a hybrid advising system. Every entering undergraduate student is assigned a professional advisor to

assist with the transition to the University. Faculty advisors are assigned at the end of the first year to counsel students on their programs of study, achievement, and maintenance of satisfactory scholastic performance, professional development, and extracurricular activity as part of the educational process. Until all work required for the degree is completed, students must consult with their faculty advisors in all academic matters, including obtaining the advisor's approval of their program of study prior to registration for each academic semester and summer session. In addition, a student must consult their faculty advisor before they register for a course at another institution. The faculty advisor represents the student in all cases requiring faculty action. However, the faculty advisor may not deny entry into any course or activity to which the student is entitled under the regulations of the School. Students may consult other members of the faculty on an informal basis.

Mathematics Placement

All incoming first-year students are required to take a math proficiency examination, administered through the mathematics department, which places students in either MATH 1220 or MATH 1231. Visit the math placement exam webpage (<https://math.columbia.gwu.edu/gw-mathematics-placement-test/>) for more information.

Makeup of Credit for Waived Courses

Waiver of a required course requires the approval of the student's faculty advisor and department chair. If a course required by the SEAS curriculum is waived, the corresponding credits must be earned by satisfactory completion of a university-level academic course, either technical or nontechnical, approved by the student's faculty advisor. The grade earned will be used in determining the SEAS GPA only if the substituted course would normally be considered part of the student's curriculum.

Scholarship Requirements

To be eligible for graduation a student in SEAS must have:

- A minimum overall GPA of 2.0.
- A minimum overall GPA of 2.0 in their SEAS program.
- A minimum GPA of 2.2 for technical courses (see below).
- Completed all degree and University General Education requirements.

Technical GPA

What constitutes a technical course is determined by each program. For applied science and technology, biomedical engineering, civil engineering, computer engineering, electrical engineering, mechanical engineering, and systems engineering majors, all technical courses taken during the fifth through eighth semesters as outlined on each program's four-year curriculum sheet and approved by the student's faculty advisor, are counted towards the student's technical GPA. Current and archived curriculum sheets are available from SEAS departments.

As of fall 2014, for the BA and BS programs in computer science, all CSCI courses count toward the student's technical GPA.

Each student is assigned a curriculum year, with its own set of requirements, based either on time of matriculation at GW or time of declaring a major. For students who choose to update their curriculum year to a more recent one, courses that apply toward their technical GPA may change. The same is true for students who change their SEAS major. Students should consult their faculty advisor before making any changes to their academic plans.

Incompletes

For more information see Incompletes under University Regulations (<http://bulletin.gwu.edu/university-regulations/>). In addition, SEAS students must get an incomplete agreement in writing by completing a Request for an Incomplete form (<http://www.seas.gwu.edu/forms/>) with the instructor.

Pass/No Pass Grading System

SEAS students may not take required courses on the Pass/No Pass grading system. They may, however, take courses outside their required SEAS academic program on a P/NP basis.

Academic Workload

SEAS adheres to all academic workload regulations outlined under University Regulations (p. 27). In exceptional cases, these limits may be exceeded with the faculty advisor's approval.

Humanities, Social Science, and Non-Technical Elective Requirement

Each SEAS major must complete a series of non-technical areas of study. Of these courses, at least two (6 credits) must be from the Critical Analysis in Social Science list and at least one course (3 credits) from the Critical Analysis in Humanities list of the University General Education Requirement (p. 42). The remaining courses must be chosen from an approved list, or approved by the advisor, and satisfy specific departmental requirements. A full list of courses by major is available on the humanities and social science form located on the SEAS forms page (<https://www.seas.gwu.edu/policies-procedures-forms/>). Non-technical areas of study cannot include courses in scientific disciplines or mathematics, or courses focusing on technology.

When a foreign language course is taken as part of the humanities requirement, the following rules apply:

- The foreign language studied may not be a native language of the student, unless the courses taken are literature courses.
- If the student has studied the language previously, he or she must first take a placement test given by the language department concerned and enroll in a course recommended by that department.
- The advisor must approve the course selection.

*Students in the systems engineering program must complete all required University General Education humanities or social science requirements within this minimum.

Bachelor of Science Degree Programs

Students should consult the department concerned for total credit requirements for the degree programs. The listed curricula assume that all elective courses are offered for at least 3 credits. Credits for Lifestyle, Sport, and Physical Activity (LSPA) courses cannot be counted toward the degree.

Bachelor of Arts Degree Programs

SEAS offers a bachelor of arts degree with majors in applied science and technology and in computer science. Each program provides a strong and level base for students who intend to make their careers in fields allied to science and technology or computer science. The curriculum requirements for these programs can be viewed under the Undergraduate tab in this section of the Bulletin. The listed curricula assume that all elective courses are offered for at least 3 credits. Credits for Lifestyle, Sport, and Physical Activity (LSPA) courses cannot be counted toward the degree.

Special Programs

The School of Engineering and Applied Sciences offers a variety of combined, 5-year degree programs that are available to any student who meets the eligibility requirements outlined by the program in question. For a comprehensive list of programs, eligibility requirements, and deadlines is available on the SEAS website.

Double Major

Students in the School of Engineering and Applied Science (SEAS) who complete the requirements for two SEAS majors may graduate with a double major, provided the majors are in different departments and are both BS degrees.

SEAS students may also pursue a double major (second major) in another school in the University but must also adhere to all requirements outlined by that school or department. SEAS students must consult both their SEAS faculty advisor and an advisor in the department offering the second major. To officially declare a second major, students must complete a Declaration of Second Major form and have it approved by both their SEAS faculty advisor and the second major department advisor.

Additionally, any SEAS student wanting to complete a Double Major within SEAS must fulfill the following requirements:

- Due to ABET accreditation, the completion of a distinct number of major specific credits/courses for each major must be met, and approved by respective major departments.
- Completion of two capstone projects, one for each major, following registration for the two capstone course sequences approved by the major departments.

Any undergraduate student pursuing a Bachelor of Science degree outside of SEAS may declare a double major (second major) in the following fields: biomedical engineering, computer science (BS)*, computer engineering, electrical engineering, mechanical engineering, systems engineering. The student must follow all the degree requirements as those receiving a bachelor of science in engineering/computer discipline, which includes SEAS general, major, technical electives, humanities/social science, and technical GPA requirements. In addition, SEAS does not offer a double major (second major) in Civil Engineering or Applied Science and Technology.

The degree is earned from the home school, and students must complete the major in their own school in order to graduate. In no case will a double major result in two degrees. For more information see Double Degrees (<http://bulletin.gwu.edu/university-regulations/#dddegrees>) under University Regulations and the SEAS Regulations (<http://bulletin.gwu.edu/engineering-applied-science/#undergraduate>) for a Double Degree outlined below.

All other scenarios (BBA, BFA, BA, etc.) require the student to complete either a BA in computer science or a double degree. See Double Degree (<http://bulletin.gwu.edu/university-regulations/#DDdegrees>).

Graduation grade-point average criteria:

To satisfactorily complete a double major (second major) in any engineering/computer science discipline, a student must have a minimum grade-point average of 2.20 in all technical engineering/computer science courses and a 2.00 overall in courses required for the double major (second major). See *Technical GPA* section for more information about how this GPA is calculated.

*SPECIAL NOTE: The Department of Computer Science has specific requirements for admission into a double major (second major) before a student will be allowed to declare either a BS or BA degree. However, a student with a BA primary degree must complete all requirements for the BA degree outlined by the Department and students with a primary BS degree must complete all the degree requirements as those outlined in the BS in Computer Science degree program.

Double Degree

Any SEAS students pursuing a double degree must meet all eligibility requirements outlined under Double Degree (<http://bulletin.gwu.edu/university-regulations/#double>) under University Regulations. They also must:

- Complete SEAS double degree application.
- Provide a course plan approved by both primary and second-degree departments.
- Receive approval from both the primary and second-degree programs' Dean's offices.

Additionally, a SEAS student wanting to complete a double degree within SEAS must:

- Complete a distinct number of major-specific credits/courses for each major, and approved by respective major departments, in accordance with ABET accreditation requirements.
- Complete two capstone projects, one for each major, with registration in the two capstone course sequences approved by the major departments.

Minors

The School of Engineering and Applied Science offers a variety of minors, including biomedical engineering, computer engineering, computer science, electrical engineering, mechanical engineering, operations research, and systems engineering to all students. The School may require students to meet certain eligibility requirements to declare the minor. SEAS students may only declare a minor outside their department and must consult their faculty advisor before enrolling in a minor in another school of the University.

SEAS students who wish to declare a minor officially should complete a Declaration of Minor form, which must be signed by both their SEAS faculty advisor and the minor department advisor. Depending on the student's major, additional credits beyond the minimum required for the minor may be required. Students from schools other than SEAS, should email seasadvising@gwu.edu for more information about requirements and eligibility criteria, before requesting to declare a minor through the department.

Graduate Programs

Degree Programs

Fields of graduate study offered by SEAS include biomedical engineering, civil and environmental engineering, computer engineering, computer science, electrical engineering, engineering management, mechanical and aerospace engineering, systems engineering, and (at the MS level only) cybersecurity in computer science, telecommunications engineering, and regulatory biomedical engineering (MEng). Degree requirements and representative areas of focus within each field are listed in this section of the Bulletin. In some fields, students may choose to focus their coursework in other specialties as well. For information on certificate, professional, and doctoral degree studies in a given field students should contact the relevant department.

Entrance requirements are outlined under individual degree programs. The following information pertains to all SEAS graduate and certificate programs.

Transfer of Credit

With the approval of the student's advisor and department chair, graduate credit earned at a level of study equivalent to that being pursued at GW may be transferred, when applicable, to meet degree requirements of the School. For

a master's or professional degree candidate, or a doctoral candidate whose highest earned degree is a master's, up to 6 credits may be transferred. For a doctoral candidate whose highest earned degree is a bachelor's, up to 24 credits may be transferred. In all cases, credits must have been completed with a minimum GPA of 3.0 at another accredited and recognized institution. The professional and doctoral degree programs require that the credit be earned no more than five years prior to admission to the GW program, and some departments require that it be earned more recently. Credit applied toward a previously earned degree may not be transferred. Transfer of credit regulations apply to courses taken as a non-degree student through GW's Office of Non-Degree Students; that is, up to 6 credits may be taken in non-degree status before applying for admission to degree status. For purposes of transfer of credit, SEAS graduate certificate programs are not considered prior degrees. At the discretion of the department concerned, the credits earned in a SEAS certificate program may be applied to a subsequent master's degree program.

English Language Requirements for International Students

Applicants who do not hold a degree from a regionally accredited U.S. institution of higher learning are required to submit scores from the Test of English as a Foreign Language (TOEFL), the academic International English Language Testing System (IELTS), or the Pearson Test of English-Academic (PTE). Visit the SEAS Graduate Admissions website (<http://graduate.seas.gwu.edu/admissions-requirements/>) for possible exemptions from this policy. The required minimum score for admission is 550 paper-based or 80 Internet-based on the TOEFL, an overall band score of 6.0 on the IELTS with no individual band score below 5.0, or a score of 53 on the PTE. The Department of Engineering Management and Systems Engineering requires a TOEFL score of 600 paper-based or 100 internet-based, or an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE. Applicants for graduate teaching assistantships must have a minimum score of 600 paper-based or 100 Internet-based on the TOEFL, an overall band score of 7.0 on the IELTS with no individual band score below 6.0, or a score of 68 on the PTE.

Undergraduate and graduate international students who are admitted but whose test scores fall below 100 (TOEFL), 7.0 (IELTS), or 68 (PTE) are required to take one or more courses in the English for Academic Purposes (EAP) Program. Both undergraduate and graduate students receive credit for EAP courses; however, in most cases graduate EAP credits cannot be applied to a degree. Graduate students placed in EAP courses should anticipate additional tuition expenses as well as possible extension of time needed to complete their degree programs. For detailed information concerning this requirement, consult the English for Academic Purposes Program website.

Grades

Information on grades and computing the grade-point average (GPA) is found under University Regulations (<http://bulletin.gwu.edu/university-regulations/>).

Incompletes

At the option of the instructor, the symbol of *I* (Incomplete) may be recorded if a student, for reasons beyond their control, is unable to complete the work of the course and if the instructor is informed of and approves such reasons before the date when grades must be reported. The symbol *I* may be recorded only if the student's prior performance and class attendance in the course have been satisfactory. Any course in which a student fails to complete the work of the course and does not provide the instructor with a satisfactory explanation before the date when grades must be turned in will be graded *F*. If acceptable reasons are later presented, the instructor may initiate an appropriate grade change. Although the *I* may remain on the record for a maximum of one year, the instructor should normally set a much briefer period within which the uncompleted work must be made up. The *I* cannot be removed by the student's re-registering for the course at GW or taking its equivalent elsewhere. An Incomplete that is not removed within one calendar year or at the time of the student's graduation, whichever occurs first, is automatically changed to an *F*. As of fall 2014, when the *I* is changed to a letter grade the *I* will be replaced by the letter grade on the transcript. As of fall 2014, when the *I* is changed to a letter grade the *I* will be replaced by the letter grade on the transcript. Engineering Management and Systems Engineering students with two or more outstanding Incompletes are barred from further course enrollment; see Incompletes under University Regulations regarding continuous enrollment.

Credit/No Credit Grading System

SEAS students may take SEAS courses under the Credit/No Credit grading system, but credit for such courses cannot be applied toward any degree program in SEAS.

Residence and Continuous Enrollment

All work for the degree must be completed in residence unless an exception is granted by the department chair. Students in a degree program are expected to be continuously enrolled in the School until the degree is conferred. To maintain continuous enrollment, students may register in one of the following categories. See Residence and Continuous Enrollment under University Regulations (<http://bulletin.gwu.edu/university-regulations/>) for more information.

Leave of Absence

This status is available to students who, with special permission, are attending classes at another institution; who have temporarily transferred out of the area, e.g., for military TDY; or who are having temporary medical problems. A leave of absence is usually limited to two semesters. See Leave of

Absence under University Regulations (<http://bulletin.gwu.edu/university-regulations/>) for more information.

Continuing Research

Students who have completed their research credits but are not yet ready to defend a thesis or dissertation, must register for 1 credit of SEAS 0920 Continuing Research - Master's or SEAS 0940 Continuing Research - Doctoral each semester as appropriate.

Examination Preparation

Students who are studying for a comprehensive or qualifying examination for the current or following semester, and are not taking any courses, must register for SEAS 0930 Examination Preparation (Examination Preparation) as appropriate. A student who breaks their registration must apply for readmission to the degree program under whatever conditions and regulations are in force at that time.

Master of Science

The MS degree is offered in the fields of biomedical engineering, civil and environmental engineering, computer engineering, computer science, data analytics, electrical engineering, engineering management, mechanical and aerospace engineering, systems engineering, cybersecurity in computer science, and telecommunications engineering. Each field in turn encompasses several areas of focus. The course of study responds to the unique interests of the student, who designs an individual program in close consultation with an assigned advisor. In most areas, students follow a prescribed core and approved elective courses from within SEAS and from other schools of the University. Because engineering expertise includes a broad foundation in technology, engineering students may profit from study in other academic areas to sharpen their focus in practice. Students must satisfy, through undergraduate studies or otherwise, either the prerequisites specified for the desired field or approved equivalents.

Entrance Requirements

Admission to the master of science degree program requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must submit scores from the Graduate Record Examination (GRE) general test, with the exception of applicants from SEAS undergraduate programs and those applying to the data analytics program, special cohort and contract programs. In general, a minimum GPA of 3.0 (on a 4.0 scale) in the last 60 credits of undergraduate coursework is recommended. Students must submit a statement of purpose and a minimum of two letters of recommendation, which may be from the student's advisor, faculty member(s) from the institution where the highest degree was earned, and/or workplace supervisor. Visit the Graduate Admissions website (<https://graduate.admissions.gwu.edu/>) for more information.

Special Programs

Admission to the 5-year dual BS/MS degree program requires an appropriate bachelor's degree from SEAS undergraduate programs recognized in the Regulations section. In general, a minimum GPA of 3.4 (on a 4.0 scale) is required. Students must submit a statement of purpose and a minimum of two letters of recommendation, which may be from the student's advisor, faculty member(s) from the institution where the highest degree was earned, and/or workplace supervisor. Visit the Graduate Admissions website (<https://graduate.admissions.gwu.edu/>) for more information.

Completion of the program should occur within two semesters but can take up to four semesters after the conferral of their SEAS undergraduate degree.

Graduation and Scholarship Requirements

To meet graduation requirements, courses specified in a student's program of study must be completed with a minimum GPA of 3.0. This is in addition to the requirements specified for graduation under University regulations. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. Students who receive two grades of *F* or three grades below *B–* are barred from further enrollment in graduate courses and will not be readmitted as a degree candidate. Students may not repeat for credit a course in which they have received a minimum grade of *C–*, unless required to do so by the department chair. A written statement requiring a student to repeat such a course for credit must be submitted to the registrar by the department chair. See further graduation policies under University Regulations (<http://bulletin.gwu.edu/university-regulations/>).

Time Limits

Full-time students in the master's program are allowed a maximum of three calendar years from the date of first registration as a degree candidate in prerequisite or graduate courses to complete all degree requirements; this time limit excludes any time spent taking English for Academic Purposes courses only. Part-time students in the master's program are allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students on F1 or J1 visas and students with external funding may have different time limits. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the department chair and approved by the dean.

Master's Thesis

The master's thesis must demonstrate a student's ability to make independent use of the knowledge and discipline of thought acquired through graduate study, to undertake constructive work in a given field, and to communicate the

results of the work in writing. Suitable work for which the student has professional responsibility may be considered, whether done on or off campus, provided no significant amount of work is completed without faculty supervision. An accepted thesis is the property of the University.

To register for the thesis course sequence, students must submit their advisor-approved thesis area to the appropriate department chair. While registered in the thesis course sequence, students are entitled to the advice of the faculty member under whom the thesis is to be written. Students may consult with their advisors, but they have primary responsibility for their own thesis. Students defend their theses orally before a committee of SEAS faculty members.

The thesis in final form must be submitted by the stated deadline. In the event a thesis is unfinished on the date specified, the student must register for SEAS 0920 (Continuing Research - Master's). The overall time limit for earning the degree (see Time Limits, above) may not be exceeded. All theses must be submitted electronically and meet the formatting and other requirements set forth on GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds/>). Additional information regarding thesis requirements and dates may be found under University Regulations (<http://bulletin.gwu.edu/university-regulations/>).

Master of Engineering (MEng)

The MEng degree is offered in the fields of cybersecurity policy and compliance (CPC) and regulatory biomedical engineering (rBME). The MEng (CPC) is a cohort program offered online. Its interdisciplinary content comprises courses from SEAS's departments of computer science, electrical and computer engineering, and engineering management and systems engineering. The degree presents the latest trends in cybersecurity policy to provide the tools needed to stay at the forefront of this fast-changing discipline. Course materials can be absorbed by those with technical and nontechnical bachelor's degrees. Visit the program website (<https://onlinecybersecurity.seas.gwu.edu/>) for more information. The master of engineering in regulatory biomedical Engineering (rBME) is an interdisciplinary program offered through the Department of Biomedical Engineering (<https://www.bme.seas.gwu.edu/>) in partnership with GW's School of Medicine and Health Sciences (<http://smhs.gwu.edu/>). The new program addresses a pressing need for a graduate program to train engineers in the specific set of skills of regulatory science, biomedical innovation, and entrepreneurship. Students with training in engineering or physics and/or relevant industry/government experience study the fundamentals of biomedical engineering, global regulatory affairs, regulatory strategy in the development of devices and diagnostics, regulatory compliance, engineering patent law, medical measurements, and instrument design. In addition to coursework, students gain experience in SBIR/STTR grant applications and/or

FDA Premarket Notification (510(k)) submissions for medical devices.

Entrance Requirements

Admission to the master of engineering degree program requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must submit scores from the Graduate Record Examination (GRE) general test, with the exception of applicants from SEAS undergraduate programs and those applying to cohort and contract programs. In general, a minimum GPA of 3.0 (on a 4.0 scale) in the last 60 credits of undergraduate coursework is recommended. MEng(CPC) applicants (<https://onlinecybersecurity.seas.gwu.edu/admissions/>) must submit an up-to-date resume; three letters of recommendation, at least one of which must come from a professional reference; and evidence of work experience in an IT field if they do not hold a degree in a technical discipline. MEng (BME) students must submit a statement of purpose and a minimum of two letters of recommendation. Recommendation letters may be from the student's advisor, faculty member(s) from the institution where the highest degree was earned, and/or workplace supervisor. Visit the Graduate Admissions website (<http://www.gwu.edu/gradapply/>) for more information.

Graduation and Scholarship Requirements

To meet graduation requirements, courses specified in a student's program of study must be completed with a minimum GPA of 3.0. This is in addition to the requirements specified for graduation under University regulations. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. Students who receive two grades of F or three grades below B- are barred from further enrollment in graduate courses and will not be readmitted as a degree candidate in SEAS. Students may not repeat for credit a course in which they have received a minimum grade of C-, unless required to do so by the department chair. A written statement requiring a student to repeat such a course for credit must be submitted to the registrar by the department chair. See further graduation policies under University Regulations (<http://bulletin.gwu.edu/university-regulations/>).

Time Limits

All MEng (CPC) cohort students must complete the program in three years. Full-time students in the MEng (BME) program are allowed a maximum of three calendar years from the date of first registration as a degree candidate in prerequisite or graduate courses to complete all degree requirements; this time limit excludes any time spent taking English for Academic Purposes courses only. Part-time rBME students are allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students on F1 or J1 visas and students with external funding may have different time limits. Students who do not complete degree requirements

within the allowed time will have their degree candidate status terminated. They may be readmitted to degree candidate status under conditions specified by the department chair and approved by the dean.

Graduate Certificates

Entrance Requirements

Admission to SEAS certificate programs requires an appropriate bachelor's degree from a recognized institution and evidence of a strong academic background and capacity for productive work in the field selected. All applicants must provide an online application, statement of purpose, and resume and/or curriculum vitae. In general, a minimum GPA of 3.0 (on a 4.0 scale) in the last 60 credits of undergraduate coursework is recommended. Certificate applicants are not required to submit letters of recommendation. Visit the Graduate Admissions website (<https://www.gwu.edu/graduate-admissions/>) for more information.

Graduation and Scholarship Requirements

In order to receive the graduate certificate students must have a minimum GPA in courses specified in their program of study. Courses specified upon admission as deficiency or prerequisite courses do not form part of the program of study. Students who receives two grades of *F* or three grades below *B–* are barred from further enrollment in graduate courses, and will not be readmitted as a candidate. Students may not repeat for credit a course in which they have received a minimum grade of *C–*, unless required to do so by the department chair. A written statement requiring a student to repeat such a course for credit must be submitted to the registrar by the department chair. Additional information regarding graduation requirements may be found under University Regulations (<http://bulletin.gwu.edu/university-regulations/>).

Professional Degrees

The SEAS professional degree programs are designed for those students who wish to pursue coursework beyond the master's degree with emphasis on applied subject material rather than on basic research. Successful completion of the professional degree program leads to the degree of engineer or of applied scientist.

For admission to the degree of engineer, an applicant must have earned both a bachelor's and master's degree in an area of engineering. For the degree of applied scientist, an applicant must possess a master's degree in engineering, computer science, natural science, or mathematics. Applicants who have an equivalent quantitative background may be considered as special cases by the respective departments.

Entrance Requirements

For admission to the degree of engineer, an applicant must have earned both a bachelor's and master's degree in an

area of engineering. For the degree of applied scientist, an applicant must possess a master's degree in engineering, computer science, natural science, or mathematics. Applicants who have an equivalent quantitative background may be considered as special cases by the respective departments.

Entrance requirements may vary by department within SEAS. A minimum GPA of 3.0 in graduate work is usually required, although individual departments often set higher admission standards. Some programs have specified prerequisites. An applicant who has significant deficiencies in preparation may be required to take prerequisite courses, which do not count toward any part of the requirements for the professional degree. The Departments of Computer Science and Electrical and Computer Engineering require applicants for the professional degree to have had two years of professional experience after receiving the master's degree. For specific entrance and application requirements see Master's Degree.

Graduation and Scholarship Requirements

The professional degree programs consist of a minimum of 30 credits in approved graduate-level courses beyond a master's degree. Programs of study are determined by established prerequisites and the requirements of the department in which the student wishes to enroll. The student's program must be approved by the faculty advisor and the department chair. Departments may require degree candidates to undertake and defend the results of a technical design project or development problem, or to prepare a comprehensive technical report to demonstrate the candidate's ability to make independent use of the knowledge and discipline of thought acquired through graduate study. When applicable, the student is informed of this requirement by the faculty advisor at the time when the student's program is being formulated. The project may not account for more than 6 credits.

If a student studying for the professional degree receives two grades of *F* or three grades below *B–*, study is terminated and further enrollment prohibited. A student must have a minimum of GPA of 3.0 in order to receive the degree.

Time Limits

A full-time student in the master's program is allowed a maximum of three calendar years from the date of first registration as a degree candidate in prerequisite or graduate courses to complete all degree requirements. A part-time student is allowed a maximum of five calendar years. The time limit does not include any period of registration as an unclassified student before admission to degree candidate status or any period spent on approved leave of absence. Students who do not complete degree requirements within the allowed time will have their degree candidate status terminated. Such students may be readmitted to degree candidate status under conditions specified by the department chair.

Transfer Between Degree Programs

Candidates for the professional or doctor of philosophy degree who are in good academic standing may, with the approval of the faculty advisor and department chair, transfer from one degree program to the other within their department if they meet the qualifications and requirements specified by the department. In the Department of Engineering Management and Systems Engineering, only one such transfer is permitted.

Doctoral Programs

Doctor of Philosophy

The doctoral program is designed to prepare students for careers of creative scholarship by providing a broad but balanced background of knowledge and guidance in the performance of research. The program is divided into two stages: the first comprises a study of related fields of learning that support the general area of research concentration and culminates in a qualifying examination; the second, composed of original research and the presentation of findings in a written dissertation, culminates in a final examination.

Entrance Requirements

Admission to the PhD program requires an appropriate bachelor's or master's degree from a recognized institution, evidence of a strong academic or relevant professional background, coursework designated by the department as pertinent to the field to be studied, and capacity for research. With the exception of applicants from SEAS BS and M.S. programs, applicants must submit scores from the Graduate Record Examination (GRE) general test. All applicants must submit a minimum of three letters of recommendation, at least one of which should be from the advisor and/or faculty members at the institution(s) from which a degree was earned. Students for whom the bachelor's is the highest earned degree must have a minimum GPA of 3.3 (on a 4.0 scale) in undergraduate work. Students for whom the master's is the highest earned degree, departmental requirements for the GPA in coursework leading to that degree are as follows (on a 4.0 scale): Civil and Environmental Engineering, Electrical and Computer Engineering, and Mechanical and Aerospace Engineering—3.4; Computer Science, and Engineering Management and Systems Engineering—3.5. Consult the department concerned for field-specific admission requirements.

Graduation and Scholarship Requirements

Upon admission to the first stage of the program—study of related fields culminating in the qualifying examination—students are assigned a faculty advisor who directs their studies. In some departments, a faculty committee may be appointed instead of a single advisor. Consult the department concerned for requirements.

For students who enter the program with a master's degree, the formal program of study consists of a minimum of 30

graduate-level credits. For students who enter with a bachelor's degree only, the program of study consists of a minimum of 54 graduate-level credits. These credits include both course and dissertation research credit. Individual requirements may vary by department. In many cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits stated above. Departments may establish a tool requirement, such as an examination in a computer language. Consult the department concerned for specific curriculum requirements.

If a doctoral student receives two grades of *F* or three grades below *B–*, graduate study is terminated and further enrollment prohibited. Courses in which the student earned grades below *B–* are not included in the total credit requirement for the degree. Students who receive any grade below *B–* are required to review their programs of study with their advisors. Visit the doctor of engineering in engineering management (<https://seasonline.gwu.edu/doctoral-degrees/doctor-of-engineering/>) and doctor of philosophy in systems engineering (<https://seasonline.gwu.edu/doctoral-degrees/doctor-of-philosophy/>) program websites for graduation and scholarship information for those distance learning doctorates.

Time Limits

In general, one year of full-time study is the minimum amount of time needed to prepare for the qualifying examination. Students should consult the individual department for specific timelines and regulations. In general, the qualifying examination must be completed within five years of the date of admission, unless specified otherwise by the department. The entire degree program must be completed within seven years, unless the department grants an extension. Approval of an extension is conditional on satisfactory progress. The time period for completion of the degree may be adjusted by the department for an approved leave of absence. A minimum of two years of full-time study and three years of research should be expected. All time periods indicated here are increased by two years for students entering the doctoral program without a master's degree.

Full-time doctoral students must register for a minimum of 9 credits per semester until the minimum number of credits are completed, and 1 credit of SEAS 0940 (Continuing Research - Doctoral) each semester thereafter until satisfactory completion of the final examination. Part-time doctoral students usually register for a minimum of 6 credits per semester until the minimum number of credits is completed, and 1 credit of Continuing Research each semester thereafter until satisfactory completion of the final examination. No minimum workload is required during the summer session.

Preliminary and Qualifying Examinations

The Department of Computer Science requires a preliminary examination that must be passed within four semesters of

starting the program. It comprises material from the areas of algorithms and theory, and software and systems.

The Department of Electrical and Computer Engineering requires a preliminary examination that must be taken before completing 18 credits after initial registration. The examination is guided by, but not limited to, the core material of the GW master's program. Specific details regarding the structure of the exam are available in the department.

To be admitted to the qualifying examination that is required of all doctoral students, students must have a minimum cumulative GPA of 3.2 in the Departments of Civil and Environmental Engineering and Computer Science, and of 3.4 in the Departments of Biomedical Engineering, Electrical and Computer Engineering, Engineering Management and Systems Engineering, and Mechanical and Aerospace Engineering.

The qualifying examination is the principal means of determining whether a student will qualify as a candidate for the doctoral degree and progress to the second stage of the program. Its purpose is to ascertain whether the student's background and intellectual development are adequate to support doctoral research in the central field.

Preliminary and qualifying examinations may be written or oral or both. Students should consult the departments for specific guidelines. The examinations are conducted on dates established by the departments and are administered by a faculty committee. Upon favorable report of the examiners following the qualifying examination, students are admitted to candidacy for the degree. Students then begin specialized study and research under the supervision of a designated member of the full-time faculty. At the discretion of the committee that prepared the examination, students who fail any part of the qualifying examination may be given a second opportunity to qualify for candidacy. Usually, the entire examination must be retaken. Students who fail to qualify for candidacy in a doctoral program of the School will be considered to have failed on a school-wide basis and will not be admitted to further doctoral study within the School.

The Dissertation and Final Examination

Students admitted to candidacy for the degree of Doctor of Philosophy choose the faculty member under whom they wish to conduct research. The faculty member may accept or reject the request to serve as the student's director of research. The research area must be approved by the director, under whom the candidate conducts dissertation research throughout the remainder of the doctoral program. Students may consult other members of the faculty on an informal basis. In the Departments of Engineering Management and Systems Engineering and Civil and Environmental Engineering, students are required to present a written dissertation proposal to a committee of three full-time faculty members and to successfully defend the proposal in an oral defense prior to performing the bulk of their dissertation research. Work on

the dissertation encompasses a minimum of 12 to 24 credits, depending on the department.

The dissertation should embody the results of extended original study and include material deemed worthy of publication in recognized scientific and engineering journals. Students are expected to attempt to have the results of the research published as soon as possible after they receive the degree and to submit copies of the published material to the dean. The Department of Computer Science requires that at least one article be accepted for publication by a refereed conference or journal prior to completion of degree requirements. The Department of Engineering Management and Systems Engineering requires that an article be accepted for review by a refereed journal prior to completion of degree requirements; see the Doctor of Philosophy in Systems Engineering program (p. 679) website. The Department of Electrical and Computer Engineering requires the submission of a paper to a refereed journal and its acceptance for publication prior to the completion of degree requirements. Credit must be given in the publication to the fact that the material is abstracted, summarized, or developed from a dissertation submitted to The George Washington University in partial fulfillment of the requirements for the PhD.

All dissertations must be submitted electronically and meet the formatting and other requirements set forth at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds/>). Regulations regarding the form of the dissertation and preparation of the abstract are available in department offices. The dissertation, with accompanying files, becomes the property of the University.

Upon acceptance of the dissertation by the research committee, the candidate is presented for the final examination. The final examination is oral and is open to the public. The candidate must demonstrate a mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University especially to participate in the examination. The director of research usually serves as advocate for the candidate. Students should consult department regulations concerning the formation of the committee and scheduling of the examination. When the examining committee is convinced of the quality and originality of the candidate's contribution to knowledge as well as his or her mastery of the scholarship and research techniques of the field, the committee recommends the candidate for the degree of doctor of philosophy. Students completing their degree program should refer to the sections on Eligibility for Graduation and Participation in the Commencement Ceremony under University Regulations (p. 27).

Doctor of Engineering

The School of Engineering and Applied Science offers an off-campus doctor of engineering (DEng) degree program. The doctor of engineering program addresses the widespread

need for practitioners who can apply the knowledge they gain in the program of study within a business or technical environment, wherein the constant challenge is to create useful applications of the latest engineering principles and lead organizations that are occupied in this work.

The doctor of engineering degree currently is offered only in engineering management.

Doctor of Engineering in Engineering Management

The DEng (EM) program demands that research be applied to the solution of a real-world problem using the latest engineering concepts and tools—in other words, research toward the DEng program is applied, rather than basic. Its purpose is to empower students, who are likely to be practicing engineers, to create advanced, practice-based solutions.

Admission to the DEng (EM) program requires: (1) bachelor's and master's degrees from accredited institutions in engineering, applied science, mathematics, computer science, business administration, or information technology; (2) a minimum of two college-level calculus courses passed with grades of B- or above; and (3) a minimum graduate-level GPA of 3.2 (on a 4.0 scale).

The DEng (EM) program consists of 45 credits divided into a classroom phase of 10 graduate-level, three-credit courses, and a research phase during which a practice-based case study is undertaken on a topic related to engineering management, chosen by the student and approved by the adviser. Research for the case study comprises 15 credits. Prospective students are advised to contact the Engineering Management and Systems Engineering Department for additional information.

Visit the program website for additional information.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in applied science and technology (p. 738)
- Bachelor of Arts with a major in computer science (p. 740)
- Bachelor of Science with a major in biomedical engineering (p. 743)
- Bachelor of Science with a major in civil engineering (p. 744)
- Bachelor of Science with a major in civil engineering, environmental engineering option (p. 747)
- Bachelor of Science with a major in civil engineering, medical preparation option (p. 749)
- Bachelor of Science with a major in civil engineering, transportation and sustainability engineering option (p. 751)
- Bachelor of Science with a major in computer engineering (p. 753)
- Bachelor of Science with a major in computer science (p. 755)
- Bachelor of Science with a major in electrical engineering (p. 759)
- Bachelor of Science with a major in electrical engineering, energy option (p. 760)
- Bachelor of Science with a major in electrical engineering, medical preparation option (p. 762)
- Bachelor of Science with a major in mechanical engineering (p. 764)
- Bachelor of Science with a major in mechanical engineering, aerospace option (p. 765)
- Bachelor of Science with a major in mechanical engineering, biomechanical option (p. 767)
- Bachelor of Science with a major in mechanical engineering, medical preparation option (p. 768)
- Bachelor of Science with a major in mechanical engineering, patent law option (p. 770)
- Bachelor of Science with a major in mechanical engineering, robotics option (p. 771)
- Bachelor of Science with a major in systems engineering (p. 773)

Minors

- Minor in biomedical engineering (p. 786)
- Minor in computer engineering (p. 786)
- Minor in computer science (p. 788)
- Minor in electrical engineering (p. 787)
- Minor in mechanical engineering (p. 787)
- Minor in operations research (p. 788)
- Minor in systems engineering (p. 788)

Combined programs

- Dual Bachelor of Arts with a major in applied science and technology and master of science in the field of computer science (p. 775)
- Dual Bachelor of Arts with a major in applied science and technology and Master of Science in the field of cybersecurity in computer science (p. 776)
- Dual Bachelor of Arts with a major in applied science and technology and Master of Science in the field of data analytics (p. 776)
- Dual Bachelor of Arts with a major in computer science and Master of Science in the field of computer science (p. 776)
- Dual Bachelor of Arts with a major in computer science and Master of Science in the field of cybersecurity in computer science (p. 776)
- Dual Bachelor of Science with a major in biomedical engineering and Master of Engineering in the field of regulatory biomedical engineering (p. 777)
- Dual Bachelor of Science with a major in biomedical engineering and Master of Science in the field of

biomedical engineering (<http://bulletin.gwu.edu/engineering-applied-science/biomedical-engineering/combined-bs-ms-biomedical-engineering/>)

- Dual Bachelor of Science with a major in biomedical engineering and Master of Science in the field of computer science (p. 777)
- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field environmental engineering (p. 777)
- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field structural engineering (p. 777)
- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field transportation engineering (p. 779)
- Dual Bachelor of Science with a major in computer engineering and Master of Science in the field of computer engineering (p. 781)
- Dual Bachelor of Science with a major in computer engineering and Master of Science in the field of electrical engineering (p. 781)
- Dual Bachelor of Science with a major in computer engineering and Master of Science in the field of telecommunications engineering (p. 782)
- Dual Bachelor of Science with a major in computer science and Master of Science in the field of computer science (p. 782)
- Dual Bachelor of Science with a major in computer science and Master of Science in the field of cybersecurity in computer science (p. 782)
- Dual Bachelor of Science with a major in electrical engineering and Master of Science in the field of computer engineering (p. 782)
- Dual Bachelor of Science with a major in electrical engineering and Master of Science in the field of electrical engineering (p. 782)
- Dual Bachelor of Science with a major in mechanical engineering and Master of Science in the field mechanical engineering (p. 783)
- Dual Bachelor of Science with a major in electrical engineering and Master of Science in the field of telecommunications engineering (p. 784)
- Dual SEAS Bachelor of Science majors and Master of Science in the field of computer science (p. 784)
- Dual SEAS Bachelor of Science majors and Master of Science in the field of cybersecurity in computer science (p. 785)
- Dual SEAS Bachelor of Science majors and Master of Science in the field of data analytics (p. 785)

MASTER'S

Master's programs

- Master of Engineering in the field of cloud computing management (p. 789) (online)
- Master of Engineering in the field of construction engineering (p. 790)
- Master of Engineering in the field of cybersecurity analytics (p. 791) (online)
- Master of Engineering in the field of cybersecurity policy and compliance (p. 790) (online)
- Master of Engineering in the field of regulatory biomedical engineering (p. 791)
- Master of Science in the field of biomedical engineering (p. 792)
- Master of Science in the field of civil and environmental engineering (p. 793)
- Master of Science in the field of computer engineering (p. 794)
- Master of Science in the field of computer science (p. 795)
- Master of Science in the field of cybersecurity in computer science (p. 796)
- Master of Science in the field of data analytics (p. 798)
- Master of Science in the field of electrical engineering (p. 799) (on-campus or online)
- Master of Science in the field of engineering management (p. 802) (on-campus or online)
- Master of Science in the field of mechanical and aerospace engineering (p. 804)
- Master of Science in the field of systems engineering (p. 805) (on-campus or online)
- Master of Science in the field of telecommunications engineering (p. 807)

DOCTORAL

Doctoral programs

- Doctor of Engineering in the field of engineering management (p. 807) (on-campus or online)
- Doctor of Philosophy in the field of biomedical engineering (p. 808)
- Doctor of Philosophy in the field of civil and environmental engineering (p. 809)
- Doctor of Philosophy in the field of computer engineering (p. 810)
- Doctor of Philosophy in the field of computer science (p. 811)
- Doctor of Philosophy in the field of electrical engineering (p. 813)
- Doctor of Philosophy in the field of engineering management (p. 814)

- Doctor of Philosophy in the field of mechanical and aerospace engineering (p. 816)
- Doctor of Philosophy in the field of systems engineering (p. 818) (on-campus or online)

CERTIFICATES

Certificate Programs

At the discretion of the respective departments, credit earned in a certificate program may be applied to a subsequent master's degree program. Scholarship requirements are the same as those for the master's degree program. Details are available in the Office of the Dean.

Graduate Certificates

- Gateway to computer science graduate certificate (<http://bulletin.gwu.edu/engineering-applied-science/computer-science/certificate-gateway-to-cs/>)
- Graduate certificate in computer-integrated design in mechanical and aerospace engineering (p. 820)
- Graduate certificate in computer security and information assurance (p. 821)
- Graduate certificate in emergency management and public health (p. 821)
- Graduate certificate in energy engineering and management (p. 822)
- Graduate certificate in engineering and technology management (p. 822)
- Graduate certificate in environmental engineering (p. 823)
- Graduate certificate in environmental and energy systems management (p. 824)
- Graduate certificate in geoenvironmental engineering (p. 824)
- Graduate certificate in high-performance computing (p. 825)
- Graduate certificate in homeland security emergency preparedness and response (p. 826)
- Graduate certificate in structural engineering (p. 826)
- Graduate certificate in systems engineering (p. 827)
- Graduate certificate in systems management (p. 827)
- Graduate certificate in transportation engineering (p. 828)

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Applied Sciences (APSC) (p. 1417)
- Biomedical Engineering (BME) (p. 1438)
- Civil Engineering (CE) (p. 1454)
- Computer Science (CSCI) (p. 1471)
- Electrical and Computer Engineering (ECE (p. 1553)) (p. 1553)
- Engineering Management and Systems Engineering (EMSE (p. 1567)) (p. 1567))
- Mechanical and Aerospace Engineering (MAE (p. 1692)) (p. 1692))
- School of Engineering and Applied Sciences (SEAS (p. 1812)) (p. 1812))

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

BIOMEDICAL ENGINEERING

OVERVIEW

Mission

The mission of the Department of Biomedical Engineering is to motivate and inspire students by providing high-caliber, fully integrated programs to prepare them to lead and participate in advancing the state of the art in health care technologies. In addition, graduates earn advanced degrees and further knowledge in the discipline by actively pursuing scholarly research for publication and dissemination.

Biomedical Engineering Program Educational Objectives

The biomedical engineering program prepares graduates who achieve employment in biomedical and related industry, government, or organizational fields using skills and knowledge learned while an undergraduate student. This is evidenced by their:

- Employment history and/or career advancement.
- Professional visibility (e.g., patents, invention disclosures, honors or awards, refereed journal articles, conference papers and other publications, and involvement in professional associations).
- Entrepreneurial activities.

Student Outcomes

The Department of Biomedical Engineering aims to produce graduates who are able to:

- Identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
- Apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
- Communicate effectively with a range of audiences.
- Recognize ethical and professional responsibilities in engineering situations and make informed judgments that consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
- Function effectively on a team whose members work together to provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
- Develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
- Acquire and apply new knowledge as needed, using appropriate learning strategies.

UNDERGRADUATE

Bachelor's program

- Bachelor of Science with a major in biomedical engineering (p. 743)
- Bachelor of Science with a Second Major in Biomedical Engineering.

Any undergraduate student who is enrolled at GW, may declare a second major in biomedical engineering only if their primary degree is a bachelor of science and the student must follow all the same degree requirements as those receiving a bachelor of science in biomedical engineering which including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students pursuing other bachelor's degrees (e.g., BA, BBA, BFA) must complete a double degree (p.).

GRADUATION GRADE-POINT AVERAGE CRITERIA

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

Minor

- Minor in biomedical engineering (p. 786)

Combined programs

- Dual Bachelor of Science with a major in biomedical engineering and Master of Engineering in the field of regulatory biomedical engineering (p. 777)
- Dual Bachelor of Science with a major in biomedical engineering and Master of Science in the field of biomedical engineering (p. 777)
- Dual Bachelor of Science with a major in biomedical engineering and Master of Science in the field of computer science (p. 777)

GRADUATE

Master's programs

- Master of Engineering in the field of regulatory biomedical engineering (p. 791)
- Master of Science in the field of biomedical engineering (p. 792)

Doctoral program

- Doctor of Philosophy in the field of biomedical engineering (p. 808)

FACULTY

Professors I. Efimov (Chair), E. Entcheva, M. Kay, M. Loew, J. Zara, V. Zderic

Associate Professors Z. Li, C. Park

Assistant Professors A. Papa, L. Lu

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BME 1010. Introduction to Biomedical Engineering. 1 Credit.

Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. (Fall, Every Year).

BME 1020. Introduction to Biomedical Engineering. 2 Credits.

Continuation of BME 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering; practical experiments and projects; introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. Prerequisite: BME 1010. (Spring, Every Year).

BME 2810. Biomedical Engineering Seminar I. 1 Credit.

BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. Prerequisite: BME 1020. (Fall).

BME 2815. Biomedical Engineering Seminar II. 1 Credit.

BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. (Fall and spring).

BME 2820. Biomedical Engineering Programming I. 3 Credits.

Introduction to Matlab Programming and fundamentals of programming in general with a focus on biomedical engineering problems. Functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques are covered; manipulation of vectors and matrices and the use of vectorized code. (Fall, Every Year).

BME 2825. Biomedical Engineering Programming II. 3 Credits.

Introduction to C Programming and fundamentals of data structures with a focus on biomedical engineering problems; the use of data structures, pointers, and linked lists and discuss concepts such as binary trees and sorting algorithms. Students are expected to understand the basics of programming concepts such as the use of functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques are understood, but no prior knowledge of C is required. Prerequisites: BME 2820 or permission of the instructor. (Fall, Every Year).

BME 3820. Principles and Practice of Biomedical Engineering. 4 Credits.

Introduction to engineering principles applicable to medicine; medical measurements for clinical use and research; anatomy and physiology of the human body from system and cellular approaches. Principles of biomedical engineering are reinforced by determining and analyzing physiological measurements in laboratory exercises. Prerequisites: ECE 2110 and APSC 2113. (Fall).

BME 3907. Special Topics in Biomedical Engineering. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. (Fall, spring, and summer, Every Year).

BME 3910. Capstone Design Preparation. 1 Credit.

Elements of project design; formulation of project ideas. Prerequisites: BME 2810 and BME 2815. (Fall, Every Year).

BME 3915W. Biomedical Engineering Capstone Project Lab I. 1 Credit.

BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BME 3910. (Same as ECE 3915W) (Spring, Every Year).

BME 4480. Bioelectricity. 3 Credits.

Origin and applications of bioelectric phenomena; engineering tools for excitable cells, tissues and organs; biophysical and equivalent electrical engineering analysis; heart and brain abnormalities from a quantitative perspective. (Spring, Every Year) Same As: BME 6480.

BME 4488. Cell and Molecular Imaging. 3 Credits.

Basics of optics, microscopy, spectroscopy, and fluorescence in the context of imaging at the cellular and molecular level; advanced techniques for probing protein interactions and live cell functions; image processing algorithms and principles of scientific visualization. Restricted to juniors and seniors. Prerequisites: BME 2825 and ECE 3220. (Same as BME 6488) (Fall, Every Year).

BME 4489. Socially Assistive Robotics and Interactive Learning. 3 Credits.

Application of advanced robotic solutions to promoting human lives through social, emotional, and interactive therapies in areas such as social and behavioral therapies for children with autism spectrum disorder (ASD) and emotional and rehabilitation assistance in elder care. Prerequisite: BME 2825. Recommended background: Experience with computer programming. (Fall, Every Year) Same As: BME 6489.

BME 4820. Anatomy and Physiology for Engineers. 3 Credits.

Human anatomy and physiology from an engineering viewpoint. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 6820) (Fall).

BME 4825. Biomedical Properties Laboratory. 1 Credit.

Introduction to biophysical concepts in a laboratory setting; emphasis on biomedical engineering. (Spring).

BME 4830. Introduction to Medical Imaging Methods. 3 Credits.

Application of linear systems analysis methods to medical imaging techniques; basic properties of imaging systems; physics and instrumentation behind modalities; advantages, disadvantages, and primary applications of modalities. Prerequisites: BME 3820 and ECE 3220. (Spring, Every Year).

BME 4835. Introduction to Assistive Robotics. 3 Credits.

Application of advanced robotic solutions to promoting human lives through social, emotional, and interactive therapies in areas such as social and behavioral therapies for children with autism spectrum disorder (ASD) and emotional and rehabilitation assistance in elder care. Prerequisites: BME 2825 and ECE 3220. (Spring, Every Year).

BME 4920W. Biomedical Engineering Capstone Project Lab II. 3 Credits.

BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BME 3915W. (Same as ECE 4920W) (Fall, Every Year).

BME 4925W. Biomedical Engineering Capstone Project Lab III. 3 Credits.

BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Spring, Every Year).

BME 4990. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Restricted to juniors and seniors. (Fall and spring, Every Year).

BME 6045. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. (Fall and spring).

BME 6050. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit. (Spring, Every Year).

BME 6065. Colloquium. 3 Credits.

Seminars and meetings featuring visiting scholars in biomedical engineering. Topics vary. See department for details. Restricted to graduate students in biomedical engineering. (Fall and spring, Every Year).

BME 6480. Bioelectricity. 3 Credits.

Origin and applications of bioelectric phenomena; engineering tools for excitable cells, tissues and organs; biophysical and equivalent electrical engineering analysis; heart and brain abnormalities from a quantitative perspective. Restricted to graduate students. (Spring, Every Year) Same As: BME 4480.

BME 6481. Regulatory Law for Medical Devices. 3 Credits.

An introduction to legal issues pertinent to medical device regulation; device classification, general and special controls, quality system regulation, 510(k) submissions, premarket approval applications (PMAs), clinical trials, investigational device exemptions (IDEs) and medical device reporting (MDR), recalls, labeling and advertising, enforcement, and emerging legal issues. Pharmaceutical regulation. (Fall).

BME 6482. Medical Measurements. 3 Credits.

Theory of measurements in biological areas and techniques for electronic measurements on biological specimens. Experiments in acquisition, processing, and measurement of physiological signals, ECG, EEG, and EMG. (Fall).

BME 6483. Medical Instrumentation Design. 3 Credits.

The medical device design process and many of its key aspects, including needs assessment, regulatory processes and concerns, intellectual property, patient safety, and market analysis. Prerequisites: BME 6482. (Spring).

BME 6484. Biomedical Signal Analysis. 3 Credits.

Origin, acquisition, and analysis of physiological signals. Deterministic and probabilistic modeling; fitting models; sequences and time series. Feature extraction from EEG and ECG; Fourier analysis and filtering; modeling. Noise and artifact removal and signal compensation. Prerequisites: BME 6482. (Spring).

BME 6485. Medical Imaging I. 3 Credits.

Principles of projection radiography, fluoroscopy, tomography, ultrasound and nuclear sources; biomagnetic imaging. Source and object; recorder resolution and noise; scatter and attenuation. Ultrasound techniques and instrumentation, including physics of ultrasound, transducers, ultrasound imaging, hemodynamics, Doppler techniques. Prerequisite: BME 4830. (Fall).

BME 6486. Clinical Medicine for Engineers. 3 Credits.

Overview of clinical medicine with emphasis on those areas most affected by engineering and technology. (Spring, Every Year).

BME 6487. Rehabilitation Medicine Engineering. 3 Credits.

Cross-sectional view of those areas of medicine most involved with the treatment of handicapped individuals; application of engineering theory and techniques to the rehabilitation of handicapped individuals; solutions to major problem areas and specific problems. Prerequisite: BME 6482. (Spring, Every Year).

BME 6488. Cell and Molecular Imaging. 3 Credits.

Basics of optics, microscopy, spectroscopy, and fluorescence in the context of imaging at the cellular and molecular level; advanced techniques for probing protein interactions and live cell functions; image processing algorithms and principles of scientific visualization. Students taking this course for graduate credit complete additional work. Restricted to graduate students. Recommended background: Computer Programming. (Fall, Every Year) Same As: BME 4488.

BME 6489. Socially Assistive Robotics and Interactive Learning. 3 Credits.

Application of advanced robotic solutions to promoting human lives through social, emotional, and interactive therapies in areas such as social and behavioral therapies for children with autism spectrum disorder (ASD) and emotional and rehabilitation assistance in elder care. Restricted to graduate students. Recommended background: Experience with computer programming. (Fall, Every Year) Same As: BME 4489.

BME 6820. Anatomy and Physiology for Engineers. 3 Credits.

Human anatomy and physiology from an engineering perspective. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 4820) (Fall).

BME 6830. Introduction to Medical Imaging Methods. 3 Credits.

Application of linear systems analysis methods to medical imaging techniques; basic properties of imaging systems; physics and instrumentation behind modalities; advantages, disadvantages, and primary applications of modalities. Recommended background: Knowledge of signal processing. (Same as BME 4830) (Spring, Every Year).

BME 6840. Digital Image Processing. 3 Credits.

Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisites: ECE 6800. (Same as ECE 6840) (Spring, odd years).

BME 6842. Image Engineering. 3 Credits.

Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010 and ECE 6015. (Same as ECE 6842) (Fall, Every Year).

BME 6850. Pattern Recognition. 3 Credits.

Random vectors, transformations. Hypothesis testing, error probability: bias, variance, and sample size, resampling; sequential methods. Bayes, other linear classifiers. Discriminant functions, support vector machines, maximum-likelihood and parameter estimation, dimensionality reduction. Nonparametric methods; unsupervised learning and clustering; feature selection and ordering. Applications in industry and medicine. Student projects. Learning is reinforced by homework problems and in-class and at-home computer examples. Prerequisite: ECE 6015. (Same as ECE 6850) (Fall, Spring, and Summer, Every Year).

BME 6885. Computer Vision. 3 Credits.

Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisites: BME 6840 or ECE 6840 or equivalent. (Same as ECE 6885) (Fall, Spring, and Summer, Every Year).

BME 6994. Biomedical Engineering Regulatory Practicum I. 3 Credits.

First part of the BME 6994 and BME 6995 practicum sequence. Students work with a practicum mentor to develop either an application for federal funding using the Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) mechanism or a 510(k) submission for U.S. Food and Drug Administration (FDA) medical device review. Independent research combined with the synthesis of technical and regulatory topics covered in the program. Restricted to students who have completed a minimum of 9 credits in the Master of Engineering in Regulatory Biomedical Engineering program. (Fall, spring, and summer, Every Year).

BME 6995. Biomedical Engineering Regulatory Practicum II. 3 Credits.

Second part of the BME 6994 and BME 6995 practicum sequence. Prerequisite: BME 6994. (Fall, spring, and summer, Every Year).

BME 6998. Thesis Research. 3 Credits.

Thesis research. (Fall and spring).

BME 6999. Thesis Research. 3 Credits.

Thesis research. (Fall and spring).

BME 8484. Medical Imaging II: Image Analysis. 3 Credits.

Review of medical imaging modalities; review of image formation and characteristics, both static and dynamic; methods for and evaluation of: medical image reconstruction, enhancement, segmentation, registration, and description; feature extraction and classification; error analysis and the receiver operating characteristic; imaging applications in diagnosis and treatment, including surgery; metrics of truth and quality, with implications for image compression. Prerequisites: BME 6484. (Fall).

BME 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall, spring, and summer, Every Year).

CIVIL AND ENVIRONMENTAL ENGINEERING

Mission Statement

The mission of the Department of Civil and Environmental Engineering is to provide an academic environment where professional education can be pursued, scholarly research in science and technology can be conducted, and the interest of the public can be served through the advancement of knowledge.

In pursuit of this mission, the administration, faculty, and staff join to provide a broad-based, rigorous professional education in civil engineering at the undergraduate level; a graduate education at the master's level in major areas of civil engineering; and doctoral programs in selective areas of excellence within civil engineering.

Educational Objectives of the Bachelor of Science Program

The civil engineering undergraduate program of study prepares its graduates with the following capabilities necessary to attain career and professional accomplishments:

- Technical knowledge: students are able to use their technical knowledge and expertise in mathematics, science, and engineering to identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications;
- Team skills: students develop leadership skills, demonstrate proficiency in all forms of communication, and perform well in a multidisciplinary team environment;
- Continuous education: students recognize the need for continuing their education through graduate studies, continuous education opportunities, and/or self-education;
- Professionalism: students are prepared to exercise the highest standards of personal and professional integrity, demonstrate an understanding of the ethical and professional issues related to the procurement of work, and provide coordination between the design and construction aspects of the civil engineering profession.

These objectives are accomplished through a rigorous curriculum that emphasizes fundamentals in basic sciences, mathematics, humanities, and engineering in five major areas of civil engineering: environmental engineering, geotechnical engineering, structural engineering, water resources engineering, and transportation engineering. The curriculum enables students to use modern engineering tools to work individually and in teams. The curriculum contains a well-structured set of courses that enable students to develop the required analytical, experimental, and design skills.

Educational Outcomes of the Bachelor of Science Program

The civil engineering undergraduate program of study prepares its graduates to have the following capabilities for career and professional advancement:

- Apply knowledge of mathematics, science, and engineering; design and conduct experiments; and analyze and interpret data;
- Design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability constraints;
- Identify, formulate, and solve engineering problems;
- Use the techniques, skills, and modern engineering tools necessary for engineering practice;
- Function on multidisciplinary teams; and
- Communicate effectively.

Students are provided with the broad education necessary to understand the impact of engineering solutions in a global

economic, environmental, and social context; a knowledge of contemporary issues; an understanding of professional and ethical responsibility; and a recognition of the need for and ability to engage in lifelong learning.

The civil engineering undergraduate program curriculum includes coverage of proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry; proficiency in a minimum of four recognized major civil engineering areas; the ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas; the ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum; and an understanding of professional practice issues such as procurement of work, bidding versus quality-based selection processes, how the design professionals and the construction professions interact to construct a project, the importance of professional licensure and continuing education, and/or other professional practice issues.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in civil engineering (p. 744)
- Bachelor of Science with a major in civil engineering, environmental engineering option (p. 747)
- Bachelor of Science with a major in civil engineering, medical preparation option (p. 749)
- Bachelor of Science with a major in civil engineering, transportation and sustainability option (p. 751)

Combined programs

- Dual Bachelor of Science with a major in civil engineering and Master of Science in the field environmental engineering (p. 777)

GRADUATE

Master's program

- Master of Engineering in the field of construction engineering (p. 790)
- Master of Science in the field of civil and environmental engineering (p. 793)

Doctoral program

- Doctor of Philosophy in the field of civil and environmental engineering (p. 809)

CERTIFICATE

- Graduate certificate in environmental engineering
- Graduate certificate in geoenvironmental engineering

- Graduate certificate in structural engineering (p. 826)
- Graduate certificate in transportation engineering (p. 828)

FACULTY

Professors S.S. Badie, M.T. Manzari (*Chair*), R. Riffat, K. Roddis, P.F. Silva

Associate Professors L. Farhadi, T. Li, S.H. Hamdar, D. Shuai

Assistant Professors X. Liu, Z. Xu

Research Professor K.H. Digges

Professorial Lecturers M.O. Critchfield, K. Garrahan, K. Ghavami, F. Sadek, C. Tin

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CE 1010. Introduction to Civil and Environmental Engineering. 1 Credit.

An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall).

CE 1020. Introduction to a Sustainable World. 1 Credit.

The science underlying the basic processes that gave rise to the world we live in and that maintain its viability for human life. Ecosystem-functioning environmental issues, such as greenhouse gas emission and ozone, with current efforts to resolve them. Technological innovations in the context of sustainability.

CE 1098. Variable Topics. 1-36 Credits.

CE 1099. Variable Topics. 1 Credit.

CE 2210. Engineering Computations. 3 Credits.

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisites: APSC 2113 and CSCI 1121. (Spring).

CE 2220. Introduction to the Mechanics of Solids. 3 Credits.

Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisites: APSC 2057 and APSC 2113. (Fall and spring, Every Year).

CE 2510. Environmental Sustainability. 3 Credits.

An introduction to environmental sustainability with focus on the nexus of water, energy, and climate; energy demands of water systems, water footprints of energy generation, and how the two valuable resources are limiting each other; technologies and research frontiers toward a sustainable water and energy supply.

CE 2710. Introduction to Transportation Engineering. 3 Credits.

Transportation system components; roadway traffic capacity and network performance measures; signalized and un-signalized intersections; monitoring techniques, instruments and data processing. Sustainability issues and environmental impact of transportation systems with focus on urban design, planning and regulation. Prerequisite: MATH 2233. (Spring, Every Year).

CE 3110W. Civil Engineering Materials. 2 Credits.

Mechanical properties and behavior of civil engineering materials such as metals, concrete, and fiber-reinforced polymer composites. Properties range from plastic deformations of metallic materials to crushing of confined and unconfined concrete. Basis of the strength of materials. Concepts of creep, fatigue, fracture, and crack propagation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CE 2220 and CHEM 1111. (Fall, Every Year).

CE 3111W. Civil Engineering Materials Lab. 1 Credit.

Measurement of stress-strain characteristics and study of failure modes in ductile steel, brittle concrete, and anisotropic composite materials. Experiments include data collection, data analysis, and interpretation and presentation of results regarding tension, compression, bending, impact, and shear properties. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. CE 3110W may be taken as a corequisite. Prerequisites: CE 3110W. (Fall).

CE 3230. Structural Theory I. 3 Credits.

Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of beams, frames, trusses, and arches. Calculation of deflections. Prerequisites: CE 2210 and CE 2220. (Fall, Every Year).

CE 3240. Structural Theory II. 3 Credits.

Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 3230. (Spring, Every Year).

CE 3310. Reinforced Concrete Structures. 3 Credits.

Properties of concrete and reinforcement; design of flexural reinforcement, shear reinforcement; development of reinforcement; design of columns, floor slabs; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. CE 3240 may be taken as a corequisite. Prerequisite: CE 3240. (Fall and spring, Every Year).

CE 3520. Environmental Engineering I: Water Resources and Water Quality. 3 Credits.

Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisites: CE 3610 and CHEM 1111. (Spring, Every Year).

CE 3521. Environmental Engineering Laboratory. 1 Credit.

Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 3520.

CE 3610. Hydraulics. 3 Credits.

Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisites: CE 2210 and MAE 3126. (Spring, Every Year).

CE 3611. Hydraulics Laboratory. 1 Credit.

Laboratory experiments and demonstrations of hydraulics in pipe and open-channel flow. Topics include center of pressure, floating bodies, Bernoulli's theorem, discharge coefficients, velocity profile, and head losses. Prerequisite or corequisite: CE 3610.

CE 3720. Highway Engineering and Design. 3 Credits.

Road vehicle performance. Principles of highway design: horizontal and vertical alignments, roadside design; drainage and drainage structures, earthwork, intersections, interchanges, parking facilities; basic traffic models; highway materials. Application of safety standards. APSC 3115 and CE 2220 may be taken as a corequisite. Prerequisites: APSC 3115, CE 2220 and MATH 2233. (Fall and spring, Every Year).

CE 4320. Metal Structures. 3 Credits.

Principles of the design of metal structures, structural elements, connections, specific problems of analysis including the use of computer software, methods of construction, professionalism in design. Prerequisite: CE 3240.

CE 4330W. Contracts and Specifications. 3 Credits.

Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors. (Spring, Every Year).

CE 4341. Senior Design Project I. 1 Credit.

First in a two-course sequence for the senior design project in civil and environmental engineering. Outcomes include team formation, project selection, task formulation and assignments, preliminary design validation and/or prototyping. Restricted to students in the civil engineering program with senior standing. (Fall, Every Year).

CE 4342. Senior Design Project II. 3 Credits.

Second in a two-course sequence for the senior design project in civil and environmental engineering. Application of civil and environmental engineering concepts in the design of a project that integrates the concepts and technical knowledge learned in two or more of the following disciplines: engineering mechanics, materials, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources engineering. Restricted to students in the civil engineering program with senior standing. Prerequisite: CE 4341. Recommended background: Knowledge of structural analysis of indeterminate structures, reinforced concrete and structural steel design, and soil mechanics. (Spring, Every Year).

CE 4410. Introduction to Geotechnical Engineering. 3 Credits.

Soils and rock formation, soil composition, permeability, seepage and flow net analysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisites: CE 2220, CHEM 1111 and MAE 3126. (Fall, Every Year).

CE 4411. Geotechnical Engineering Laboratory. 1 Credit.

Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture-density relationship of soils. CE 4410 may be taken as a corequisite. Prerequisite: CE 4410. (Fall and spring, Every Year).

CE 4450. Introduction to Geo-environmental Engineering. 3 Credits.

Characterization of soils and wastes, engineering properties of soils and geo-synthetics, fundamental concepts of fate and transport of contaminants, common practice in design and construction of waste containment systems, current methods for remediation of contaminated groundwater and soils. Prerequisites: CE 3520 and CE 4410. (Spring, Every Year).

CE 4530. Environmental Engineering II: Water Supply and Pollution Control. 3 Credits.

Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 3520.

CE 4620. Hydrology and Hydraulic Design. 3 Credits.

Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. APSC 3115 and CE 3610 may be taken as a corequisite. Prerequisites: APSC 3115 and CE 3610. (Fall and spring, Every Year).

CE 4810. Research. 1-8 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring, Every Year).

CE 4820. Special Topics. 1-6 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CE 5099. Variable Topics. 1-99 Credits.**CE 6101. Numerical Methods in Engineering. 3 Credits.**

Eigenvalue problems. Numerical solution of systems of equations and ordinary differential equations. Solution techniques for elliptic, parabolic, and hyperbolic partial differential equations. Numerical methods for solving finite element equations. Introduction to solution of fluid-flow problems. Prerequisite: CE 2210.

CE 6102. Application of Probability Methods in Civil Engineering. 3 Credits.

Uncertainty in real-world information; basic probability concepts and models; random variables; useful probability distributions, statistical estimation of distribution parameters from observed data; empirical determination of distribution models; testing hypothesis; regression and correlation analyses; decision theory. Prerequisite: APSC 3115.

CE 6110. Contracts and Specifications In Construction Engineering. 3 Credits.

Overview of contracts, specifications, and the legal environment for engineers; construction contracts, specifications, bidding, contract administration, bonds and securities, dispute resolution. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6111. Project Management For Construction. 3 Credits.

Principles of project management in construction industry. Elements of project management such as structural organization, planning, scheduling, communications, bidding, change orders, contractual relationship, and labor relations and related activities in construction. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6112. Construction Project Acquisition. 3 Credits.

Basic principles used in the procurement and tendering stages of projects up to delivery; construction management activities, financial activities, and cost estimating software and techniques. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall, Every Year).

CE 6113. Construction Contracts, Insurance, and Bonds. 3 Credits.

Common laws used in construction such as contract, tort and statutory/regulatory laws. Elements of project dispute avoidance, subcontracts, project delivery, and insurance and performance and payment bonds. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6114. Construction Methods, Materials, Equipment, and Systems. 3 Credits.

Principles of construction methods, machinery and equipment selection, and production estimation. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6115. Project Planning and Scheduling. 3 Credits.

Fundamentals of project planning and scheduling, scoping estimation risk analysis with a focus on the tools and techniques available to a project planner for mitigation of project risks. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6116. Green Building Design and Construction. 3 Credits.

Sustainability issues and green building design and delivery with a focus on development of commercial and institutional high performance green buildings; LEED ratings and accreditation. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6117. Construction Finance and Engineering Economics. 3 Credits.

Fundamentals of financing construction projects. Commonly used business models, life cycle cost analysis, and software tools for construction project cost control. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6118. Advanced Construction and Computer-Aided Design. 3 Credits.

Integration of construction techniques and computer-aided design; building information modeling and other technologies in various phases of construction management. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall, Every Year).

CE 6119. Construction Safety And Quality Control. 3 Credits.

Principles and importance of construction quality assurance and contractor quality control. Quality control methods to assess design activities in design-build contracts. Overview of hazardous situations that may arise in the construction jobsite and methods for mitigation these dangerous situations. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6121. Construction Project Control. 3 Credits.

Basic principles of scope, cost, schedule, risk, and quality management; the organization of construction firms at the general corporate level and the project level, flow of information between parties in the project, scheduling software. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6201. Advanced Strength of Materials. 3 Credits.

Deflection of beams using singular functions, unsymmetrical bending of beams, beams on elastic foundation. Beam-column problems, shear center for thin-walled beam cross sections, curved beams. Applications of energy methods, torsion, basic equations for theory of elasticity, thin- and thick-walled cylinders, stress concentration, and failure criteria. Prerequisites: CE 2220 and CE 3240. (Spring, Every Year).

CE 6202. Methods of Structural Analysis. 3 Credits.

Theory and applications of modern methods of structural analysis, direct stiffness approach, energy and variational methods, elastoplastic analysis of frames, P-delta effects, application of commonly available structural analysis software. Prerequisites: CE 2220 and CE 3240. (Fall, Every Year).

CE 6203. Reliability Analysis of Engineering Structures. 3 Credits.

Probability theory, theory of structural reliability, probabilistic analysis of strength and loads, risk and reliability function, empirical distribution, probability plot. The design service life, method of perturbation, Monte Carlo simulation. Fatigue and fracture, proof testing, inspection and repair-replacement maintenance. Prerequisite: APSC 3115.

CE 6204. Analysis of Plates and Shells. 3 Credits.

Bending and stretching of thin elastic plates under loading with various boundary conditions, continuous plates and plates on elastic foundations, theory of folded-plate structures. Theory of curved surfaces; general linear bending theory and its simplification to membrane theory; bending stresses in shells of revolution, shallow-shell theory. Prerequisites: CE 2220 and CE 3240. (Spring, odd years).

CE 6205. Theory of Structural Stability. 3 Credits.

General criteria for stability, buckling of elastic and inelastic columns and frames, torsional and lateral buckling, variational methods. Buckling of plates and shells under static loads, stability of stiffened structures, effect of imperfections and boundary conditions. Prerequisites: CE 2220 and CE 3240. (Fall, Every Year).

CE 6206. Continuum Mechanics. 3 Credits.

Introduction to the mechanics of continuous media. Tensor calculus; kinematics; stress and stress rate, conservation of mass, conservation of linear and angular momentum, energy balance, second law of thermodynamics; constitutive theory; linear and nonlinear elasticity, newtonian fluids, micropolar elasticity. Prerequisites: CE 2220. (Fall, spring, and summer, even years).

CE 6207. Theory of Elasticity I. 3 Credits.

Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatic rods, plane problems. Prerequisites: CE 2220. (Same as MAE 6207) (Spring).

CE 6208. Plasticity. 3 Credits.

Introduction to the continuum theory of plastic deformation. Physical basis of rate-independent plasticity. Concepts of yield, strain hardening and softening, reverse yield, and cyclic plasticity. Constitutive equations describing plastic deformation. Prerequisite: CE 6201 or CE 6206.

CE 6209. Mechanics of Composite Materials. 3 Credits.

Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Prerequisite: CE 3240. (Spring, even years).

CE 6210. Introduction to Finite Element Analysis. 3 Credits.

Calculus of variations. Variational formulation of the finite element method. Weighted residual techniques. Computer implementation of the finite element method. Application to problems in heat transfer, stress analysis, fluid flow, and structural analysis. Prerequisites: Proficiency in one computer language; and CE 2220 and CE 3240. (Fall, Every Year).

CE 6301. Design of Reinforced Concrete Structures. 3 Credits.

Structural behavior of reinforced concrete structures, ultimate strength and deformation characteristics; design of structural components including beams, columns, floor slabs, deep beams, corbels, and composite slab/beam systems. Prerequisite: CE 3310.

CE 6302. Prestressed Concrete Structures. 3 Credits.

Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges, and precast systems. Prerequisite: CE 3310.

CE 6310. Advanced Reinforced Concrete Structures. 3 Credits.

Conception, analysis, and design of low-rise and high-rise buildings by ultimate-strength methods, precast systems, progressive collapse, earthquake considerations, domes, folded plates, shell-type structures, and special topics. Prerequisite: CE 6301.

CE 6311. Bridge Design. 3 Credits.

Application of basic design procedures for reinforced and prestressed concrete bridges, according to AASHTO bridge specifications. Various types of concrete bridges, design superstructure bridge elements (deck slab, girders, bearing pads), and development of superstructure/substructure details. Prerequisite: CE 6302.

CE 6320. Design of Metal Structures. 3 Credits.

Structural behavior of metal structures and composite girders. Conception, analysis, and design of low-rise and high-rise buildings by elastic and inelastic methods. Earthquake considerations and special topics. Prerequisite: CE 4320.

CE 6321. Advanced Metal Structures. 3 Credits.

Conception and design of advanced structural components and systems, hysteretic behavior, plastic design principles, box-type girders, cable systems, and unique structural systems. Prerequisite: CE 6320. (As arranged).

CE 6340. Structural Dynamics. 3 Credits.

Vibration of continuous systems: membranes, beam plates, and shells; approximate methods of vibration analysis; methods of integral transform; analysis of nonlinear systems; wave propagation. Prerequisites: APSC 2058 and CE 3240. (Fall, odd years).

CE 6341. Random Vibration of Structures. 3 Credits.

Introduction to random processes, responses of linear structures to stationary and nonstationary random inputs. Structural responses to earthquakes, waves, boundary-layer turbulences, wind loads, etc. Failure analysis of structures under random loads. Prerequisites: APSC 3115 and CE 6340. (Spring, even years).

CE 6342. Structural Design to Resist Natural Hazards. 3 Credits.

Prediction of forces due to earthquakes and strong winds; generalized codes; pseudostatic methods for preliminary design; codes based on spectra, energy absorption and ductility; influence of foundations; ground failures; static and aeroelastic effects of strong winds. Design project. Prerequisites: CE 3240 and CE 4340; and CE 6340 or CE 6701. (Spring, Every Year).

CE 6350. Introduction to Biomechanics. 3 Credits.

Fundamentals of continuum mechanics as they apply to biological materials: concepts of stress, strain, and equilibrium; elastic and viscoelastic properties of solids; physiological fluid mechanics and bioheat and mass transfer. Fundamentals of solid mechanics of soft tissues and bone structures. Development of computer models and applications. Prerequisite: CE 2220. (Fall, Every Year).

CE 6401. Fundamentals of Soil Behavior. 3 Credits.

Soil mineralogy, clay-water-electrolyte systems, soil composition, fabric, structure, volume change behavior, permeability, coupled phenomena, in-situ evaluation of soil behavior. Prerequisite: CE 4410. (Fall, even years).

CE 6402. Theoretical Geomechanics. 3 Credits.

Porous media, stress-strain behavior of soil skeleton, elastic and elastoplastic models for soil behavior, critical state concept, cam clay, strength of soils, stress-dilatancy, stress paths. (Fall, odd years).

CE 6403. Foundation Engineering. 3 Credits.

Principles of soil mechanics applied to the analysis and design of mat foundations, pile foundations, retaining structures including sheeting and bracing systems, and waterfront structures. Foundations on difficult soils and reinforced earth structures. Prerequisite: CE 4410. (Spring, Every Year).

CE 6404. Geotechnical Earthquake Engineering. 3 Credits.

Ground motion, wave propagation, foundation isolation, site response analysis, seismic stability of retaining structures, soil structure interaction. Prerequisite: graduate standing.

CE 6405. Rock Engineering. 3 Credits.

Classification and properties of rock; nature of rock masses and rock discontinuities; field exploration; methods of excavation; design and applications to foundation slopes, tunnels, and chambers in rock. Prerequisite: CE 4410.

CE 6501. Environmental Chemistry. 3 Credits.

Principles of thermodynamics and kinetics, acid-base chemistry, alkalinity, coordination chemistry, precipitation, adsorption, redox chemistry. Prerequisites: CHEM 1111 and CHEM 1112. (Fall, Every Year).

CE 6502. Advanced Sanitary Engineering Design. 3 Credits.

Elements of design, including basic parameters and hydraulic requirements; layout and design of water supply and wastewater systems, pumping stations, and treatment plants; plant expansions and modifications. Prerequisite: CE 4530. (Spring, Every Year).

CE 6503. Principles of Environmental Engineering. 3 Credits.

Principles of chemical equilibrium and reaction kinetics, acid-base and redox reactions, chemical transport, and reactors. Reactor design of ozone contactor, air stripping tower, activated carbon adsorption, and membrane filtration by the principle of mass balance. Prerequisite: CE 3520. (Fall, Every Year).

CE 6504. Water and Wastewater Treatment Processes. 3 Credits.

Theory and application of commonly used processes. Sedimentation, coagulation, filtration, disinfection, gas transfer, activated sludge, trickling filters, oxidation ponds, sorption, and sludge stabilization and disposal. Process combinations to produce treatment systems. Nanotechnology and water reuse systems. Prerequisite: CE 3520. (Spring, Every Year).

CE 6505. Environmental Impact Assessment. 3 Credits.

Public policy and legislation on environmental quality. Methods for assessing impacts of engineering projects. Technology for assessing impacts on air, water, and land environments, applied to transportation facilities, water and wastewater facilities, industrial and community development. Prerequisites: CE 3520. (Fall).

CE 6506. Microbiology for Environmental Engineers. 3 Credits.

Principles of microbiology and their applications to biological processes in the natural environment and engineered systems. Engineering applications, principles of biochemistry and microbiology of drinking water quality, waste and wastewater treatment, and bioremediation. Prerequisite: CE 3520. (Spring, even years).

CE 6507. Advanced Treatment Processes. 3 Credits.

Principles and applications of advanced treatment systems for water, waste-water, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisite: CE 6504. (Fall and spring, Every Year).

CE 6508. Industrial Waste Treatment. 3 Credits.

Types of industries, waste sources. Characteristics, measurements, and evaluation. Minimization and reuse. Treatment process selection, development, and design. Regulations, permits, standards, monitoring, and pretreatment. (Fall, Every Year).

CE 6509. Introduction to Hazardous Wastes. 3 Credits.

Regulations, including RCRA and Superfund; transport and fate of hazardous substances; elements of environmental toxicology, risk assessment, and hazard ranking; monitoring, data collection, and evaluation; waste minimization. Prerequisite: CE 3520. (Spring, Every Year).

CE 6601. Open Channel Flow. 3 Credits.

Types and regimes of flow; energy and momentum principles, uniform flow, gradually varied flow, spatially and rapidly varied flow. Flow in nonprismatic channels. Unsteady flow; dam break problem, flood routing. Prerequisite: CE 3610.

CE 6602. Hydraulic Engineering. 3 Credits.

Hydraulic design of conveyance, regulating, and measurement structures. Design for spillways, energy dissipators, inlet and outlet works related to dams. Forces on hydraulic structure and stability analysis. Hydraulic turbines and pumps. Design considerations for flow through pipes. Transients and cavitation. Prerequisite: CE 3610.

CE 6603. Design of Dams. 3 Credits.

Project planning and investigations. Types of dams; design of earth-rock fill dams; stability analysis, foundation treatment, wind-wave protection. Construction methods for dams. Reservoir sedimentation. Safety inspection of dams. Prerequisite: CE 3610.

CE 6604. Advanced Hydrology. 3 Credits.

Precipitation, evaporation, and transpiration. Soil physics; stream flow, drainage basins, hydrograph analysis, and stream-flow routing. Design criteria, flood frequency statistics and analysis, flood forecasting and control, water supply forecasting. Prerequisite: CE 4620.

CE 6605. Ground Water and Seepage. 3 Credits.

Permeability theory of groundwater flow, flow nets, analogs, computer solutions; applications to engineering problems such as excavation dewatering, flow through dams, stabilization of earth slopes. Prerequisites: CE 4410. (Spring).

CE 6606. Mechanics of Water Waves. 3 Credits.

Irrrotational theory for deep- and shallow-water waves, reflexion, refraction, diffraction, attenuation. Water waves of finite amplitude: shallow-water theory, tides, bores, long-waves theory, conoidal and solitary waves. Wave generation by wind. Wave breaking and reflexion. Prerequisites: APSC 6213 and permission of the instructor. (Fall and spring, Every Year).

CE 6607. Water Resources Planning and Control. 3 Credits.

The parameters of water resources planning and control, economics of water resources and related natural resources, economics of water-quality control, physical parameters of water resource development, water resources law. Prerequisite: CE 4410. (Fall and spring, Every Year).

CE 6608. Hydraulic Modeling. 3 Credits.

Dimensional analysis and similitude. Types of models—physical, mathematical. Distortions in physical models. Erodible bed models. Prerequisite: CE 3610.

CE 6609. Numerical Methods in Environmental and Water Resources. 3 Credits.

Use of microcomputers in water resources. Elements of finite difference schemes, basic operations, convergence, stability, and consistency. Nonuniform flow and error analysis; unsteady laminar flow; diffusion problems; unsteady flow in open channels; water hammer, seepage flow, and diffusion-dispersion problems. Prerequisites: CE 2210 and MAE 3126. (Spring, Every Year).

CE 6610. Pollution Transport Systems. 3 Credits.

Distribution of pollutants in natural waters and atmosphere, diffusive and advective transport, mathematics for stream pollutant deoxygenation rates, groundwater pollution transport, sediment transport, thermal transport, numerical simulation of pollutant transports in streams and estuaries. Prerequisites: CE 3610 and MAE 2131. (Fall and spring, Every Year).

CE 6701. Analytical Mechanics. 3 Credits.

Fundamental principles, particle and rigid-body dynamics, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations. Prerequisites: APSC 2058 and APSC 2113. (Fall, Every Year).

CE 6702. Vehicle Dynamics. 3 Credits.

Engineering principles and analytical methods explaining the performance of an automotive vehicle. Basic mechanics governing vehicle dynamic performance in longitudinal, ride, and handling modes. Engineering analysis techniques applied to basic systems and subsystems to derive the governing equations. CE 6701 may be taken as a corequisite. Prerequisite: CE 6701. (Spring, even years).

CE 6705. Nonlinear Finite Element Modeling and Simulation. 3 Credits.

Rigid and flexible body methods for modeling crashes. Application of dynamic nonlinear finite element methods with contact algorithms for modeling crash phenomena. Modeling and simulation of vehicles, airbags, safety restraining systems, and highway barriers. (Spring).

CE 6706. Pavement and Runway Design. 3 Credits.

Pavement types, wheel-load characteristics; stresses in pavements and subgrades; empirical methods of design of flexible and rigid highway and airfield pavements; general principles of runway design. (Spring, odd years).

CE 6707. Systems Dynamics Modeling and Control. 3 Credits.

Introduction of concepts in control theory and applications to solve problems in civil and transportation engineering dealing with single-input/single-output and multi-input/multi-output systems. Review of classical control theory in the frequency and time domain, state-space analysis, system optimization, and non-linear control. (Fall).

CE 6721. Traffic Engineering and Highway Safety. 3 Credits.

Roadway traffic capacity and network performance measures; steady and unsteady traffic flow phenomena; traffic control signalization theory and practical implementation; monitoring techniques, instruments, and data processing for highway safety. Traffic related highway safety design concepts. (Fall).

CE 6722. Intelligent Transportation Systems. 3 Credits.

Commands, controls, and communications in modern multimodal transportation; infrastructure/highway and vehicle automation, advanced traffic management, vehicle control and safety systems; information, data, and sensory requirements; practical applications and projects. Prerequisites: CE 2710 or CE 3720. Recommended background: Basic knowledge of transportation engineering. (Spring, Every Year).

CE 6730. Sustainable Urban Planning. 3 Credits.

Human and physical processes shaping urban ecologies and environments; human-environment interactions in the context of an urban region; urban land use, transport, and planning. Departmental approval is required prior to enrollment. Prerequisites: CE 2710. (As arranged, Every Year).

CE 6800. Special Topics. 1-6 Credits.

Topic to be announced in the Schedule of Classes.

CE 6801. Civil and Environmental Engineering Graduate Internship. 1 Credit.

May be repeated once for credit. Additional prerequisites may be required for a specific internship as determined by the research supervisor. Restricted to graduate students in the civil and environmental engineering program. Prerequisites: Required courses in the area of focus and permission of the department. (Fall and spring, Every Year).

CE 6808. Research. 1-12 Credits.

Basic research projects, as arranged. May be repeated for credit.

CE 6998. Thesis Research. 3 Credits.**CE 6999. Thesis Research. 3 Credits.****CE 8320. Theory of Elasticity II. 3 Credits.**

Application of integral transform and analytic function theory to solution of plane problems; elastic wave propagation. Three-dimensional elasto-statics. Prerequisites: APSC 6211 and CE 6207. (Spring, Every Year).

CE 8321. Nonlinear Mechanics of Continua. 3 Credits.

Polar decomposition, invariance, isotropy, representation theorems for invariants and isotropic tensor functions. Deformation, kinematics, stress, balance principles. Principles for constitutive relations. Applications to nonlinear elasticity and non-Newtonian fluids. Prerequisite: CE 6206.

CE 8330. Advanced Finite Element Analysis. 3 Credits.

Review of variational formulation of the finite element method. Formulation of various continuum and structural elements. Application to static and dynamic problems in elasticity, plasticity, large deflection, and instability in plates and shells. Recent developments in finite element methods. Prerequisites: CE 6206 and 6210; or MAE 6210 and MAE 6286. (Same as MAE 6288) (Fall and spring, Every Year).

CE 8350. Sedimentation Engineering. 3 Credits.

Problems of erosion and sedimentation. Properties of sediment. Initiation of motion. Suspension of sediment and sediment discharge theories. Sedimentation measurements. Economic and legal aspects. Prerequisites: CE 6601 or permission of the department. (Fall and spring, Every Year).

CE 8351. Mechanics of Alluvial Channels. 3 Credits.

Physical processes in drainage basins and channels. Channel forms and bed forms. Hydraulics and sediment transport in alluvial channels. Design of stable channels. Qualitative and quantitative response of rivers. Channel stabilization, navigation channels. Case studies including environmental impacts. Prerequisites: CE 6601 or permission of the department. (Fall and spring, Every Year).

CE 8352. Advanced Hydraulics. 3 Credits.

Theory of unsteady flow. Diffusion and dispersion through pipes and open channels. Numerical solutions using finite element and finite difference methods. Prerequisites: CE 6601 or permission of the department. (Fall and spring, Every Year).

CE 8370. Intelligent Systems Theory and Applications. 3 Credits.

Overview of artificial intelligence, neural networks, genetic algorithms, fuzzy systems, and hybrid intelligent systems and their integration with other information processing methods. Intelligent systems applications; examples are drawn from ITS and traffic engineering, vehicle safety, remote sensing, and structural design optimization. Prerequisite: CE 6707.

CE 8380. Advanced Biomechanics. 3 Credits.

Historical overview of biomechanics and biomaterials. Fundamental concepts in mechanics as applied to the treatment of biological systems. Approaches to the mechanical analysis of the human structure under physiological and non-physiological loading conditions. Constitutive laws for biological materials. Finite element applications. Prerequisite: CE 6206. (Fall and spring, Every Year).

CE 8998. Advanced Reading and Research. 1-12 Credits.

Doctoral candidates preparing for qualifying examination. (Fall and spring, Every Year).

CE 8999. Dissertation Research. 1-12 Credits.

Doctoral candidate research. Restricted to doctoral candidates. (Fall and spring, Every Year).

COMPUTER SCIENCE

Mission Statement

The mission of the Department of Computer Science is to serve the global community by providing high-quality computer science education, research, and professional services and to advance computer technology in selective areas while upholding standards of excellence.

Educational Objectives

The undergraduate program of study is designed to prepare graduates to earn an advanced degree in computer science

or related disciplines; for a professional degree such as law, business, or medicine; or for employment in the computer or IT industry, where they apply the skills and knowledge learned in the program. Graduates conduct themselves professionally and ethically, work effectively in teams, and communicate effectively with both technical and non-technical audiences.

Educational Outcomes

A graduate in computer science has the ability to do the following:

- Apply knowledge of computing and mathematics appropriate to the discipline;
- Analyze a problem and identify and define the computing requirements appropriate to its solution;
- Design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs;
- Function effectively on teams to accomplish a common goal;
- Understand professional, ethical, legal, security, and social issues and responsibilities;
- Communicate effectively with a range of audiences;
- Analyze the local and global impact of computing on individuals, organizations, and society;
- Recognize the need to engage in continuing professional development;
- Use current techniques, skills, and tools necessary for computing practice;
- Apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the trade-offs involved in design choices; and
- Apply design and development principles in the construction of software systems of varying complexity.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in computer science (p. 740)
- Bachelor of Science with a major in computer science (p. 755)

Minor

- Minor in computer science (p. 788)

Combined programs

- Dual Bachelor of Arts with a major in computer science and Master of Science in the field of computer science (p. 776)
- Dual Bachelor of Arts with a major in computer science and Master of Science in the field of cybersecurity in computer science (p. 776)

- Dual Bachelor of Science with a major in computer science and Master of Science in the field of computer science (p. 782)
- Dual Bachelor of Science with a major in computer science and Master of Science in the field of cybersecurity in computer science (p. 782)

GRADUATE

Master's programs

- Master of Science in the field of computer science (p. 795)
- Master of Science in the field of cybersecurity in computer science (p. 796)

Doctoral program

- Doctor of Philosophy in the field of computer science (p. 811)

CERTIFICATES

Certificate programs

- Gateway to computer science graduate certificate (p. 820)
Offered online
- Graduate certificate in computer security and information assurance (p. 821)

FACULTY

Professors X. Cheng, H.A. Choi, M. Diab, J.K. Hahn, R.S. Heller, L. Hoffman, B. Narahari, R. Pless, R. Simha, P. Vora, A. Youssef

Associate Professors G. Parmer, T. Wood

Assistant Professors A. Caliskan, A. Yerukhimovich

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000-4000s are upper-division undergraduate courses; computer science courses in this numerical range may only be taken for graduate credit with permission of the course instructor, permission of the student's academic advisor, and by completing additional work in the course
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: With the exception of CSCI 1010, CSCI courses numbered CSCI 1041 and below normally may not be counted toward degree requirements for computer science majors, unless approved by a departmental advisor.

CSCI 1010. Computer Science Orientation. 1 Credit.

Introduction to the field of computer science. Basic and emerging concepts and applications of computer science. Hands-on experiments and team projects. Technical resources, professional ethics, writing, and presentation.

CSCI 1011. Introduction to Programming with Java. 3 Credits.

An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, GUI widgets, containers, and exceptions.

CSCI 1012. Introduction to Programming with Python. 3 Credits.

Introduction to programming a computer using the Python language; variables, types, assignment, conditionals, loops, lists, and program units. (Fall, spring, and summer, Every Year).

CSCI 1020. Applications Software. 3 Credits.

Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business.

CSCI 1021. Introduction to Computers and the Internet. 3 Credits.

Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring).

CSCI 1022. Introduction to Internet Technology. 3 Credits.

An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia.

CSCI 1023. Introduction to Web Software Development. 3 Credits.

Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring).

CSCI 1030. Technology and Society. 3 Credits.

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1030W. Technology and Society. 3 Credits.

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Fall and spring, Every Year).

CSCI 1041. Introduction to FORTRAN Programming. 3 Credits.

Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. MATH 1220 or MATH 1231 may be taken as a corequisite. Prerequisites: MATH 1220 or MATH 1231. (Fall and spring, Every Year).

CSCI 1099. Variable Topics. 1-36 Credits.**CSCI 1111. Introduction to Software Development. 3 Credits.**

Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment.

CSCI 1112. Algorithms and Data Structures. 3 Credits.

Object-oriented software. Inheritance, exceptions, development of classes, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science. Prerequisites: CSCI 1111 with a minimum grade of C; and MATH 1220 or MATH 1231. (Spring, Every Year).

CSCI 1121. Introduction to C Programming. 3 Credits.

Structured programming with the C language; control structures; data types; use of pointers; matrix manipulation to solve simultaneous equations; external subroutines for mathematical and graphical applications; introduction to C++; complex number representation. Co-requisites: MATH 1220 and MATH 1231. (Spring, Every Year) Credit cannot be earned for this course and ECE 1120.

CSCI 1131. Introduction to Programming with C. 3 Credits.

Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital computer using C programming language in a Unix environment. Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: MATH 1232.

CSCI 1132. Data Structures and Software Design. 3 Credits.

Data structures such as trees, lists, stacks, queues, and strings. Big-O notation and introduction to algorithm performance analysis. Solutions of numerical and non-numerical problems. Use of I/O libraries. Application development and software testing. Prerequisite: CSCI 1121.

CSCI 1311. Discrete Structures I. 3 Credits.

Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science. Prerequisites: MATH 1220 or MATH 1231. (Fall).

CSCI 2113. Software Engineering. 3 Credits.

Programming techniques and software development in one or more programming languages; application development with GUIs, database access, threads, web programming. Prerequisites: CSCI 1112 with a minimum grade of C; and MATH 1221 or MATH 1231. (Fall and spring, Every Year).

CSCI 2312. Discrete Structures II. 3 Credits.

Basic discrete techniques in computer science; proofs, algebraic structures, number theory, graph theory, (coloring and planar graphs, communication networks), advanced recurrences, advanced sums, approximations and asymptotics. Students must have received a minimum grade of C in CSCI 1311. Prerequisites: CSCI 1311; and MATH 1220 or MATH 1231; and MATH 1221. (Fall, Every Year).

CSCI 2441. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, normal forms, and design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, and software copyrights. Students cannot receive credit for both CSCI 2441 taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 2541 and CSCI 6441. (Fall and spring, Every Year).

CSCI 2441W. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, normal forms, and design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, and software copyrights. Students cannot receive credit for both CSCI 2441W taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 2441W and CSCI 6441. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Corequisite: CSCI 2113. (Spring, Every Year).

CSCI 2460. Introduction to Computer Systems. 1,2 Credit.

Introduction to computer organization and computer systems. Data representation; computer organization; processor instruction sets and assembly programming; language translation; memory; input/output; introduction to operating systems. Restricted to students in the BA and minor programs in computer science. Prerequisites: CSCI 1112; and CSCI 1311 with a minimum grade of C. Corequisites: CSCI 2113. Recommended background: introductory coursework and background in computer science, programming, and discrete mathematics. (Spring, Every Year).

CSCI 2461. Computer Architecture I. 3 Credits.

Number representation, computer arithmetic, digital logic, and circuit design. Computer organization, micro-architecture and processor datapath, assembly and machine language programming. Introduction to memory organization and the hardware-software interface. Implementation of high-level language constructs. Prerequisites: CSCI 1112 and CSCI 1311. (Fall, Every Year).

CSCI 2501. Ethical Issues in Computing. 1 Credit.

Introduction and analysis of the ethical issues of the technological age; ethical principles and skills and social analysis skills needed to evaluate future consequences of the design and implementation of complex computer systems; application of professional ethics codes in decision-making in professional practice. Restricted to computer science majors. Prerequisites: CSCI 1010 and CSCI 1011. (Fall and spring, Every Year).

CSCI 2541W. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, Introduction to Not just SQL (NoSQL) database systems, normal forms, and design of database applications. Team software development, integration, and testing. Students cannot receive credit for both CSCI 2541W taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 2541 and CSCI 6441. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Corequisite: CSCI 2113. Prerequisite: CSCI 1311. (Spring, Every Year).

CSCI 3212. Algorithms. 4 Credits.

Core concepts in design and analysis of algorithms, data structures, and problem-solving techniques. Hashing, heaps, trees. Graph algorithms, searching, sorting, graph algorithms, dynamic programming, greedy algorithms, divide and conquer, backtracking. Combinatorial optimization techniques. NP-completeness. Prerequisites: CSCI 1311 and CSCI 2113. (Fall and spring, Every Year).

CSCI 3221. Programming Languages. 3 Credits.

Programming language and software design fundamentals. Writing programs in a non-procedural programming language. Closures; procedure and data abstraction; object-oriented, procedural, and declarative programming; continuation compilation and interpretation, and syntactic extension. Advanced control structures appropriate for parallel programming. Prerequisite: CSCI 2113.

CSCI 3240. Pre-Senior Design with Research. 3 Credits.

For students who wish to combine a research project with their Senior Design project. The goal is to complete the research, under a faculty mentor, within three semesters. Prerequisites: CSCI 3212, CSCI 3313, CSCI 3411 and permission of the instructor. (Fall and spring, Every Year).

CSCI 3313. Foundations of Computing. 3 Credits.

Introduction to the theory of computing and automata theory. Formal languages and automata; regular expressions, context-free languages; finite state automata and pushdown automata; Turing machines and computability, recursive function theory, undecidability. Prerequisites: CSCI 1311, CSCI 2113, and CSCI 2461. (Fall and spring, Every Year).

CSCI 3362. Probability for Computer Science. 3 Credits.

Introduction to probability and statistics for computer scientists; random variables; conditional probability, independence, correlation; applications to computer science, including information theory, data compression, coding, inference, Markov chains, randomized algorithms. Students cannot receive credit for both CSCI 3362 taken while an undergraduate and CSCI 6362 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 3362 and CSCI 6362. Prerequisites: CSCI 1311 and MATH 1232. (Spring, Every Year).

CSCI 3410. Systems Programming. 3 Credits.

Concepts underlying all computer systems. Processor operation, hierarchical memory systems, embedded boards, data acquisition, actuation, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Use of embedded platforms to examine how programs interact with and are constrained by hardware. Prerequisites: CSCI 2461 and CSCI 2113. (Fall and spring, Every Year).

CSCI 3411. Operating Systems. 4 Credits.

Process management, process state, concurrent processing, synchronization, events; operating system structure, the kernel approach, processor scheduling, task switching, monitors, threads; system management, memory management, process loading, communication with peripherals; file systems; socket programming, packets, Internet protocols. Prerequisites: CSCI 2113 and CSCI 2461. (Fall, Every Year).

CSCI 3462. Computer Architecture II. 3 Credits.

Computer organization; design of computer components and of a simple computer. Instruction set and assembly language of a pipelined RISC processor; introduction to high-performance processors; design of cache, main memory, and virtual memory systems; program performance models and system performance; I/O structure and peripherals. Prerequisites: CSCI 2113 and CSCI 2461. (Spring, Every Year) Credit cannot be earned for this course and ECE 3515.

CSCI 3571. Introduction to Bioinformatics. 3 Credits.

An introduction to the use of computational techniques in molecular biology, genetics, and evolution. Techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. May be taken for graduate credit. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126. (Same as BISC 2584) (Spring, Every Year).

CSCI 3907. Special Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes. (Fall and spring).

CSCI 3908. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Restricted to juniors and seniors. (Fall and spring, Every Year).

CSCI 4222. Theory of Computer Translators. 3 Credits.

Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisites: CSCI 3313 and CSCI 3462. (Fall and spring, Every Year).

CSCI 4223. Principles of Programming Languages. 3 Credits.

Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Students cannot receive credit for both CSCI 4223 taken while an undergraduate and CSCI 6223 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4223 and CSCI 6223. Prerequisites: CSCI 1311 and CSCI 2113. (Spring, odd years).

CSCI 4235. Development of Open-Source Software. 3 Credits.

Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4237. Software Design for Handheld Devices. 3 Credits.

Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4243. Capstone Design Project I. 3 Credits.

Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4243W. Capstone Design Project I. 4 Credits.

Planning, design, and construction of the capstone project; economic analysis of the project; application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CSCI 3212 and CSCI 3411. (Fall, Every Year).

CSCI 4244. Capstone Design Project II. 4 Credits.

Continuation of CSCI 4243. Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Restricted to seniors. Prerequisites: CSCI 4243W or CSCI 4243. (Spring, Every Year).

CSCI 4314. Discrete Analysis-Computer Science. 3 Credits.

Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisites: CSCI 1311 or permission of the instructor. (Fall, Every Year).

CSCI 4331. Cryptography. 3 Credits.

Algorithmic principles of cryptography from Julius Caesar to public key cryptography. Key management problems and solutions. Cryptographic systems and applications. Students cannot receive credit for both CSCI 4331 taken while an undergraduate and CSCI 6331 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4331 and CSCI 6331. Prerequisites: CSCI 2312, CSCI 3212 and CSCI 3313. (Spring, Every Year).

CSCI 4341. Continuous Algorithms. 3 Credits.

Structures in continuous mathematics from a computational viewpoint; continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Students cannot receive credit for both CSCI 4341 taken while an undergraduate and CSCI 6341 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4341 and CSCI 6341. Prerequisites: CSCI 1311 and CSCI 2113. (Spring, Every Year).

CSCI 4342. Computational Linear Algebra and Applications. 3 Credits.

Application of linear algebra to computer science and engineering, with a computational perspective; points, vectors, matrices, and their programming representations; algorithms for 3D transformations, pose and viewpoint estimation; linear equations, independence, rank; algorithms for matrix decompositions, reduction of dimension; computation with large matrices, under and over-determined systems; applications to large data, computer vision, text processing. Students cannot receive credit for both CSCI 4342 taken while an undergraduate and CSCI 6342 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4342 and CSCI 6342. Prerequisite: CSCI 2113. (Spring, Every Year).

CSCI 4361. Simulation Methods. 3 Credits.

Computational methods for continuous and discrete system simulation; effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing; calibration and scaling technique; verification and validation technique. May be taken for graduate credit. Prerequisite: CSCI 2113 or permission of the instructor. (Spring, Every Year).

CSCI 4364. Machine Learning. 3 Credits.

Overview of core machine learning techniques: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Students cannot receive credit for both CSCI 4364 taken while an undergraduate and CSCI 6364 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4364 and CSCI 6364. Prerequisites: CSCI 3212, CSCI 3362 and MATH 2184. (Fall, Every Year).

CSCI 4414. Introduction to Blockchain Technology and Applications. 3 Credits.

Introduction to blockchain concepts. Illustrates applications in both technical and business contexts. May be taken for graduate credit. Recommended background: prior coursework and background in computer science disciplines, programming, security protocols, machine learning, and distributed systems is helpful. (Fall and spring, Every Year).

CSCI 4415. Real-Time and Embedded Systems. 3 Credits.

Development of software for real-time control of physical systems; reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSCI 2113. (Spring, Every Year).

CSCI 4417. UNIX System Programming. 3 Credits.

Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience.

CSCI 4418. UNIX System Administration. 3 Credits.

System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms. Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSCI 4417.

CSCI 4431. Computer Networks I. 3 Credits.

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Students cannot receive credit for both CSCI 4431 taken while an undergraduate and CSCI 6431 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4431 and CSCI 6431. Prerequisites: CSCI 2113 and CSCI 2461. (Fall, Every Year).

CSCI 4431W. Computer Networks I. 3 Credits.

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CSCI 2113 and CSCI 2461. (Fall and spring, Every Year).

CSCI 4432. Computer Networks II. 3 Credits.

Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSCI 4431.

CSCI 4455. Computer Game Design and Programming. 3 Credits.

Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. (Fall).

CSCI 4511. Artificial Intelligence Algorithms. 3 Credits.

Knowledge representation and reasoning, propositional logic and predicate calculus. Logic programming; search, game trees, backtracking; planning. May be taken for graduate credit. Prerequisites: CSCI 3212 and CSCI 3221. (Spring, Every Year).

CSCI 4521. Introduction to Mobile Robotics. 3 Credits.

Overview of autonomous mobile robotics. Sensing, localization, calibration, mapping, perception, decision making, planning, and control. Emphasis on algorithmic rather than hardware aspects of robotics. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisites: MATH 1232 and MATH 2184; and CSCI 3362 or CSCI 4341. (Fall and spring, Every Year).

CSCI 4525. Autonomous Robotics: Manipulation. 3 Credits.

Introduction to robot manipulation. Core principles necessary to program robots for autonomous operation in dynamic and typically human-centric environments. Transdisciplinary concepts from computer science (reinforcement learning, perception), mechanical engineering (kinematics, dynamics), and electrical engineering (control theory). Prerequisites: Permission of the instructor. (Fall and spring, Every Year).

CSCI 4527. Introduction to Computer Vision. 3 Credits.

Introduction and overview of computer vision. Image-formation signal processing and filtering. Saliency, image features and feature extraction, tracking, stereo disparity estimation, structure from motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Prerequisites: MATH 1232 and MATH 2184; and CSCI 3362 or CSCI 4341. (Spring, Every Year) Same As: CSCI 6527.

CSCI 4531. Computer Security. 3 Credits.

Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Students cannot receive credit for both CSCI 4531 taken while an undergraduate and CSCI 6531 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4531 and CSCI 6531. Corequisite: CSCI 4331. Prerequisite: CSCI 3411. (Spring, Every Year).

CSCI 4532. Information Policy. 3 Credits.

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use. Students cannot receive credit for both CSCI 4532 taken while an undergraduate and CSCI 6532 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4532 and CSCI 6532. (Fall, Every Year).

CSCI 4541. Network Security. 3 Credits.

Security protocols and applications in local, global, and wireless networks; IPsec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Students cannot receive credit for both CSCI 4541 taken while an undergraduate and CSCI 6541 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4541 and CSCI 6541. Prerequisite: CSCI 4531. (Spring, Every Year).

CSCI 4551. Concepts and Applications of Computer Graphics. 3 Credits.

Introduction to computer graphics without programming; building 3-D geometry and rendering; computer animation; virtual reality and computer games; hands-on projects in modeling, rendering, and animation using commercial software; hands-on projects in photo and video manipulation.

CSCI 4552. Design of Computer Animation I. 3 Credits.

Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. (Fall, Every Year).

CSCI 4553. Design of Computer Animation II. 3 Credits.

Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-production. Emphasis on developing original content and attaining high production values. Prerequisite: CSCI 4552.

CSCI 4554. Computer Graphics I. 3 Credits.

Graphics primitives; 2D, 3D, and viewing transformations; hierarchical modeling and animation; illumination and shading; texture mapping; shaders; visibility and collision detection; sampling and anti-aliasing; global illumination; projects using OpenGL graphics API. May be taken for graduate credit. Prerequisites: CSCI 2113 or CSCI 6221. (Spring, Every Year).

CSCI 4561. Design of User-Interface Programs. 3 Credits.

Structure of interactive programs. Widgets, windows, and input devices. Client-server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4572. Computational Biology. 3 Credits.

Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisite: CSCI 3571 and CSCI 3212 or CSCI 6212.

CSCI 4576. Introduction to Biomedical Computing. 3 Credits.

A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations.

CSCI 4577. Biomedical Computing. 3 Credits.

Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Corequisite: CSCI 2441. Restricted to graduate students. Prerequisites: CSCI 2113 and CSCI 4576. (Spring, Every Year).

CSCI 5099. Variable Topics. 1-99 Credits.**CSCI 6001. Introduction to Computer Programming and Software Development. 3 Credits.**

Introduction to concepts and skill development in programming and software development, including problem solving on a digital computer and writing, debugging, and executing programs. Restricted to students in select programs; departmental permission is required. (Fall, spring, and summer, Every Year).

CSCI 6002. Introduction to Data Structures and Their Applications. 3 Credits.

Introduction to core computer science data structures including: arrays, lists, linked structures, stacks, queues, and trees. Sorting, searching, and comparison of algorithmic performance. Restricted to students in select programs; departmental permission is required. (Fall, spring, and summer, Every Year).

CSCI 6003. Introduction to Software Design and Engineering. 3 Credits.

Introduction to objects and object-oriented programming. Software development for applications including development with GUIs, database access, threads, web programming. Restricted to students in select programs; departmental permission is required. (Fall, spring, and summer, Every Year).

CSCI 6010. Introduction to Computer Science Fundamentals. 3 Credits.

Review of programming in a high-level language using Java or C++ Introduction to objects and object-oriented programming: static and dynamic objects, inheritance, dynamic method invocation. Data structures: 2D-arrays, linked-lists, stacks, queues, trees, hashing. Discrete structures: sets, graphs, permutations and combinations. Restricted to students whose letter of admission stated that the course is required. (Fall and spring, Every Year).

CSCI 6011. Introduction to Computer Systems. 3 Credits.

Introduction to basic concepts underlying all computer systems; processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Students must have completed one year of coursework in programming in C, C++, or Java prior to registration. Restricted to students whose letter of admission stated that the course is required. (Fall and spring, Every Year).

CSCI 6012. Cybersecurity and Privacy. 3 Credits.

Overview of cybersecurity and privacy, including cryptography, authentication, malware, viruses, network security, anonymity, privacy and online privacy, risk management; common cyberattacks and techniques for detection and defense; policy and legal perspectives for managing cybersecurity missions supporting private sector and government; cyber technologies as applied to the stability of global information and communications infrastructure; government cybersecurity policies. (Fall, spring, and summer).

CSCI 6013. Security in Mobile Computing. 3 Credits.

Relationship between security strategic plan and business strategic plan; mobile device solutions (MDS) to access enterprise corporate data; bring your own device (BYOD) paradigm; mobile device management (MDM) best practices, policies, network controls to identify countermeasures, and risk mitigation strategies against common threats. Overview of mobile security solutions for classified processing and communications. Prerequisites: CSCI 6012. (Fall, spring, and summer).

CSCI 6015. Cyber Forensics. 3 Credits.

Acquiring, preserving and analyzing digitally stored information while ensuring that this information is admissible as evidence in a court of law. Principles and techniques for cyber forensics investigations using industry-standard forensic process. Restricted to SEAS online students. (As arranged, Every Year).

CSCI 6016. Applied Network Defense. 3 Credits.

Computer security: protection aspects of the Internet. Cryptographic tools to provide security, such as shared key encryption (DES, 3DES, RC and more), public key encryption, key exchange, and digital signature. Internet protocols and applications. Restricted to SEAS online students. (As arranged, Every Year).

CSCI 6018. Cloud Application Architecture. 3 Credits.

Cloud application design guidelines and software patterns. Survey of cloud services for scalable secure cloud applications. Trade-offs in cloud application design, container vs virtual machine deployments, and monolithic vs microservice. Restricted to SEAS online students. (As arranged, Every Year).

CSCI 6114. Introduction to Computer Systems and Systems Programming. 3 Credits.

Introduction to basic concepts underlying all computer systems; processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Software development with the C programming language. Students cannot receive credit for this course and CSCI 6011. Restricted to students in select programs; departmental permission is required. Prerequisites: CSCI 2113 or CSCI 6003. (Fall, spring, and summer, Every Year).

CSCI 6115. Application Development I. 3 Credits.

Client-server programming, web development, front end design, back-end server development, introduction to databases. Front and back-end languages, server administration and tools. Students cannot get credit for this course and CSCI 2441, CSCI 2441W, CSCI 2541, or CSCI 2541W. Restricted to students in select programs; departmental permission is required. Prerequisites: CSCI 2113 or CSCI 6003. (Fall, spring, and summer, Every Year).

CSCI 6116. Advanced Application Development. 3 Credits.

Design of large software systems and installable applications, development frameworks, integration of components and services, cloud and web programming, and mobile device development; software specification and testing. Prerequisites: CSCI 6115, CSCI 6431 and CSCI 6441. (Fall, spring, and summer, Every Year).

CSCI 6212. Design and Analysis of Algorithms. 3 Credits.

Design and analysis of algorithms; Turing machines; NP-complete theory; algorithmic techniques: divide-and-conquer, greedy, dynamic programming, graph traversal, backtracking, and branch-and-bound; applications include sorting and searching, graph algorithms, and optimization. Students are expected to know data structures and possess general programming skills in one or more procedural/OOP language such as C/C++/Java, and to have a good mathematical background such as discrete math and some calculus, prior to registration. (Fall, spring, and summer, Every Year).

CSCI 6221. Advanced Software Paradigms. 3 Credits.

Object-oriented, procedural, functional, and concurrent software design paradigms; design patterns; software life cycle concepts; tradeoffs between compiled and interpreted languages; examples from Java, C, C++ and Perl. Restricted to graduate students. (Fall, spring, and summer, Every Year).

CSCI 6223. Principles of Programming Languages. 3 Credits.

Fundamental concepts underlying design of programming languages; detailed study of functional and object-oriented computational models; types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Students cannot receive credit for both CSCI 6223 taken while a graduate and CSCI 4223 taken while an undergraduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4223 and CSCI 6223. (Spring, odd years).

CSCI 6231. Software Engineering. 3 Credits.

The life-cycle model. Requirements and specifications. Design models, structured and object-oriented design. Program development, PDL's tools, configuration control. Program, unit, and integration testing. Program verification. Other development models. Development metrics. Computer-aided software engineering (CASE). Prerequisites: CSCI 6221 and CSCI 6212. (Fall and spring, Every Year).

CSCI 6232. Software Engineering Development. 3 Credits.

Formal methods in software engineering. First-order logic, basic specification elements, rigorous proofs, formal development process, concurrency. Prerequisites: CSCI 6461 and CSCI 6212. (Fall and spring, Every Year).

CSCI 6233. Software Testing and Quality. 3 Credits.

Flow graphs and path testing, transaction flow testing, data flow testing, software metrics, system testing, test planning and documentation, reliability, statistical testing. Prerequisite: CSCI 6231. (Fall and spring, Every Year).

CSCI 6234. Object-Oriented Design. 3 Credits.

Object-oriented systems, software reusability, software modularity, top-down and bottom-up approaches, object classification, genericity, metaprogramming, concurrent object-oriented programming languages. Prerequisite: CSCI 6221.

CSCI 6235. Component-Based Enterprise Software Development. 3 Credits.

Component-based software development for enterprise applications. Component models, multi-tier architecture. Specific case studies may include topics such as Enterprise Java Beans, DCOM, and COBRA. Prerequisite: CSCI 6221.

CSCI 6311. Theory of Computation. 3 Credits.

Theoretical foundations of computer science. Formal languages and automata; regular expressions, context-free languages, parsing; Turing machines and complexity; partial recursive functions; undecidability; program correctness; fixed-point theory; formal specifications of software. Prerequisite: CSCI 6212.

CSCI 6312. Graph Theory and Applications. 3 Credits.

Undirected and directed graphs. Connectivity, partitions, cycles and matchings. Edge and vertex coloring, chromatic polynomials, and the four-coloring problem. Planar graphs and Kuratowski's theorem. Properties of random graphs. Applications to a variety of problems. Prerequisite: CSCI 6212. (Fall and spring, Every Year).

CSCI 6318. Complex Systems. 3 Credits.

The edge-of-chaos phenomenon, phase transitions, power laws, small-world networks, Boolean networks, cellular automata, and complex dynamics. Applications to networks and biological systems. Prerequisite: CSCI 6212.

CSCI 6331. Cryptography. 3 Credits.

Review of mathematical theory for cryptography; classical ciphers; modern block and stream ciphers; symmetric and asymmetric systems; digital signatures; public key infrastructure; authentication. Students cannot receive credit for both CSCI 4331 taken while an undergraduate and CSCI 6331 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4331 and CSCI 6331. Prerequisite: CSCI 6212. (Spring, Every Year).

CSCI 6341. Continuous Algorithms. 3 Credits.

Structures in continuous mathematics from a computational viewpoint; continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Students cannot receive credit for both CSCI 4341 taken while an undergraduate and CSCI 6341 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4341 and CSCI 6341. (Spring, Every Year).

CSCI 6342. Computational Linear Algebra and Applications. 3 Credits.

Linear algebra applied to computational problems in computer science and engineering; points, vectors, matrices, and their programming abstractions; 3D transformations, pose and viewpoint estimation; linear equations; algorithms for matrix decompositions, dimension reduction, computation with large matrices, under- and over-determined systems; applications to big data, computer vision, text processing. Students cannot receive credit for both CSCI 4342 taken while an undergraduate and CSCI 6342 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4342 and CSCI 6342. (Spring, Every Year).

CSCI 6351. Data Compression. 3 Credits.

Background on signals, information theory, transforms, human vision, and metrics. Lossless and lossy compression techniques. Video compression. Compression standards. Progressive transmission. Prerequisite: CSCI 6212.

CSCI 6362. Probability for Computer Science. 3 Credits.

Concepts of probability and statistics used in computer science; random variables; conditional probability, independence, correlation; law of large numbers, central limit theorem; applications to computer science, including entropy, information theory, data compression, coding, inference, Markov chains, randomized algorithms. Students cannot receive credit for both CSCI 3362 taken while an undergraduate and CSCI 6362 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 3362 and CSCI 6362. (Spring, Every Year).

CSCI 6364. Machine Learning. 3 Credits.

Machine learning algorithms: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, boosting, graphical models, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Students cannot receive credit for both CSCI 4364 taken while an undergraduate and CSCI 6364 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4364 and CSCI 6364. Prerequisites: CSCI 6212 and CSCI 6362. (Fall, Every Year).

CSCI 6365. Advanced Machine Learning. 3 Credits.

Theory and algorithms for machine learning research; in-depth focus on advanced machine learning topics such as clustering, learning from data streams, and climate informatics. Prerequisite: CSCI 6364. (Spring, Every Year).

CSCI 6411. Advanced Operating Systems. 3 Credits.

Fundamentals of operating system design and structure, resource management, and system support for multi-core. Topics include scheduling, synchronization, system structure, virtual address spaces, memory management, I/O management, and systems abstractions for modern multi-core architectures. The course involves an implementation component and requires substantial programming experience. This course can be taken for credit by undergraduates who have taken CSCI 3411. Prerequisite: CSCI 6461 or CSCI 2461.

CSCI 6412. OS Design and Implementation. 3 Credits.

Builds on CSCI 6411 to provide students with the knowledge to build parts of modern operating systems, which is studied and motivated from the viewpoint of practical design and implementation. Students learn how operating system's components for resource management and abstraction are built from the ground up and integrated into working systems considering the challenges of reliability, multi-core, and security. The course has a significant implementation component; substantial low-level programming experience is required. Prerequisite: CSCI 6411. (Fall and spring, Every Year).

CSCI 6418. Unix Systems Administration. 3 Credits.

System administration for the stand-alone system or small networks; installation of two or more UNIX variants (Linux, FreeBSD, Solaris) hardware platforms; configuration of mail, name services, and other network utilities; backup and recovery, security and ethics. Students cannot receive credit for both CSCI 4418 taken while an undergraduate and CSCI 6418 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4418 and CSCI 6418. Prerequisites: CSCI 6114; or CSCI 6010 and CSCI 6011. (Fall, spring, and summer, Every Year).

CSCI 6419. Advanced Systems Administration. 3 Credits.

Administration of large systems, non-Unix platforms, web document systems, website administration, cloud and web services, user and IT personnel components, and economics of IT support. Prerequisite: CSCI 6418. (Fall, spring, and summer, Every Year).

CSCI 6421. Distributed and Cluster Computing. 3 Credits.

Algorithmic and implementation challenges in building large scale distributed applications; distributed coordination, scheduling, consistency issues, and fault tolerance algorithms; fundamental distributed systems concepts applied to both high performance computing and cloud computing environments. Prerequisite: CSCI 6212. Recommended background: Substantial programming experience. (Fall, Every Year).

CSCI 6431. Computer Networks. 3 Credits.

Fundamental concepts in the design and implementation of computer communication networks and internet, their protocols, and applications; layered network architectures, applications, network programming interfaces, transport, routing, data link protocols, local area networks, network management, and network security. Students cannot receive credit for both CSCI 4431/CSCI 4431W taken while an undergraduate and CSCI 6431 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4431/CSCI 4431W and CSCI 6431. Prerequisite: CSCI 6461. (Fall, Every Year).

CSCI 6433. Internet Protocols. 3 Credits.

Understanding of the layered protocols for the Internet. Interconnection of networks. The IP protocol and routing algorithms, switches, bridges, and routers. The transmission control protocol (TCP). Addressing and names. Application-specific protocols, FTP, TELNET, SMTP, SNMP, HTTP. Domain name services. Prerequisites: CSCI 6221 and CSCI 6431. (Fall and spring, Every Year).

CSCI 6434. Design of Internet Protocols. 3 Credits.

Protocol specifications and formal description methods. Finite-state descriptions of Internet protocols. Specification and Description Language. Implementation of protocol specifications. Prerequisites: CSCI 6212 and CSCI 6433. (Fall and spring, Every Year).

CSCI 6441. Database Management Systems. 3 Credits.

Design and architecture of relational database management systems; query languages, data models, index structures, database application design. Students cannot receive credit for CSCI 2441W or 2541W taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for CSCI 2441W or CSCI 2541W and CSCI 6441. Prerequisites: CSCI 6221 and CSCI 6461. (Spring, Every Year).

CSCI 6442. Database Systems II. 3 Credits.

Concepts in database systems. Relational database design. Editing, report generation, updating, schema refinement, tuning. Construction of database management systems. Conceptual and logical design of a database. Prerequisite: CSCI 6441.

CSCI 6443. Data Mining. 3 Credits.

Fundamental concepts of data mining. Algorithm techniques for data mining, including classification, clustering, association rules mining. Prerequisites: CSCI 6441 or permission of the instructor. (Fall and spring, Every Year).

CSCI 6444. Introduction to Big Data and Analytics. 3 Credits.

Big data, its properties, technology, and the types and classes of analytics that can be applied to it; associated storage and programming systems. Students gain practical experience through focused projects to apply different analytics to a data set. Prerequisite: CSCI 2113 or CSCI 6221. (Fall, spring, and summer).

CSCI 6451. Information Retrieval Systems. 3 Credits.

Information organization and retrieval of natural language data by digital computer systems; statistical, syntactic, and logical analysis of natural language; dictionary and thesaurus systems; searching strategies and cataloging. Large-scale file structures. Prerequisites: CSCI 6221 and CSCI 6461. (Fall and spring, Every Year).

CSCI 6461. Computer System Architecture. 3 Credits.

Concepts in processor, system, and network architectures; architecture of pipeline, superscalar, and VLIW/EPIC processors; multiprocessors and interconnection networks; cache coherence and memory subsystem design for multiprocessor architectures; parallel and distributed system architecture; internetworking. Restricted to graduate students. (Fall, spring, and summer, Every Year).

CSCI 6511. Artificial Intelligence. 3 Credits.

Representation and space search; heuristic search; predicate calculus; knowledge representation and knowledge engineering for expert systems; rule-based, hybrid, and O-O systems; semantic nets, frames, and natural language; theorem provers; planning, learning, neural nets; use of AI languages. Prerequisite: CSCI 6212. (Spring, Every Year).

CSCI 6515. Natural Language Understanding. 3 Credits.

The state of the art of natural language parsing and semantic understanding by computer systems. Review of formal, context-free, and transformational grammars and parsing. Augmented transition networks: problems of complexity, semantics, and context. Deterministic parsing and semantic parsing. Prerequisite: CSCI 6511.

CSCI 6521. Introduction to Mobile Robotics. 3 Credits.

Concepts of autonomous mobile robotics with emphasis on algorithmic aspects. Sensing, sensor fusion, localization, calibration, mapping, perception, decision making, planning, behavior-based control, world modeling, and navigation. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisites: MATH 1232 and MATH 2184; and CSCI 6362 or CSCI 4341. (Fall and spring, Every Year).

CSCI 6525. Autonomous Robotics: Manipulation. 3 Credits.

Manipulation and autonomous operation in dynamic, human-centric environments. Reinforcement learning, perception, optimization algorithms, kinematics, dynamics, control theory. Prerequisites: CSCI 6362 and MATH 2184; or permission of the instructor. (Fall and spring, Every Year).

CSCI 6527. Introduction to Computer Vision. 3 Credits.

Image signal processing and filtering. Saliency, features and feature extraction, tracking, stereo disparity estimation, structure from motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Current research topics. Prerequisites: MATH 1232 and MATH 2184; and CSCI 6362 or CSCI 6341. (Fall and spring, Every Year).

CSCI 6531. Computer Security. 3 Credits.

Functional description of cryptographic primitives; risk analysis; policy models; design principles; assurance; malicious logic. Students cannot receive credit for both CSCI 4531 taken while an undergraduate and CSCI 6531 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4531 and CSCI 6531. Prerequisite: CSCI 6461. (Spring, Every Year).

CSCI 6532. Information Policy. 3 Credits.

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use. Students cannot receive credit for both CSCI 4532 taken while an undergraduate and CSCI 6532 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4532 and CSCI 6532. (Fall, Every Year).

CSCI 6534. Information Security in Government. 3 Credits.**CSCI 6541. Network Security. 3 Credits.**

Security protocols and applications in local, global, and wireless networks; IPsec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Students cannot receive credit for both CSCI 4541 taken while an undergraduate and CSCI 6541 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4541 and CSCI 6541.

Prerequisite: CSCI 6531. (Spring, Every Year).

CSCI 6542. Computer Network Defense. 3 Credits.

Offensive and defensive information warfare operations. Simulation of various attacks on and defenses of computer systems. Laws related to information warfare. History and literature related to information warfare attacks. Prerequisite: CSCI 6541.

CSCI 6545. Software Security. 3 Credits.

Security for software systems. Theory and practice of designing and implementing secure software. Security in the context of software engineering. Practical experience with building a software system and securing it, with emphasis on correctness and robustness. Requires substantial prior programming experience. Prerequisites: CSCI 6461 or CSCI 6411; and CSCI 6531 or EMSE 6540; or permission of the instructor. (Fall and spring, Every Year).

CSCI 6547. Wireless and Mobile Security. 3 Credits.

Mobile agents, wireless Web, WAP, WEP, peer-to-peer computing; secure routing; intrusion detection and authentication on wireless networks; security for handheld devices; encryption and cryptographic measures for wireless; real-time wireless security; security measures for embedded devices. Prerequisites: CSCI 6431 and CSCI 6531. (Spring, Every Year).

CSCI 6548. E-Commerce Security. 3 Credits.

Advanced technical topics in e-commerce security. Key security threats. Authentication and authorization models, directory services, cloud based IAM, federated identity. Public key cryptography and PKI. Mobile payment methods, digital currencies, blockchain. Technologies and applications for securing web commerce. Web service security standards. Prerequisites: CS 4531 or CS 6531. (Fall and spring, Every Year).

CSCI 6554. Computer Graphics II. 3 Credits.

Algorithmic aspects of computer graphics; 3D viewing transformation; shape modeling; shading and illumination models; visible-surface determination; curves and surfaces; sampling and aliasing; global illumination, ray tracing and radiosity; shadows; image manipulation and texture mapping; procedural models. (Spring, Every Year).

CSCI 6555. Computer Animation. 3 Credits.

Euler angles and quaternions; articulated figure motion; forward and inverse kinematics; kinematic, physics based, and behavioral motion control; character animation; motion capture; temporal aliasing; sound synthesis and synchronization. (Fall, Every Year).

CSCI 6561. Design of Human-Computer Interface. 3 Credits.

Design of dialogues for interactive systems. Psychological, physiological, linguistic, and perceptual factors. Advantages and disadvantages of various interaction techniques, command language syntaxes, and data presentations. Design methodology and guidelines. Case studies, research readings, and projects. Prerequisite: CSCI 6221.

CSCI 6562. Design of Interactive Multimedia. 3 Credits.

History, theory, and development of multimedia concepts. Hardware components, platforms, and authoring tools. Scientific, technical, and cognitive foundations of various media including text, sound, graphics, and video. Interface design. Use of a media taxonomy as a design and evaluation tool. Completion of a multimedia portfolio required. Prerequisite: CSCI 6221.

CSCI 6572. Computational Biology Algorithms. 3 Credits.

Algorithms and models for DNA and protein sequence alignments, gene finding, identification of gene regulatory regions, sequence evolution and phylogenetics, RNA and protein structure, microarray and/or proteomics data analysis. Prerequisites: CSCI 6212; and programming experience in C/C++ or Java. (Spring, Every Year).

CSCI 6900. Colloquium. 0 Credits.

Lectures by outstanding authorities in computer science. Topics to be announced each semester. (Fall and spring).

CSCI 6907. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit if the topic differs. See department for details. (Fall and spring, Every Year).

CSCI 6908. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit.

CSCI 6998. Thesis Research. 3 Credits.**CSCI 6999. Thesis Research. 3 Credits.****CSCI 8211. Advanced Topics in Algorithms. 3 Credits.**

Graph algorithms, strongly connected components, biconnected components, dominators in acyclic graphs, ordered trees, network flow, planarity testing, bipartite matching, theory of NP completeness, NP-complete problems. Design and analysis of approximation algorithms for NP-complete problems. Prerequisite: CSCI 6212.

CSCI 8231. Advanced Topics in Software Engineering. 3 Credits.

Seminar on current research and developments in software engineering. Students develop a software package with the aid of available software tools such as requirement tool, design tool, code generators, testing tools, measurement tools, cost estimation tools. Prerequisites: CSCI 6232 and CSCI 6233. (Fall and spring, Every Year).

CSCI 8331. Advanced Cryptography. 3 Credits.

Linear and differential cryptanalysis. Cryptanalysis of AES. Factorization and primality. Computational and information-theoretic secrecy. Theory of secrecy. Zero-knowledge proofs. Secret sharing. Cooperative distributed cryptography. Provable security. Prerequisite: CSCI 6331.

CSCI 8401. Advanced Topics in Systems. 3 Credits.

Seminar on current research and developments in computer operating systems. May be repeated for credit. (Spring, even years).

CSCI 8431. Advanced Topics in Computer Networks and Networked Computing. 3 Credits.

Seminar on current research and developments in computer networks, Internet, networked computing, mobile computing and pervasive computing. May be repeated for credit. Prerequisites: CSCI 6461, CSCI 6212 and CSCI 6433. (Fall and spring, Every Year).

CSCI 8440. Advanced Topics in Data Management. 3 Credits.

Seminar on current research and developments in computer database systems and information retrieval. May be repeated for credit. Prerequisite: CSCI 6442 or CSCI 6451.

CSCI 8531. Advanced Topics in Security. 3 Credits.

Seminar on current research and developments in information assurance. May be repeated for credit. Prerequisite: CSCI 6531.

CSCI 8554. Advanced Topics in Computer Graphics. 3 Credits.

Seminar on current research and developments in computer graphics. Spatial and temporal anti-aliasing; hidden-surface algorithms; illumination models, radiosity, textural mapping. May be repeated for credit. Prerequisite: CSCI 6554.

CSCI 8900. Advanced Selected Topics. 3 Credits.

Topics announced in the Schedule of Classes.

CSCI 8901. Research and Evaluation Methods. 3 Credits.

Required for all computer science doctoral candidates. The scientific method; research/design requirements and objectives: qualitative, quantitative, and case studies; performance metrics; design procedures and control; sources of error and bias; evaluation tools; formal validation methods; documentation standards. Prerequisite: APSC 3115.

CSCI 8998. Computer Science Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the qualifying examination. (Fall and spring, Every Year).

CSCI 8999. Dissertation Research. 1-12 Credits.

Doctoral candidates performing dissertation research. Restricted to doctoral candidates. (Fall and spring, Every Year).

ELECTRICAL AND COMPUTER ENGINEERING

OVERVIEW

Mission Statement

The mission of the Department of Electrical and Computer Engineering is to inspire our diverse students by providing rigorous and comprehensive programs in electrical engineering and computer engineering in order to provide leadership in a rapidly developing technological society and to advance the state of knowledge in our disciplines by actively pursuing scholarly research.

Computer Engineering Program Educational Objectives

The computer engineering program in GW's Department of Electrical and Computer Engineering prepare graduates who, in the years following graduation, will achieve:

- Employment in industry, government or other organizations using skills and knowledge learned while an undergraduate student at GW as evidenced by:
 - Employment history and/or career advancements.
 - Professional visibility (e.g., patents, invention disclosures, honors or awards, refereed journal articles, conference papers & other publications, involvement in professional associations).
 - Entrepreneurial activities.

and/or

- Engagement in lifelong learning using skills and knowledge learned while an undergraduate student at GWU as evidenced by:
 - Enrollment in graduate or professional programs.
 - Advanced degree earned.
 - Professional visibility (e.g., patents, invention disclosures, honors or awards, refereed journal articles, conference papers & other publications, involvement in professional associations).

Computer Engineering Program Student Outcomes

The computer engineering program at the GW's Department of Electrical and Computer Engineering aims to produce graduates who will have an:

1. Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.

2. Ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. Ability to communicate effectively with a range of audiences.
4. Ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

Electrical Engineering Program Educational Objectives

The electrical engineering program in GW's Department of Electrical and Computer Engineering prepare graduates who, in the years following graduation, will achieve:

- Employment in industry, government or other organizations using skills and knowledge learned while an undergraduate student at GWU as evidenced by:
 - Employment history and/or career advancements.
 - Professional visibility (e.g., patents, invention disclosures, honors or awards, refereed journal articles, conference papers & other publications, involvement in professional associations).
 - Entrepreneurial activities.

and/or

- Engagement in lifelong learning using skills and knowledge learned while an undergraduate student at GWU as evidenced by:
- Enrollment in graduate or professional programs.
- Advanced degree earned.
- Professional visibility (e.g., patents, invention disclosures, honors or awards, refereed journal articles, conference papers & other publications, involvement in professional associations).

Electrical Engineering Program Student Outcomes

The electrical engineering program at the GW's Department of Electrical and Computer Engineering aims to produce graduates who will have an:

1. Ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics.
2. Ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.
3. Ability to communicate effectively with a range of audiences.
4. Ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.
5. Ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.
6. Ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.
7. Ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in computer engineering (p. 753)
- Bachelor of Science with a major in electrical engineering (p. 759)
- Bachelor of Science with a major in electrical engineering, energy option (p. 760)
- Bachelor of Science with a major in electrical engineering, medical preparation option (p. 762)

Minors

- Minor in computer engineering (p. 786)
- Minor in electrical engineering (p. 787)

Combined programs

- Dual Bachelor of Science with a major in computer engineering and Master of Science in the field of computer engineering (p. 781)
- Dual Bachelor of Science with a major in computer engineering and Master of Science in the field of electrical engineering (p. 781)
- Dual Bachelor of Science with a major in computer engineering and Master of Science in the field of telecommunications engineering (p. 782)
- Dual Bachelor of Science with a major in electrical engineering and Master of Science in the field of computer engineering (p. 782)

- Dual Bachelor of Science with a major in electrical engineering and Master of Science in the field of electrical engineering (p. 782)
- Dual Bachelor of Science with a major in electrical engineering and Master of Science in the field of telecommunications engineering (p. 784)

GRADUATE

Master's programs

- Master of Science in the field of computer engineering (p. 794)
- Master of Science in the field of electrical engineering (p. 799) (on-campus or online)
- Master of Science in the field of telecommunications engineering (p. 807)

Professional programs

See the School of Engineering and Applied Science (<https://www.seas.gwu.edu/>) for programs leading to the professional degree.

Doctoral programs

- Doctor of Philosophy in the field of computer engineering (p. 810)
- Doctor of Philosophy in the field of electrical engineering (p. 813)

CERTIFICATES

- Graduate certificate in high-performance computing (p. 825)

FACULTY

Professors S. Ahmadi (*Teaching*), T. El-Ghazawi, K.B. Eom, R.J. Harrington, H.J. Helgert, H. Huang, C.E. Korman, R.H. Lang, A. Louri, D. Nagel (*Research*), S. Subramaniam (*Chair*), G.P. Venkataramani, M.E. Zaghloul

Associate Professors M. Doroslovacki, T. Lan, V. Sorger

Assistant Professors G. Adam, A. Aslani (*Practice*), P. Dehghanian, M. Imani, M. Miscuglio (*Research*), O. Ozel

Professorial Lecturers A. Dragonova, A. Gadkar, L. Ippolito, O. Kavaklioglu, Y. Kim, N. Kyriakopoulos, O. Mazzoni, T. Ramesh, R. Rao, S. Torrico, S. Weiss, J. Wu, S. Yun, A. Zamani

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECE 1010. Introduction to Electrical and Computer Engineering I. 1 Credit.

Basic and emerging concepts in electrical and computer engineering; professional literature and resources; technical writing, speaking, and presentation skills. Practical experiments and projects. (Fall, Every Year).

ECE 1020. Introduction to Electrical and Computer Engineering II. 1 Credit.

Continuation of ECE 1010. Basic and emerging concepts in electrical and computer engineering; professional literature and resources; technical writing, speaking, and presentation skills. Practical experiments and projects. (Spring, Every Year).

ECE 1099. Variable Topics. 1 Credit.

ECE 1120. C Programming for Electrical and Computer Engineering. 3 Credits.

Basic programming concepts including algorithmic thinking and structured programming, control flow, data types, pointers, functions, algorithms, I/Os, threads, and performance evaluation and optimization; concurrency and multicore programming using threads, processes as well as parallel C programming paradigms; controlling hardware devices and fine control via interfacing with assembly language. Credit cannot be earned for both this course and CSCI 1121. (Spring, Every Year) Credit cannot be earned for this course and CSCI 1121.

ECE 1125. Data Structures and Algorithms for ECE. 3 Credits.

Fundamentals of algorithms and data structures for electrical and computer engineering; techniques to solve problems through programming in C/C++ languages, linked lists, stacks, queues and trees; searching methods such as binary trees, hashing, and multi-way trees; design and analysis of algorithms and their space and time complexity. Prerequisite: ECE 1120. (Fall, Every Year).

ECE 2110. Circuit Theory. 4 Credits.

Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasors; power calculations; transformers; two-port circuits. CAD tools used in circuit projects. Corequisites: APSC 2113; and PHYS 1022 or PHYS 1026. (Fall and spring, Every Year).

ECE 2115. Engineering Electronics. 4 Credits.

Solid state devices used in electronic engineering; physics of their operation; application to electronic circuits. Application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 2110. (Spring, Every Year).

ECE 2120. Engineering Seminar. 1 Credit.

A detailed view of the electrical and computer engineering professions. Departmental and other speakers discuss facets of ECE, engineering education, and other department, college, or university topics of interest. (Fall, Every Year).

ECE 2140. Design of Logic Systems. 4 Credits.

Boolean algebra; combinational and sequential circuits; minimization techniques; design and build logic subsystems, such as decoders, multiplexers, adders, and multipliers. Use of CAD tools. Prerequisites: ECE 2110. Corequisites: ECE 2115. (Spring, Every Year).

ECE 2210. Circuits, Signals, and Systems. 3 Credits.

Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters. CAD tools used in design of projects. Prerequisites: ECE 2110. (Spring, Every Year).

ECE 3125. Analog Electronics Design. 4 Credits.

Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers; output stages and power amplifiers; frequency response of amplifiers, high-frequency models of FETs and BJTs; introduction to feedback circuit topologies; use of electronic CAD tools, such as P-SPICE. Prerequisite: ECE 2115. (Fall, Every Year).

ECE 3130. Digital Electronics and Design. 4 Credits.

Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as SPICE. Students must have completed a course in logic systems, such as ECE 2140 or equivalent, prior to enrollment. Consult the instructor if uncertain whether this requirement has been met. Prerequisite: ECE 2140. (Fall, Every Year).

ECE 3135. Digital Design with FPGAs. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project. Prerequisite: ECE 2140. (Spring, Every Year).

ECE 3220. Introduction to Digital Signal Processing. 3 Credits.

Signal representation, sampling, discrete-time signals, z-transforms and spectra, difference equations; Fourier analysis; discrete Fourier transform, IIR and FIR filter design. Prerequisite: ECE 2210. (Fall, Every Year).

ECE 3225. Signal and Image Analysis. 3 Credits.

Introduction to digital filters and digital image processing, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Prerequisites: APSC 3115 and ECE 2110. (As arranged, Every Year).

ECE 3310. Introduction to Electromagnetics. 3 Credits.

Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves, reflection from a dielectric of fiber and integrated optics. Prerequisites: APSC 2113; and PHYS 1022 or PHYS 1026. (Spring, Every Year).

ECE 3315. Fields and Waves I. 3 Credits.

Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching; review of vector analysis and numerical methods; electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy; Magnetostatics, Biot-Savart Law, Maxwell's equations, vector magnetic potential, inductance, magnetic energy, boundary conditions. Prerequisites: APSC 2113; and PHYS 1022 or PHYS 1026. (Fall, Every Year).

ECE 3410. Communications Engineering. 3 Credits.

Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK. Pulse code modulation, DPCM and delta modulation. Prerequisites: APSC 3115; and ECE 2210. Recommended background: Students in this course should have taken APSC 3115 (Engineering Analysis III) and ECE 2210 (Circuits, Signals, and Systems) or an equivalent course; If unsure, please contact the instructor, and discuss the pre-requisite requirements. (Spring, Every Year).

ECE 3515. Computer Organization. 3 Credits.

Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing. Prerequisites: ECE 2140. (Fall, Every Year).

ECE 3520. Microprocessors: Software, Hardware, and Interfacing. 3 Credits.

Microprocessor architecture, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory access, microprocessor-based system. Hands-on laboratory experience using laboratory facilities is an integral part of this course. Prerequisites: ECE 1120 and ECE 2140. (Fall, Every Year).

ECE 3525. Introduction to Embedded Systems. 3 Credits.

Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisites: ECE 1120 and ECE 3520. (Spring, Every Year).

ECE 3530. Introduction to Parallel and Distributed Computer Systems. 3 Credits.

Parallel Computing versus Distributed Computing Systems. Applications of Parallel Computing and Distributed Computing in Science and Engineering. Computer networks versus interconnection networks of parallel systems; high throughput versus low latency computing systems. Data Centers, Clouds, Grids, Edge, Fog and Cluster Computing. Performance analyses and evaluation of parallel and distributed systems. Shared memory and distributed systems programming with introduction to OpenMP, pthreads, message passing, Hadoop and MapReduce. Synchronization issues and methods. Introduction to the design and analyses of parallel algorithms. Performance Analysis and Program Optimizations. Introduction to GPUs and Heterogeneous systems and programming. Offered as arranged. Prerequisites: ECE 1120 and ECE 1125. (Summer, Every Year).

ECE 3915W. Electrical and Computer Engineering Capstone Project Lab I. 1 Credit.

Program majors take ECE 3915, ECE 4920, and ECE 4925 in sequence beginning in the second semester of their junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Spring, Every Year).

ECE 4140. VLSI Design and Simulation. 3 Credits.

Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student designs a VLSI chip, simulates the design and submits a GDS II file for Chip fabrication. Prerequisites: ECE 3130 and ECE 3135. (Same as ECE 6240) (Fall, Every Year).

ECE 4145. Micro- and Nanofabrication Techniques. 3 Credits.

Introduction to the basic fabrication principles at the micro and nano scale; students practice and fabricate simple devices. Prerequisite: ECE 2110. (Fall, Every Year) Same As: ECE 6245.

ECE 4150. ASIC Design and Testing of VLSI Circuits. 3 Credits.

ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140 or equivalent chips. Prerequisite: ECE 4140. (Same as ECE 6250) (Spring, Every Year).

ECE 4155. Sensors, Networks, and Applications. 3 Credits.

Sensor technologies for measurement of mechanical, optical, magnetic, electromagnetic, thermal, and acoustic signals; interface electronic components, calibration, noise, and nonlinearity in addition to main modern sensors and sensor networks. Prerequisites: ECE 3125 or permission of instructor. (Spring, Every Year) Credit cannot be earned for this course and ECE 6255.

ECE 4160. Introduction to Nanoelectronics. 3 Credits.

Nanoscience and technology and nanoelectronics. Basic nanofabrication steps, and techniques to build devices such as carbon nanotubes, Graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). Prerequisite: ECE 2115. (Same as ECE 6260) (Fall, Every Year).

ECE 4320. Fields and Waves II. 3 Credits.

Magnetostatic fields, Lorentz force torques, Biot-Savart law, Ampere's law, magnetic materials, inductance, magnetic energy; Maxwell's equations, Faraday's law, charge-current continuity, vector potential; time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics; radiation, dipole, gain, effective area. Prerequisites: APSC 2114; and ECE 3315. (Spring, Every Year).

ECE 4415. Introduction to Computer Networks. 3 Credits.

Layered protocol architectures; digital transmission and fundamental limits; error detection and ARQ protocols; data link layer and control; multiple access protocols; circuit and packet switching; multiplexing; routing; flow and congestion control and queue management; LAN standards; TCP/IP; Next-generation Internet. Prerequisites: APSC 3115. (Spring, Every Year).

ECE 4425. Data Communications Laboratory. 1 Credit.

Experiments in support of the analysis and design of communications systems with emphasis on network protocols. Time and frequency division multiplexing, flow control, automatic repeat request, interfacing, token ring, token bus, multiple access for Ethernet, routing, packet switching. Prerequisite: ECE 4415. (Spring, Every Year).

ECE 4435. Photonics and Fiber Optics. 3 Credits.

Concepts of opto-electronic devices; light-matter-interaction; absorption; device details and applications: laser, photodetector, modulators, optical cavity, waveguides and optical fibers; device and link considerations, including energy-per-bit, modulation speed, and nano fabrication; plasmonics and nanophotonics; industry perspective. Prerequisites: APSC 2114; ECE 3310 or ECE 4320. Recommended background: Prior completion of at least one undergraduate-level course in electromagnetism and semiconductors. (Spring, even years) Credit cannot be earned for this course and ECE 6765.

ECE 4535. Computer Architecture and Design. 3 Credits.

Advanced topics in computer architecture and design; instruction-level parallelism, thread-level parallelism, memory, multithreading, and storage systems. Prerequisite: ECE 3515. (Fall, Every Year) Credit cannot be earned for this course and ECE 6005.

ECE 4610. Electrical Energy Conversion. 3 Credits.

Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. Prerequisites: ECE 2210 and ECE 3315. (Same as ECE 6610) (Spring, Every Year).

ECE 4620. Electrical Power Systems. 3 Credits.

AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency and power flow control. Voltage, current and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 6620) (Fall, Every Year).

ECE 4662. Power Electronics. 3 Credits.

The application of electronics to energy conversion; principles of operation, analysis, and control of circuits; methods of solving power electronic circuits and finding the steady-state values of important quantities; deriving the linear model of the studied power electronic circuits and designing controllers for these devices. A general knowledge of electric circuits and linear control theory is required. Restricted to undergraduate students. (Same as ECE 6662) (Spring, Every Year).

ECE 4710. Control Systems Design. 3 Credits.

Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems. Prerequisites: APSC 2114; and ECE 2210 or MAE 3134. (Fall, Every Year).

ECE 4730. Robotic Systems. 3 Credits.

Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 3197. Prerequisite: computer programming, APSC 2058, ECE 4710.

ECE 4920W. Electrical and Computer Engineering Capstone Project Lab II. 3 Credits.

Program majors take ECE 3915, ECE 4920, and ECE 4925 in sequence beginning in the second semester of their junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Fall, Every Year).

ECE 4925W. Electrical and Computer Engineering Capstone Project Lab III. 3 Credits.

Program majors take ECE 3915, ECE 4920, and ECE 4925 in sequence beginning in the second semester of their junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ECE 4920W. (Spring, Every Year).

ECE 4980. Special Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes. (Fall and spring).

ECE 4990. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

ECE 6005. Computer Architecture and Design. 3 Credits.

Advanced topics in computer architecture and design; instruction-level parallelism, thread-level parallelism, memory, multithreading, and storage systems. (Fall, Every Year).

ECE 6010. Linear Systems Theory. 3 Credits.

Introduction to linear systems theory. Topics include linear vector spaces and linear operators, mathematical representation of dynamic linear systems, concept of state and solution of the state equation, controllability and observability, canonical forms of the state equation, state feedback, and state estimation. (Fall, Spring, Every Year).

ECE 6015. Stochastic Processes in Engineering. 3 Credits.

Axioms of probability; conditional probability; independent events; sequential experiments. Single and multiple random variables. Discrete-valued and continuous-valued stochastic processes; discrete-time and continuous-time stochastic processes; mean, auto-correlation and autocovariance functions; multiple random processes; stationary stochastic processes and linear time-invariant systems; ergodicity; Markov chains. Examples from engineering applications. (Fall, spring, and summer, Every Year).

ECE 6020. Applied Electromagnetics. 3 Credits.

Vector algebra and calculus, Divergence and Stokes theorems, Maxwell's equations, Boundary conditions, Poynting vector theorem, Time harmonic waves, Wave equation, Propagation in lossy media, Skin depth, Plane waves in an arbitrary direction, Polarization, Snell's law, Transmission line equations, Propagation constant, Characteristic impedance, Average power, Waveguides, TEM, TM and TE modes, cutoff frequencies, Vector and scalar potentials, scalar Green's function, Near and far fields from a dipole, radiated power and Antenna fundamentals Recommended background: ECE 4320 or similar course. (Fall, Every Year).

ECE 6025. Signals and Transforms in Engineering. 3 Credits.

Signal spaces and approximation. Orthogonal functions. Fourier series and transform. Bandpass signals and modulation. Hilbert transform and analytic signals. Time frequency analysis. Short-time Fourier transform. Linear systems properties. Laplace transform. Sampling and discrete-time signals. Discrete-time Fourier transform and z-transform. Wavelets. (Fall and spring, Every Year).

ECE 6030. Device Electronics. 3 Credits.

Semiconductor device concepts; doping, drift diffusion, recombination. Analysis of Schottky and Ohmic contacts, pn junctions, MOS systems. Modeling and analysis of semiconductor devices such as MOSFET and bipolar transistors. Hot electron and short and narrow channel effects. (Spring, Every Year).

ECE 6035. Introduction to Computer Networks. 3 Credits.

Layered protocol architectures. Digital transmission, fundamental limits. Error detection and ARQ protocols. Data link layer and control. Multiple access protocols. Circuit and packet switching. Multiplexing. Routing. Flow and congestion control, queue management. LAN standards. TCP/IP. Next-generation Internet. (Fall and spring, Every Year) Same As: ECE 4415.

ECE 6045. Special Topics. 3 Credits.

Topics vary by semester. May be repeated provided topic differs. See department for details. (Fall and spring, Every Year).

ECE 6050. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit.

ECE 6060. Electric Power Generation. 3 Credits.

Primary traditional/conventional and alternative/renewable energy sources and energy storage applications. Large generation plants and distributed small generation units and impact on transmission and distribution systems operation and infrastructure. Review of applicable schemes of hybrid generation. Evaluate smart grid objectives on long and short term stability of large power networks. (Fall, Every Year).

ECE 6105. Introduction to High-Performance Computing. 3 Credits.

Taxonomy and classifications of computers and parallel computers. Parallel thinking and parallel algorithms. Domain decomposition and load balancing. Programming parallel computers using the message passing, global address space, and partitioned global address space paradigms. Restricted to graduate students in science or engineering or permission of the instructor. (Fall, Every Year).

ECE 6120. Advanced Microarchitecture. 3 Credits.

Review of computer architecture fundamentals performance and power; pipeline design and hazards; superscalar pipelines, speculation and recovery; fetch logic and instruction caches; branch prediction; decoder logic for CISC and RISC; scheduling and instruction issue; ALUs and register files; memory optimizations; commit logic. Prerequisite: ECE 6005. Recommended background: Students should have taken at least one course in computer architecture, such as ECE 6005 or equivalent, prior to enrollment. (Spring, Every Year).

ECE 6125. Parallel Computer Architecture. 3 Credits.

Architectural classifications and taxonomies of parallel computers; enabling technologies, including advanced processor concepts, interconnection networks, high-speed memory architectures and protocols; parallel performance and scalability; and introduction to parallel algorithms and parallel programming. Prerequisites: ECE 6005 or ECE 6105. (Spring, Every Year).

ECE 6130. Big Data and Cloud Computing. 3 Credits.

This course covers a wide range of research topics related to big data and cloud computing, including data centers, virtualization, hardware and software architecture, as well as system-level issues on performance, energy efficiency, reliability, scalability and security. Prerequisites: ECE 6005 or ECE 6105. (Spring, Every Year).

ECE 6132. Secure Cloud Computing. 3 Credits.

The course provides a comprehensive guide to security concerns and best practices for cloud computing and cloud services. Topics discussed include cloud computing architectures, risk issues and legal topics, data security, internal and external clouds, information security frameworks and operational guidelines. Offered as arranged. Restricted to students in the MEng in cybersecurity policy and compliance program. (Summer, Every Year).

ECE 6140. Embedded Systems. 3 Credits.

Architectural advances and instruction sets for embedded microprocessors. Real-time operating systems and real-time scheduling, use of pre-designed software and hardware cores. Sensors, actuators, and data acquisition. System-on-chip (SoC). Design case studies. Prerequisite: ECE 6005. (Fall, Every Year).

ECE 6150. Design of Interconnection Networks for Parallel Computer Architectures. 3 Credits.

In-depth study and fundamental design principles of interconnection networks for parallel computing architectures including network-on-chips for multicores and chip multiprocessors (CMPs), interconnection networks for multiprocessors, multi-computers, and datacenters; interconnect topologies, routing protocols and algorithms, switching techniques, flow control protocols, router design, modeling and simulation tools, interconnect reliability, scalability, security, emerging technologies for interconnects (optical, wireless, radio frequency), emerging applications (neuromorphic, quantum, and approximate computing), case studies covering modern commercial examples. Restricted to SEAS graduate students. Prerequisites: ECE 6005 or equivalent. Recommended background: Prior completion of a course in computer organization or computer architecture, which may be ECE 3515 or ECE 6005 or an equivalent. (Spring, Every Year).

ECE 6160. Secure Computer Architecture. 3 Credits.

Building blocks of secure hardware and systems: trusted execution environment, security engines; side and covert channels in computing systems; hardware trojans; physically unclonable functions and challenges; obfuscation strategies. Prerequisites: ECE 6005 or equivalent with permission of the instructor. (As arranged, Every Year).

ECE 6213. Design of VLSI Circuits. 3 Credits.

This class covers top-down ASIC/FPGA design methodology; Modeling of VLSI circuits using HDL; Behavioral, Structural, and RTL modeling techniques; Logic synthesis techniques; Design verification plan and techniques; Students design and verify a final project using state-of-the-art commercial VLSI CAD tools for ASIC and FPGA (Altera). (Fall, Every Year).

ECE 6214. High-Level VLSI Design Methodology. 3 Credits.

This class covers advanced ASIC-FPGA design methodology including: synthesis methodology for both ASIC and FPGA design flow, DSP design for mobile device and implementation to ASIC and FPGA, low-power SOC design, CPF implementation, area/delay/power optimization and trade-offs, DFT, DFM, Low-Power design for mobile device, and Hardware/Software co-design. Advanced low power design for multi-core CPU architecture, LP top-down design flow with CPF implementation/verification. Students design and verify a final project using ASIC CAD tools and FPGA demo board with built-in LA. Prerequisite: ECE 6213. (Spring, Every Year).

ECE 6215. Introduction to MEMS. 3 Credits.

Introduction to microelectromechanical and nanoelectromechanical systems (MEMS/NEMS). Basic principles of simulating, designing, and fabricating MEMS/NEMS. Prerequisite: ECE 6240. Recommended background: Students in this course should have taken at least one prior course in ECE 6240; If unsure, contact the instructor, and discuss the pre-requisite requirements. (Spring, Every Year).

ECE 6216. RF/VLSI Circuit Design. 3 Credits.

Introduction to radio frequency systems: RF design, specifications, S-parameters, gain, noise, stability, matching concepts, small signal amplifiers, low noise amplifiers, power amplifiers, system-level design. In this course students use CAD tools such as ADS and other industrial tools to design class project. Prerequisite: ECE 6240. (Spring, odd years).

ECE 6218. Advanced Analog VLSI Circuit Design. 3 Credits.

CMOS technology, CMOS analog building blocks, current sinks, current sources, current mirrors, voltage references, CMOS amplifier design, feedback circuits, frequency response, compensation. Analysis of circuit variants: cascoding, active replacement elements – non-linear circuits. A/D converter design, examples of CMOS A/Ds. Mixed-signal layout techniques. Students are required to design CMOS Analog Circuit project, and submit final design Layout together with simulation using CAD (CADENCE analog design) simulation tools. Final report is required. Prerequisite: ECE 6240. (Spring, even years).

ECE 6221. Introduction to Physical Electronics. 3 Credits.

Theoretical principles underlying the operation of electronic devices; postulates of quantum mechanics: wave-particle duality, uncertainty relations, electronic band structure; free-carrier statistics; electron-photon interaction; physical principles of semiconductor and optoelectronic devices. (Fall, Every Year).

ECE 6240. VLSI Design and Simulation. 3 Credits.

Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student designs a VLSI chip, simulates the design and submits a GDS II file for Chip fabrication. (Same as ECE 4140) (Fall, Every Year).

ECE 6245. Micro- and Nanofabrication Technology. 3 Credits.

Introduction to the basic fabrication principles at the micro- and nanoscale; practical experience and fabrication of simple devices. Restricted to graduate students. Prerequisite: ECE 2150. (Fall, Every Year) Same As: ECE 4145.

ECE 6250. ASIC Design and Testing of VLSI Circuits. 3 Credits.

ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140/6240 or equivalent chips. Prerequisite: ECE 6240. (Spring, Every Year) Same As: ECE 4150.

ECE 6255. Sensors, Networks, and Applications. 3 Credits.

Sensor technologies for measurement of mechanical, optical, magnetic, electromagnetic, thermal, and acoustic signals; interface electronic components, calibration, noise, and nonlinearity in addition to main modern sensors and sensor networks. Restricted to graduate students. Prerequisites: permission of the instructor. (Spring, Every Year) Credit cannot be earned for this course and ECE 4155.

ECE 6260. Introduction to Nanoelectronics. 3 Credits.

Nanoscience and technology and nanoelectronics. Basic nanofabrication steps; techniques to build devices such as carbon nanotubes, graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). (Same as ECE 4160) (Fall, Every Year).

ECE 6500. Information Theory. 3 Credits.

Introduction to the mathematical representation of information, including the concepts of entropy, mutual information and information transfer over noisy media; mathematical representation of information sources; entropy and mutual information; noiseless and noisy coding theorems; data compression; communication channels and their capacity to convey information; and rate distortion theory. Prerequisite: ECE 6015. (Spring, odd years).

ECE 6505. Error Control Coding. 3 Credits.

Introduction to the principles governing the mathematical theory of error detecting and correcting errors occurring in the transfer of information over digital communication channels. Prerequisite: ECE 6015. (Spring, Every Year).

ECE 6510. Communication Theory. 3 Credits.

Principles of digital communications. Channels, digital modulation; optimum receivers and algorithms in the AWGN; coherent, non-coherent, and fading channels. Correlation detectors, matched filters; diversity. Bounds on performance of communications, comparison of communications systems and implementation issues. Prerequisite: ECE 6015. (Spring, Every Year).

ECE 6520. Mobile and Wireless Communication Systems. 3 Credits.

Characterization of mobile and wireless channels. Indoor and outdoor path loss models. Multipath propagation. Fading and fading countermeasures: coding, equalization. Power control. Cellular design and frequency reuse. Modulation and coding techniques. Spread Spectrum and OFDM. Random access methods. Code and Space Division Multiple Access, MIMO. Prerequisite: ECE 6510. (Fall, odd years).

ECE 6525. Satellite Communication Systems. 3 Credits.

Low earth orbit and geostationary satellite systems; transmission systems; RF link budgets; modulation and multiplexing; multiple access techniques, including FDMA, TDMA, and CDMA; satellite transponders, antennas, and earth stations. Prerequisite: ECE 6510. (Fall, Every Year).

ECE 6530. Electronic Warfare. 3 Credits.

Electronic attack and protection of information; countermeasures and counter-countermeasures; attacks on ranging and tracking radar systems; jamming and jamming defense; attacks on communications systems; defensive techniques, signal design, spread spectrum; attack and defense of optical and high-energy systems. Offered as arranged. Prerequisite: ECE 6510. (Summer, Every Year).

ECE 6550. Network Architectures and Protocols. 3 Credits.

The course covers network topologies and control structures; Switching and routing of information streams; Internet transmission protocols; Data representations and codes; Application protocols; Mail and file transfer protocols; and Network management systems. Prerequisite: ECE 6035. (Spring, Every Year).

ECE 6560. Network Performance Analysis. 3 Credits.

Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisites: ECE 6015 and ECE 6035. (Fall, Every Year).

ECE 6565. Telecommunications Security. 3 Credits.

Speech and data scrambling. Linear and nonlinear transformations. Cryptographic techniques. Block and stream ciphers. The Data Encryption Standard (DES). Key management, digital signatures, message authentication, hash functions. Public key algorithms. Restricted to Students with graduate standing in science or engineering or with the permission of the instructor. (Fall, Every Year).

ECE 6570. Telecommunications Security Protocols. 3 Credits.

The OSI security architecture: services and mechanisms; risk analysis; Internet protocol security mechanisms; Ipv4 and Ipv6 security; security associations, authentication, MD5; encapsulating security payload (ESP); e-mail security: PGP, S/MIME, PEM, MSP; secure voice communications algorithms; security in Internet commerce: SSL, SET. Offered as arranged. Prerequisites: ECE 6035 and ECE 6565. (Fall and spring, Every Year).

ECE 6575. Optical Communication Networks. 3 Credits.

Wave propagation through fiber, dispersion, polarization. Multiplexing techniques, WDM. Optical networking components. Optical transmission systems design. All-optical networking, broadcast star and wavelength routing networks. Performance analysis, survivability, control and management. Optical access networks. (Fall, Every Year).

ECE 6580. Wireless Networks. 3 Credits.

The course introduces students to the principles governing the design and implementation of various types of wireless networks; mathematical analysis of telecommunications traffic; technology of wireless information transmission systems; first, second and third generation cellular networks based on circuit and packet switching principles; capacity sharing and duplex transmission; Time Division and Code Division Multiplex system; fourth and fifth generation cellular networks; wireless local and personal area networks; performance evaluation of wireless cellular and local area networks. Prerequisite: ECE 6035. (Spring, Every Year).

ECE 6610. Electrical Energy Conversion. 3 Credits.

Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. May be taken for graduate credit by students in fields other than electrical engineering. (Spring, Every Year) Same As: ECE 4610.

ECE 6620. Electrical Power Systems. 3 Credits.

AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency, and power flow control. Voltage, current, and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 4620) (Fall, Every Year).

ECE 6662. Power Electronics. 3 Credits.

The application of electronics to energy conversion. Principles of operation, analysis, and control of circuits including solid-state electronic switches. Methods of solving power electronic circuits and finding the steady-state values of important quantities. Deriving the linear model of the studied power electronic circuits and designing controllers for these devices. A general knowledge of electric circuits and linear control theory is required. (Spring, Every Year).

ECE 6666. Power System Transmission, Control, and Security. 3 Credits.

Analysis of AC networks, load flow, transient stability, economic dispatch, reactive compensation, FACTS, effects of alternative generation, voltage and frequency control, N-1 contingency, restoration techniques. Offered as arranged. Prerequisite: ECE 6620. (Fall and spring, Every Year).

ECE 6667. Nuclear Power Generation. 3 Credits.

Review of nuclear reactor engineering, traditional and developing reactor design, issues regarding the safe operation of nuclear plant, and control and regulatory aspects of nuclear power generation. Prerequisite: ECE 6620. (Fall, even years).

ECE 6668. Power Distribution Grids. 3 Credits.

Equipment for power distribution for industrial, commercial and residential applications. Switching and safety at the distribution voltage level. Bulk Insulation Level and Insulation coordination principles. Applications of 'smart-grid' innovations to short and long-term development of remote metering and customer communications. Selection and Application of Protective Relays, Fuses, Ground-Fault Protection. Prerequisite: ECE 6060. (Fall, odd years).

ECE 6669. Smart Power Grids. 3 Credits.

Overview of probability theory. Overview of basic power market reliability modeling and evaluation. Generation supply reliability techniques, modeling and evaluation. Reliability of transmission system and delivery of supply. Loss of load probability evaluation. Forced and maintenance outages and impact on system reliability. Load forecasting and probability of interconnected systems. Risk evaluation in power system operation. Operating reserve techniques and indices. Distribution system reliability including substations. Composite system reliability modeling. Reliability worth and value. (Spring, odd years).

ECE 6670. Power System Protection. 3 Credits.

Main philosophy for protection of power systems. Protection systems and approaches. Reliability and security of protection systems. Protection of Generators, Transformers, Motors and Transmission Lines. Requirements for Distributed Source Generation (DSG's). Requirements for system protection, to prevent grid blackouts and to enhance power system security. Prerequisite: ECE 6620. (Spring, even years).

ECE 6690. Power Systems Economics. 3 Credits.

Overview of electrical power market economics and market participants. Production pricing and market clearing pricing. Market ancillary service pricing. Location marginal pricing and zonal pricing schemes. New electrical generation entrant impact. Investing in generation and in transmission. Independent power producers and independent transmission owners. Offered as Arranged. (Fall and spring, Every Year).

ECE 6691. Power Systems Reliability. 3 Credits.

Overview of probability theory. Overview of basic power market reliability modeling and evaluation. Generation supply reliability techniques, modeling and evaluation. Reliability of transmission system and delivery of supply. Loss of load probability evaluation. Forced and maintenance outages and impact on system reliability. Load forecasting and probability of interconnected systems. Risk evaluation in power system operation. Operating reserve techniques and indices. Distribution system reliability including substations. Composite system reliability modeling. Reliability worth and value. (Spring, even years).

ECE 6699. Energy and Sustainability. 3 Credits.

Energy sources; consumptions; societal and environmental impacts; energy generation and harvesting technology; thermodynamics and efficiency limits; nanotechnology for sustainability; emission and pollution; growth models; learning curves; life-cycle-analysis; energy in an international perspective. Offered as arranged. Recommended background: A basic understanding of energy and thermodynamics such as material covered in ECE 4620 and MAE 2131. (Fall and spring, Every Year).

ECE 6710. Microwave Engineering. 3 Credits.

Graduate level elective course open to Electrical Engineering graduate students. Topics include transmission line theory, transmission lines and waveguides, waveguide discontinuities, microwave networks, impedance matching and tuning, microwave resonators, power dividers and directional couplers, and microwave filters and active microwave circuits. Prerequisite: ECE 6020. (Fall, even years).

ECE 6715. Antennas. 3 Credits.

Graduate level elective course open to Electrical Engineering graduate students. Topics include antenna circuits, radiation pattern, reciprocity, gain, receiving cross-section, scattering by antennas, mutual coupling, arrays; polarization; radiation from current distributions, equivalent aperture currents, dipoles, patch antennas, large phased arrays. Restricted to graduate students in electrical engineering. Prerequisite: ECE 6020. (Spring, odd years).

ECE 6720. Remote Sensing. 3 Credits.

Active and passive remote-sensing systems: scatterometers, real-aperture imaging, and synthetic-aperture radars. Sensing of surface, subsurface, and atmospheric parameters at microwave, infrared, and optical frequencies. Analysis of radiometric techniques using radiative transport theory, inverse scattering methods, profile inversion. The course is intended to provide graduate students and engineers with an in-depth understanding of the fundamentals of remote sensing at microwave, infrared and optical frequencies with emphasis on recent research innovations in these areas. Prerequisite: ECE 6020. (Spring, even years).

ECE 6725. Electromagnetic Radiation and Scattering. 3 Credits.

Alternative representations of solutions to Maxwell equations, Fourier transforms and spherical mode representations, field equivalence principle, dyadic Green's functions, radiation and scattering by simple shapes, geometrical theory of diffraction, integral equations and the moment method. Offered as arranged. Prerequisite: ECE 6020. (Fall and spring, Every Year).

ECE 6730. Waves in Random Media. 3 Credits.

Propagation and scattering of electromagnetic, optical, and acoustic waves in random media, scattering from rough surfaces and randomly distributed particles, turbulence. Applications to propagation through rain and fog. Laser beam scintillations, remote sensing, and communications channel modeling. Monte Carlo simulation. The course is intended to provide graduate students and engineers with an in-depth understanding of the fundamentals of wave propagation in complex media at microwave, infrared and optical frequencies with emphasis on recent research innovations in these areas. Offered As Arranged. Prerequisite: ECE 6725. (Summer, Every Year).

ECE 6735. Numerical Electromagnetics. 3 Credits.

Systematic discussion of useful numerical methods in computational electromagnetics including integral equation techniques and differential equation techniques, both in the frequency and time domains. Hands-on experience with numerical techniques, including the method of moments, finite element and finite difference time-domain methods, and spectral integral methods. Related numerical issues such as accuracy, stability and dispersion are discussed. Examples are drawn from various electromagnetic applications such as nanowires, waveguides, and antenna radiation. Prerequisites: ECE 6020, ECE 6025, and ECE 6800. (Fall, odd years).

ECE 6745. Analysis of Nonlinear and Multivalued Devices. 3 Credits.

Numerical techniques for modeling semiconductor and magnetic devices; modeling multivalued behavior of memory materials; optimization of geometry. Offered as arranged. Prerequisite: ECE 6020. (Fall and spring, Every Year).

ECE 6750. Modern Radar Systems. 3 Credits.

The radar range equation. Radar cross section of targets, target detection and parameter estimation, detection in clutter. Resolution, ambiguities, and signal design. Moving-target indicators. Pulse Doppler radar. Radar antennas, phased arrays. Synthetic aperture and space-based radar. The course is intended to provide graduate students and engineers with an in-depth understanding of the fundamentals of wave propagation in complex media at microwave, infrared and optical frequencies with emphasis on recent research innovations in these areas. Offered as arranged. Prerequisite: ECE 6015. (Fall and spring, Every Year).

ECE 6760. Propagation Modeling in Wireless Communications. 3 Credits.

Wireless communication channel modeling, propagation mechanisms, terrestrial fixed links, mobile satellite systems, macrocells, fading models, microcells, picocells, diversity, equalizers. Specific applications to 3G, 4G and 5G mobile systems. Prerequisite: ECE 6020. (Spring, odd years).

ECE 6765. Photonics and Fiber Optics. 3 Credits.

Concepts of opto-electronic devices; light-matter-interaction; absorption; device details and applications discussed: laser, photodetector, modulators, optical cavity, waveguides and optical fibers; device and link considerations include: energy-per-bit, modulation speed, and nano fabrication; plasmonics and nanophotonics; industry perspective. Recommended background: Students should have taken at least one prior course in electromagnetism and semiconductors at the undergraduate level. (Spring, even years).

ECE 6770. Applied Magnetism. 3 Credits.

Classification of magnetic materials. Magnetic measurements. Soft and hard magnetic materials. Applications to microwave, magnetic recording, permanent magnets, magneto-optics, magnetic refrigeration, sensors, magnetostrictive devices. Electric power. Superconducting devices. Offered as arranged. Prerequisite: ECE 6020. (Summer, Every Year).

ECE 6800. Computational Techniques in Electrical Engineering. 3 Credits.

Introduction to linear algebra and vector spaces as applied to networks and electrical systems. Orthogonal bases, projections, and least squares. Fast Fourier transforms. Eigenvalues and eigenvectors with applications. Computations with matrices. Constrained optimization in electrical systems. Network models and applications. Special relativity. (Fall, Every Year).

ECE 6810. Speech and Audio Processing by Computer. 3 Credits.

The objective of this course is to introduce computer processing of speech and audio. Topics include: acoustic sensor technologies and characteristics, direction finding, speech analysis and synthesis, audio formats and compression standards, time-varying autoregressive models, speech recognition, automatic target recognition. Restricted to graduate students. (Fall, Every Year).

ECE 6815. Multimedia Processing. 3 Credits.

Introduction to multimedia. Formats, conversion and combinations; delivery and trends; servers and networks; hardware and architecture; enduser devices; digital libraries, video conferencing and collaboration; and educational and health applications. Case studies and trials. Offered as arranged. Restricted to graduate students with programming experience in C, C++ or Java. Prerequisite: ECE 6005. (Fall and spring, Every Year).

ECE 6820. Real-Time Digital Signal Processing. 3 Credits.

Digital signals, binary number representation, fixed-point and floating-point DSP architectures. Q-format for data representation, bit allocation and arithmetic. Portability of arithmetic expressions: floating point vs. fixed point. Development of real-time signal processing software. Applications to signal parameter estimation, signal generation, filtering, signal correlation, spectral estimation (FFT). Offered as arranged. Prerequisite: ECE 6005. Recommended background: Students in this course should have taken at least one prior course in ECE 6005 Computer Architecture and Design and have a basic knowledge of computer architecture and DSP algorithms; Knowledge of C programming language, assembly language and MATLAB is desirable; If unsure, contact the instructor, and discuss the pre-requisite requirements. (Fall and spring, Every Year).

ECE 6825. Computer Control Systems. 3 Credits.

Analysis of automatic control systems in which the control procedure uses on-line digital computation. Topics include single- and multi-rate sampling, z-transforms, responses of discrete systems, stability criteria, and discrete control design. Prerequisite: ECE 6010. (Fall, odd years).

ECE 6830. System Optimization. 3 Credits.

Parameter optimization problems, theory of minima and maxima. Optimization problems for dynamic systems, calculus of variations, the maximum principle and the Hamilton-Jacobi equation. Optimization problems with constraints, optimal feedback systems. Numerical solution of optimal problems. Prerequisite: ECE 6010. (Spring, Every Year).

ECE 6835. Nonlinear Systems. 3 Credits.

Definition of linear and nonlinear systems; introduction to approximate analysis of nonlinear systems: describing functions, Krylov and Bogoliubov asymptotical method, and Tsytkin locus. Forced oscillations: jump resonance. Stability analysis: Liapunov criterion. Luré problem and Popov's method. Prerequisite: ECE 6010. (Fall, even years).

ECE 6840. Digital Image Processing. 3 Credits.

Properties of images and visual systems; image acquisition, sampling, quantization; one- and two-dimensional image transform techniques; enhancement and restoration; image coding and data compression; segmentation, representation, boundary and shape, texture, matching. Image understanding. Students should have completed at least one prior course in computational methods or signal processing, such as ECE 6800 or equivalent, prior to enrollment. Contact the instructor if uncertain as to whether this requirement has been met. Prerequisite: ECE 6800. (Spring, odd years).

ECE 6842. Image Engineering. 3 Credits.

Solid-state imaging devices and image engineering; basic understanding of the detection and noise processes underlying the sensing of optical radiation and the engineering and physics of image formation; radiometry, optics and image formation, and imaging devices; image quality metrics and system design trades. Students should have completed at least one course in linear systems and stochastic processes prior to enrollment. Contact the instructor if uncertain as to whether this requirement has been met. (Fall, even years).

ECE 6845. Image Synthesis. 3 Credits.

The objective of this course is to introduce techniques for synthesizing images using mathematical models and other reconstruction techniques. The course starts with introduction to image formation process, then other techniques for synthesizing color textures and three-dimensional scenes are covered. Prerequisite: ECE 6015. (Spring, Every Year).

ECE 6850. Pattern Recognition. 3 Credits.

Random vectors, transformations; hypothesis testing, error probability, sequential methods. Bayes, other linear classifiers; discriminant functions, parameter estimation, learning, and dimensionality reduction; nonparametric methods; clustering; feature selection and ordering; computer applications and projects. Students should have completed at least one prior course in probability and statistics, such as ECE 6015 or equivalent, prior to enrollment. Contact the instructor if uncertain as to whether this requirement has been met. Prerequisite: ECE 6015. (Fall, odd years).

ECE 6855. Digital Signal Processing Techniques. 3 Credits.

Signal and system representation, sampling and quantization, transform techniques. Recursive and nonrecursive digital filter design, recursive estimation, linear predictive filtering. Fast algorithms for signal processing. Current topics. Prerequisite: ECE 6015. (Fall, Every Year).

ECE 6860. Compression Techniques for Data, Speech, and Video. 3 Credits.

Lossless and lossy coding theorems, rate distortion bound. Data compression algorithms: Huffman coding, run-length coding. Differential coding. Transform coding. Voice, audio, image and video coding techniques: CELP, JPEG, MPEG, MP3. Data coding standards: G.722, G.726, G.728, H.261, H.323. Offered as arranged. Prerequisites: ECE 6015 and ECE 6025. (Fall and spring, Every Year).

ECE 6865. Statistical Signal Estimation. 3 Credits.

Minimum variance unbiased estimation. Cramer-Rao bound, statistical modeling, sufficient statistics, maximum likelihood estimation, efficient estimators, least squares. Bayesian estimators. Wiener and Kalman filters, complex data and parameters. Applications to radar, speech, image, biomedicine, communications, controls. Prerequisite: ECE 6015. (Fall, odd years).

ECE 6875. Wavelets and Their Applications. 3 Credits.

Time-frequency analysis. Multiresolution analysis. Continuous, discrete, and discrete-time wavelet transform. Multirate filter banks. Multiband wavelets, two-dimensional wavelets. Wavelet packets and matching pursuit. Wavelets in noise filtering, compression, modeling of fractals, communications, detection, adaptive systems, and fast computation. Prerequisites: ECE 6025 and ECE 6855. (Spring, odd years).

ECE 6880. Adaptive Signal Processing. 3 Credits.

Adaptation criteria. Least mean square and recursive least square. Convergence of adaptive algorithms and tracking. Linear and nonlinear Kalman filters. Blind source separation. Iterative (turbo) decoding and equalization. Nonlinear/non-Gaussian models: particle filtering. Machine learning: back propagation, support vector machines. Applications in system identification, adaptive channel equalization, interference cancellation and suppression, and adaptive antenna arrays. Prerequisite: ECE 6865. (Spring, even years).

ECE 6882. Reinforcement Learning. 3 Credits.

Semi-supervised learning, sequential and automated decision making, dynamic programming, Monte Carlo learning, temporal difference learning, off-policy and on-policy learning, deep reinforcement learning, inverse reinforcement learning. (Spring, Every Year).

ECE 6885. Computer Vision. 3 Credits.

Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisites: CSCI 6511; and ECE 6850. Recommended background: Students in this course should have taken at least one prior course in artificial intelligence and/or pattern recognition; Acceptable courses include ECE 6850 (Pattern Recognition), or an equivalent course; If unsure, contact the instructor, and discuss the prerequisite requirements. (Spring, even years) Same As: BME 6885.

ECE 6998. Thesis Research I. 3 Credits.

N/A.

ECE 6999. Thesis Research II. 3 Credits.

Thesis research.

ECE 8150. Advanced Topics in Computer Architecture. 3 Credits.

Examples of topics are interconnection networks, fault tolerance, load balancing, workload characterization, and performance modeling of advanced computer systems. Prerequisite: ECE 6120, ECE 6125.

ECE 8999. Dissertation Research. 12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall and spring, Every Year).

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING

Mission Statement

The mission of the Department of Engineering Management and Systems Engineering is to deliver an integrated program of research, teaching, and public service to the technology community. The department develops creative leadership to bridge dynamic, complex technologies, and societal needs. This includes delivering instruction in the management of technology and in systems engineering, operations research, and allied fields to undergraduate and graduate students who are preparing to assume leadership roles as technology professionals. The department's programs provide an understanding of the managerial role, analysis of the diverse functions of technology-based organizations, and instruction in modern management and mathematical analysis and modeling tools as they apply to formulating and executing decisions in engineering and scientific organizations. In addition, research programs feature the study of the management of technology; fundamental and applied research in systems engineering and operations, with a particularly strong interest in stochastic analysis and system optimization; sponsorship from government, industry, and the technology community; and a strong presence in refereed professional journals and leadership in professional societies.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in applied science and technology (p. 738)
- Bachelor of Science with a major in systems engineering* (p. 773)

Combined program

- Dual Bachelor of Arts with a major in applied science and technology and master of science in the field of computer science (p. 775)
- Dual Bachelor of Arts with a major in applied science and technology and Master of Science in the field of cybersecurity in computer science (p. 776)
- Dual Bachelor of Arts with a major in applied science and technology and Master of Science in the field of data analytics (p. 776)

Minors

- Minor in operations research (p. 788)
 - Minor in systems engineering (p. 788)
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*The bachelor of science with a major in systems engineering is accredited by the ABET Engineering Accreditation Commission (EAC)

GRADUATE

Master's programs

- Master of Engineering in the field of cloud computing management (<http://bulletin.gwu.edu/engineering-applied-science/cloud-computing-management-meng/>) (online)
- Master of Engineering in the field of cybersecurity policy and compliance (p. 790) (online)
- Master of Engineering in the field of cybersecurity analytics (p. 791) (online)
- Master of Science in the field of data analytics (p. 798) (on-campus or online)
- Master of Science in the field of engineering management (p. 802) (on-campus or online)
- Master of Science in the field of systems engineering (p. 805) (on-campus or online)

Doctoral program

- Doctor of Engineering in the field of engineering management (p. 807) (on-campus or online)
- Doctor of Philosophy in the field of engineering management (p. 814)
- Doctor of Philosophy in the field of systems engineering (p. 818) (on-campus or online)

CERTIFICATES

- Graduate certificate in emergency management and public health (p. 821)
- Graduate certificate in energy engineering and management (p. 822)
- Graduate certificate in engineering and technology management (p. 822)
- Graduate certificate in environmental and energy systems management (p. 824)
- Graduate certificate in homeland security emergency preparedness and response (p. 827)
- Graduate certificate in systems engineering (p. 827)
- Graduate certificate in systems management (p. 827)

FACULTY

Professors J.P. Deason, J.R. van Dorp, T.A. Mazzuchi, B. Narahari, S. Sarkani

Associate Professors H. Abeledo, J.A. Barbera, J.R. Santos, R.A. Francis, Z. Szajnarfarber (*Chair*)

Assistant Professors D. Broniatowski, E. Gralla, J.P. Helveston, E. Shittu,

Professorial Lecturers R.M. Andersen, M.J. Armstrong, J.H. Chang, T.H. Holzer Jr., J.V. Shah, J.S. Wasek, R.C. West

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Applied Sciences (APSC) (p. 1417)
- Engineering Management and Systems Engineering (p. 1567)EMSE (p. 1567))

MECHANICAL AND AEROSPACE ENGINEERING

Mission Statement

The mission of the Department of Mechanical and Aerospace Engineering is to educate students to become professional mechanical and aerospace engineers who are confident in their understanding of science and technology and creative in the face of new challenges. Graduates of the program have the analytical skill and thirst for lifelong learning that will expand career horizons. The program prepares students to conduct relevant research at the forefront of mechanical and aerospace engineering knowledge. Students learn through faculty mentoring and go on to practice mechanical engineering as skilled, responsible, and ethical professionals.

Educational Objectives

GW's undergraduate mechanical engineering program provides an integrated curriculum aimed at producing graduates who develop successful careers in mechanical engineering practice or in science and technology. Graduates are expected to accomplish the following within a few years after graduation:

- Be productive and effective members of teams that complete engineering projects of increasing complexity, and gain advancement in responsibility while pursuing successful engineering careers in industry, government, or the non-profit sector; and/or
- Successfully pursue advanced degree(s) and/or publish, patent, or market the results of research and development, or pursue other creative efforts in science, technology or engineering; and/or

- Utilize engineering knowledge and skills to successfully pursue careers in other professions, such as law, medicine, business, education, or public policy; and
- Provide service to their community and profession, such as leadership, outreach, mentoring, reviewing/editorship, organizing professional meetings/events, etc.

Student Outcomes

Attainment of the following outcomes prepares graduates of the program to enter the professional practice of engineering.

1. an ability to identify, formulate, and solve complex engineering problems by applying principles of engineering, science, and mathematics
2. an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors
3. an ability to communicate effectively with a range of audiences
4. an ability to recognize ethical and professional responsibilities in engineering situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts
5. an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives
6. an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions
7. an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

For more information contact the Department of Mechanical and Aerospace Engineering. (<http://www.mae.seas.gwu.edu/>)

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in mechanical engineering (p. 764)
- Bachelor of Science with a major in mechanical engineering, aerospace option (p. 765)
- Bachelor of Science with a major in mechanical engineering, biomechanical option (p. 767)
- Bachelor of Science with a major in mechanical engineering, medical preparation option (p. 768)
- Bachelor of Science with a major in mechanical engineering, patent law option (p. 770)
- Bachelor of Science with a major in mechanical engineering, robotics option (p. 771)

Combined program

- Dual Bachelor of Science with a major in mechanical engineering and Master of Science in the field mechanical engineering (p. 783)

Minor

- Minor in mechanical engineering (p. 787)

GRADUATE

Master's program

- Master of Science in the field of mechanical and aerospace engineering (p. 804)

Doctoral program

- Doctor of Philosophy in the field of mechanical and aerospace engineering (p. 816)

CERTIFICATE

- Graduate certificate in energy engineering and management (p. 822)
- Graduate certificate in computer-integrated design in mechanical and aerospace engineering (p. 820)

FACULTY

Professors E. Balaras, L.A. Barba, P.M. Bardet, A.D. Cutler, D.S. Dolling, C.A. Garriss, S.M. Hsu, M. Keidar, J.D. Lee, T. Lee, Y. Leng, M.W. Plesniak (*Chair*), K. Sarkar, Y.-L. Shen, S. Shooter, M. Snyder, S. Solares, L.G. Zhang

Associate Professors M.C. Leftwich, S. LeBlanc

Assistant Professors P. Wei

Associate Research Professors K. Bulusu

Research Professors K.P. Chong, M.H. Friedman, M.A. Imam

Professorial Lecturers M. Bailey, D.S. Dodbele, J.M. Fleming, D.R. Gerk, J.H. Milgram, M. Naderi, E. Naranji, N. Nigam, B.-M. Paik, J.K. Soldner

COURSES

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MAE 1001. Introduction to Mechanical and Aerospace Engineering. 1 Credit.

Careers in mechanical and aerospace engineering and the necessary academic program. Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Basic aspects of engineering ethics. (Fall).

MAE 1004. Engineering Drawing and Computer Graphics. 3 Credits.

Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section view, dimensioning, tolerancing, and pictorial drawing. Introduction to computer graphics, including topics covered in manual drawing and computer-aided drafting. (Fall and spring).

MAE 1099. Variable Topics. 1-36 Credits.

MAE 1117. Introduction to Engineering Computations. 3 Credits.

Foundations of computational thinking focusing on data practices and computational problem-solving; handling data programmatically, variables and their type, logical operations; reading data from files and cleaning and organizing text data; handling multi-dimensional arrays; basic plotting; linear regression; exploratory data analysis, handling labeled data, and data visualization. (Spring, Every Year).

MAE 2117. Engineering Computations. 3 Credits.

Computational thinking: modeling and simulation practices. Numerical derivatives. Initial-value problems. Solving differential equations, direction fields, the phase plane. Geometry of linear algebra; eigenvalues and eigenvectors. Fourier analysis. Prerequisites: MAE 1117 and MATH 1232. (Fall, Every Year).

MAE 2131. Thermodynamics. 3 Credits.

Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: PHYS 1021. (Spring, Every Year).

MAE 2170. History and Impact of the U.S. Patent System. 3 Credits.

Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system.

MAE 3120. Methods of Engineering Experimentation. 3 Credits.

Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 2117.

MAE 3126. Fluid Mechanics I. 3 Credits.

Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: APSC 2058. (Fall, Every Year).

MAE 3127. Fluid Mechanics Lab. 1 Credit.

Measurement and analysis of the behavior of fluids. Hydrostatic pressure, Bernoulli equation, conservation of momentum, pipe flow and open channel flow. Comparison of experimental data with computational simulations. Prerequisites: APSC 2058. Corequisites: MAE 3126. (Fall, Every Year).

MAE 3128. Biomechanics I. 3 Credits.

Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with permission of the department. Prerequisites: APSC 2057 and CE 2220. (Spring, Every Year).

MAE 3134. Linear System Dynamics. 3 Credits.

Modeling of linear mechanical, electrical, and fluid systems as transfer functions and in state space. Linearization, discretization. Laplace and z-transforms. Natural frequencies and damping, free vibration, forced vibration. Measurement techniques, parameter estimation, and computer simulation. Time and frequency domain analysis. Corequisite: APSC 2058. Prerequisite: APSC 2113. (Spring, Every Year).

MAE 3145. Orbital Mechanics and Spacecraft Dynamics. 3 Credits.

Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. Prerequisite: APSC 2058. (Fall).

MAE 3155. Aerodynamics. 3 Credits.

Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 3126.

MAE 3162. Aerospace Structures. 3 Credits.

Basic structural theory of lightweight aerospace structures; analysis of typical monocoque structures; load transfer in stiffened panel structures; virtual work and energy methods of structural analysis, bending of open and closed, thin walled beams, shear and torsion of beams, and structural idealization. Restricted to juniors and seniors; permission of the instructor may be substituted. Prerequisites: APSC 2057 and CE 2220. (Fall, Every Year).

MAE 3166W. Materials Science and Engineering. 3 Credits.

Mechanical properties, plastic deformation, dislocation, yielding, strengthening mechanisms, microstructure and properties, heat treatment steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, crack propagation. Prerequisites: CHEM 1111 and PHYS 1022. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MAE 3167W. Mechanics of Materials Lab. 1 Credit.

Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Tension, compression, bending, impact, and shear failures. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. MAE 3166W may be taken as a corequisite. Prerequisite: MAE 3166W. (Spring, Every Year).

MAE 3171. Patent Law for Engineers. 3 Credits.

Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department. (Spring).

MAE 3184. Robotics Lab. 1 Credit.

Forward and inverse kinematics modeling of robots, control design, trajectory planning, and force rendering. Corequisite: MAE 3197.

MAE 3187. Heat Transfer. 3 Credits.

Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisites: MAE 2131 and MAE 3126. (Spring, Every Year).

MAE 3191. Mechanical Design of Machine Elements. 3 Credits.

Strength of materials in a design context; stresses and deflections in engineering structures; theories of failure; design of mechanical components, such as fasteners, shafts, and springs; the use of computers in mechanical engineering design. Prerequisite: CE 2220. (Fall, Every Year).

MAE 3192. Manufacturing Processes and Systems. 3 Credits.

Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. MAE 1004 may be taken as a corequisite. Prerequisites: MAE 1004. (Fall, Every Year).

MAE 3193. Mechanical Systems Design. 3 Credits.

Creative engineering design, problem definition, and concept generation; design of mechanisms and mechanical systems; safety, reliability, manufacturability, material selections, cost, and integration in the design process; finite element analysis of mechanical systems, computer-aided design, and optimization. Prerequisite: MAE 3191. (Spring, Every Year).

MAE 3197. Robotic Systems Design and Applications. 3 Credits.

Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages. Design and selection of mechanical structures, actuators, transmissions, and sensors. Design of robotic control systems. Relevant computer hardware and software. Industrial applications and limitations of robot systems. Lab experiments. Same as ECE 4730. Prerequisite: MAE 3134.

MAE 4129. Biomechanics II. 3 Credits.

Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 3128.

MAE 4149. Thermal Systems Design. 3 Credits.

Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisites: MAE 3187. (Fall, Every Year).

MAE 4151. Capstone Design Project I. 1 Credit.

First in a two-course sequence. Students define objectives and an approach for a mechanical engineering project involving experimentation and apply mechanical engineering design, engineering, and laboratory skills in team project implementation. Prerequisites: MAE 3193. (Fall, Every Year).

MAE 4152W. Capstone Design Project II. 3 Credits.

Continuation of MAE 4151. Students define objectives and an approach for a mechanical engineering project involving experimentation and apply mechanical engineering design, engineering, and laboratory skills in team project implementation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Spring, Every Year).

MAE 4157. Aerodynamics Laboratory. 1 Credit.

Subsonic and supersonic wind tunnel experiments and simulations. Prerequisite: MAE 3155. (Fall).

MAE 4163. Airplane Performance. 3 Credits.

Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. Prerequisites: MAE 3126. (Fall, Every Year).

MAE 4168. Introduction to Biomaterials. 3 Credits.

Fundamentals of materials science and engineering applied to artificial materials in the human body. Biocompatibility, techniques to minimize corrosion or other degradation of implant materials, use of artificial materials in tissues and organs. Restricted to students who are not enrolled in the mechanical engineering program. Prerequisites: departmental permission. (Fall, Every Year).

MAE 4172. Engineering Design and the Patent System. 3 Credits.

Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisites: MAE 3171 and senior status. (Spring, Every Year).

MAE 4182. Electromechanical Control System Design. 3 Credits.

Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques. Prerequisites: MAE 2117 and MAE 3134. (Fall and spring, Every Year).

MAE 4183. Controls Lab. 1 Credit.

Modeling, control design, simulation, implementation, tuning, and operation of a control system. Corequisite: MAE 4182.

MAE 4194. Mechatronics Design. 3 Credits.

Data acquisition and digital signal processing. Sensors and their characteristics—displacement, position/velocity, force/pressure, piezoelectric. Actuators—mechanical, electrical, pneumatic, hydraulic. Modeling and simulation of dynamic systems. Mechanism design. Digital control systems. Microprocessors, digital logic/circuits, motor drives. Lab experiments. Prerequisite: MAE 4182.

MAE 4195. Mechatronics Lab. 0 Credits.

Designing and building a mechatronic system based around a programmable microcontroller; using sensors and actuators to create devices capable of sensing their surrounding environment and reacting to stimuli from that environment. Corequisites: MAE 6194 for students enrolled in MAE 6195, MAE 4194 for student enrolled in MAE 4195. (Spring, Every Year) Same As: MAE 6195.

MAE 4198. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Restricted to juniors and seniors. (Fall and spring, Every Year).

MAE 4199. Student Design Project. 1-3 Credits.

Student projects involving extensive design of various mechanical engineering systems. May be taken for graduate credit with the expectation that additional work is required. Prerequisites: seniors. (Fall and spring, Every Year).

MAE 5099. Variable Topics. 1-99 Credits.**MAE 6194. Mechatronics Design. 3 Credits.**

Review of data acquisition and digital signal processing; mathematical models, design, and applications of sensors and actuators in mechatronic systems; theory and applications of mechanism design; microprocessor-based design integration, motor drives, and digital logic/circuits. Corequisite: MAE 6195. Restricted to graduate students. (Same as MAE 4194) (Spring, Every Year).

MAE 6195. Mechatronics Lab. 0 Credits.

Designing and building a mechatronic system based around a programmable microcontroller; using sensors and actuators to create devices capable of sensing their surrounding environment and reacting to stimuli from that environment. Corequisites: MAE 6194 for students enrolled in MAE 6195, MAE 4194 for student enrolled in MAE 4195. (Spring, Every Year) Same As: MAE 4195.

MAE 6204. Tissue Engineering. 3 Credits.**MAE 6207. Theory of Elasticity I. 3 Credits.**

Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatic rods, plane problems. Permission of the department required prior to enrollment. (Fall, Every Year) Same As: CE 6207.

MAE 6210. Continuum Mechanics. 3 Credits.

Tensor analysis; fundamental concepts of continuum mechanics; kinematics of continuum; derivation of balance laws of mass, linear momentum, angular momentum, energy and entropy; axioms of constitutive theory; formulation of constitutive theories; Onsager's principle; objectivity; representation theorem for isotropic functions; plasticity, including concepts of internal variables, yield surface, return mapping algorithm. Permission of the department required prior to enrollment. (Fall, Every Year).

MAE 6220. Applied Computational Fluid Dynamics. 3 Credits.

Basic principles of fluid dynamics and aerodynamics. Finite difference and finite volume methods. Fluid flow and heat transfer analysis of thermo-fluid mechanical systems. Computational aerodynamics codes. Individual hands-on experience with a commercial CFD code such as FLUENT. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6221. Fluid Mechanics. 3 Credits.

Continuum, kinematics of fluids; stress and strain rate tensors; fundamental equations of viscous compressible flows. Irrotational flows; sources, sinks, doublets, and vortices. Laminar flow of viscous incompressible fluids; boundary-layer concept. Permission of the department required prior to enrollment. (Fall, Every Year).

MAE 6223. Turbomachinery. 3 Credits.

Turbine, compressor, and pump types and uses; dimensional analysis of turbomachines; cycle analysis of gas and steam turbines; energy interchange in fluid machinery; design, characteristics, and performance of turbines, compressors, and pumps; comparison of types of turbines, compressors, and pumps. Prerequisite: MAE 6221.

MAE 6224. Viscous Flow. 3 Credits.

Exact solutions of Navier-Stokes equations; the laminar boundary-layer theory. Reynolds stresses and turbulence; internal, boundary-layer, and mixing flows. Applications to heat and mass transfer and to reacting flows. Prerequisites: APSC 6213 and MAE 6221. (Fall and spring, Every Year).

MAE 6225. Computational Fluid Dynamics. 3 Credits.

Theory of discrete methods for solving the governing equations of fluid dynamics. Potential flow, Euler equations, Navier-Stokes equations. Emphasis on algorithm development appropriate to modern supercomputers. Prerequisites: MAE 6221 and MAE 6286. (Fall and spring, Every Year).

MAE 6226. Aero- and Hydrodynamics. 3 Credits.

Inviscid flows in two and three dimensions and irrotational flow theory; conformal mapping and applications. Helmholtz theorems and vorticity dynamics. Applications such as airfoil theory, finite wing theory, panel methods, instabilities, free surface flow. Prerequisite: MAE 6221. (Fall and spring, Every Year).

MAE 6228. Compressible Flow. 3 Credits.

Thermodynamics and equations of compressible inviscid flow. One-dimensional flow. Isentropic flow. Normal and oblique shock waves. Quasi-one-dimensional flow. Unsteady one-dimensional and steady two-dimensional flow. Introduction to transonic flow. Prerequisites: APSC 6213 and MAE 6221. (As arranged, odd years).

MAE 6229. Propulsion. 3 Credits.

Basic concepts of propulsion: energy transformations in propulsive flows, gas dynamics of combustion. Thermal and propulsive efficiencies. Cycle and engine component analysis. Intake, nozzle performance. Drag and thrust generation. Augmentation. Propellers, turbojets, turbofans, ramjets, and rockets. Prerequisites: Graduate standing; or MAE 2131 and MAE 3126. (Spring, Every Year).

MAE 6230. Space Propulsion. 3 Credits.

Advanced chemical propulsion: dynamic combustion and instabilities in solid propellants. Injection, atomization, mixing in liquid propellant engine performance. Plasma propulsion: electrostatic, electromagnetic, and electrothermal instabilities (laser and microwave). Nuclear propulsion. Prerequisite: MAE 6229.

MAE 6232. Fracture Mechanics. 3 Credits.

Concepts, history, and recent developments of fracture mechanics. Singularity at the crack tip; solutions around crack tip; stress intensity factors; energy release rate; J-integral; direction of crack extension; Plasticity and slow crack growth; dynamic crack propagation; molecular dynamics simulation of fracture. Prerequisite: approval of department.

MAE 6234. Composite Materials. 3 Credits.

Principles of composites and composite reinforcement. Micromechanics and failure, interface reactions in various composites, reinforcing materials. Structure of composites: fiber-reinforced polymers, filler-reinforced polymers, fiber-reinforced metals, directionally solidified alloys, dispersion-strengthened metals. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6235. Deformation and Failure of Materials. 3 Credits.

Elastic and plastic deformation, yield, dislocation theory, strengthening mechanisms, creep, polymers, fracture, transition temperature, microstructure, fatigue. (Spring, odd years).

MAE 6238. Biomaterials. 3 Credits.

Applications of materials science and engineering to artificial materials in the human body with the objective of detailed understanding of synthetic materials and biopolymers. Biocompatibility and its consequences on tissue-implant interfaces. Design and development of new implant materials, drug delivery systems, and biosensors. Prerequisite: MAE 3166 or MAE 4168.

MAE 6239. Computational Nanosciences. 3 Credits.

Introduction to surface force measurements in nanosciences; continuum contact mechanics in nanoscience research; intermolecular forces; empirical potentials for transition metals; surface forces in liquids; large-scale atomic/molecular massively parallel simulator; force field development from quantum mechanical density-functional theory for organic/metal molecular systems. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6243. Advanced Mechanical Engineering Design. 3 Credits.

Design of mechanical engineering components and systems emphasizing computer-aided engineering (CAE), including interactive computer graphics, finite element analysis, and design optimization. Creation of a complete design on an engineering workstation. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6245. Robotic Systems. 3 Credits.

Classification, features, and applications of industrial robots. Spatial descriptions and transformations, forward and inverse kinematics. Jacobian matrix, velocities and static forces, manipulator dynamics and controls. Robot actuators, transmissions, sensors, end effectors, and programming. Prerequisite: MAE 4182 .

MAE 6246. Electromechanical Control Systems. 3 Credits.

State-space representations of dynamic systems; dynamics of linear systems; controllability and observability; linear observers; compensator design by separation principle; linear-quadratic optimal control; Riccati equations; random processes; Kalman filter; applications of optimal stochastic control theory to robotics and earthquake engineering. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6247. Aircraft Design I. 3 Credits.

Conceptual design methods used in response to prescribed mission and performance requirements, alternate configuration concepts. Configuration general arrangement and empennage sizing. Estimation of aircraft size, weight, and balance; lift, thrust and drag; system level tradeoff and sensitivity studies. Prerequisites: Graduate standing or MAE 4163. (Spring, Every Year).

MAE 6249. Spacecraft Design. 3 Credits.

Computer-aided design of spacecraft and satellites to meet specific mission requirements. Environment, propulsion, structure, heat transfer, orbital mechanics, control considerations. Use of modern computer codes for design studies. Prerequisites: MAE 3145 or graduate standing. (Spring, Every Year).

MAE 6251. Computer-Integrated Manufacturing. 3 Credits.

Automation techniques for processing metals, polymers, and composites. Use of sensing and process modeling in process control. Numerical control and robot applications and limitations. Integration, scheduling, and tool management in the computer-integrated factory. Quality control. Social and economic considerations in CIM. Prerequisite: MAE 3192 .

MAE 6254. Applied Nonlinear Control. 3 Credits.

Dynamic characteristics of nonlinear systems. State stability and input-output stability. Lyapunov stability theory and invariance principle. Nonlinear control systems, including feedback linearization, back-stepping, sliding mode control, and passivity-based design. Applications to robotics, aircraft, and spacecraft control systems. Geometric controls and hybrid systems. Prerequisites: departmental permission. (As arranged, Every Year).

MAE 6255. Plasma Engineering in Aerospace and Nanotechnology. 3 Credits.

Plasma fundamentals, electromagnetic waves in plasma, plasma-wall interactions, modeling and experimental techniques in plasmas, electrical discharge, plasma propulsion, plasma-based nanotechnology. Prerequisite: MAE 3126. (Fall, Every Year).

MAE 6257. Theory of Vibration. 3 Credits.

Damped and undamped natural vibration, response of single- and multiple-degrees-of-freedom systems to steady-state and transient excitations, modal analysis, nonproportional damping and complex modes, variation formulation of equations of motion, discretization of structural systems for vibrational analysis. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6258. Advanced Vibration Analysis and Control. 3 Credits.

Passive and active vibration control of discrete and continuous systems, dynamic vibration absorbers, random vibrations, failure analysis, modal analysis, nonlinear vibrations. Prerequisites: MAE 3134 and MAE 4182 or graduate standing. (Spring).

MAE 6260. Nanomechanics. 3 Credits.

Introduction to crystallography; interatomic potentials; phonon dispersion relations; molecular dynamics simulation; Nose-Hoover thermostat; coarse grained non-equilibrium molecular dynamics; multiple length/time scale theory of multi-physics; microcontinuum field theories; applications to nano materials/structures. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6261. Air Pollution. 3 Credits.

Introductory course on the generation, monitoring, and control of air pollution. Atmospheric pollutants; current levels and health problems. Combustion chemistry and mixing. Photochemical processes; smog and measurements. Atmospheric dispersion; inversion and acid rain. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6262. Energy Systems Analysis. 3 Credits.

Analysis of energy resources and conversion devices. Statistical data analysis, forecasting, I/O, and net energy analyses, mathematical modeling. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6263. Energy and Sustainability. 3 Credits.

Review of thermodynamics, heat transfer, fluid dynamics, and materials technology used in the energy industries. New energy-efficient technologies in transportation and buildings; renewable energy (wind, solar, and biomass). Climate change and sustainability issues, such as carbon capture, cap and trade, carbon sequestration. (Spring, Every Year).

MAE 6270. Theoretical Acoustics. 3 Credits.

Basic acoustic theory in stationary and uniformly moving media; waves in infinite space; sound transmission through interfaces; sound radiation from simple solid boundaries, source and dipole fields; propagation in ducts and enclosures; elements of classical absorption of sound. Prerequisites: APSC 6213 and MAE 6221. (Fall and spring, Every Year).

MAE 6274. Dynamics and Control of Spacecraft. 3 Credits.

Fundamentals of satellite attitude dynamics and passive stabilization. Spacecraft attitude representation, rotational kinematics and kinetics. External torques. Dynamics of gyroscopes. Gravity gradient stabilization. Effect of internal energy dissipation on stability of spinning bodies and methods of despin. Dual spin satellites. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6275. Dynamics and Control of Aircraft. 3 Credits.

Derivation of equations of motion, Euler transformations and direction cosines, stability derivatives and linearization of equations of motion, stability of linear systems with application to longitudinal and lateral dynamics, Laplace transform techniques, and frequency-response analysis. Permission of the department required prior to enrollment. (Fall, even years).

MAE 6277. Spacecraft Attitude Control. 3 Credits.

Control of spinning and three-axis stabilized spacecraft. Elements of linear control theory for single-input, single-output systems and basic feedback control laws. Momentum management and actuator desaturation. Sensors for attitude determination. Application of modern control for multi-input, multi-output systems. Control system simulations using MatLab. (As arranged).

MAE 6280. Thermodynamics. 3 Credits.

Review of first and second laws of thermodynamics and combining the two through exergy; entropy generation minimization and applications. Single phase systems, exergy analyses, multiphase systems, phase diagrams and the corresponding states principle. Permission of the department is required prior to enrollment. (Fall, Every Year).

MAE 6282. Convective Heat/Mass Transfer. 3 Credits.

Heat and momentum transfer in laminar and turbulent flow. The laminar boundary-layer solution. Similarity and nondimensional parameters. Mass-momentum heat transfer analogy. Convective heat transfer at high velocity. Stability, transition, and turbulence. Free convection. Prerequisite: MAE 6221.

MAE 6284. Combustion. 3 Credits.

Basic combustion phenomena. Rate processes and chemical kinetics. Chain reaction theory. Detonation, deflagration, diffusion flames, heterogeneous combustion. Experimental measurements. Impact of pollution regulations and alternate fuels. Permission of the department required prior to enrollment. (Fall, odd years).

MAE 6286. Numerical Solution Techniques in Mechanical and Aerospace Engineering. 3 Credits.

Development of finite difference and finite element techniques for solving elliptic, parabolic, and hyperbolic partial differential equations. (Fall, Every Year).

MAE 6287. Applied Finite Element Methods. 3 Credits.

Review of theory of elasticity. Basic aspects of theory and application of finite element methods. Utilization of MSC/NASTRAN for static, dynamic, linear, and nonlinear analyses of problems in mechanical, aeronautical, and astronautical engineering. Course emphasizes individual hands-on experience with the MSC/NASTRAN code. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6288. Advanced Finite Element Analysis. 3 Credits.

Review of variational formulation of the finite element method. Finite element analysis of large-strain thermomechanics. Applications to static and dynamic problems in finite elasticity, Fung elasticity (biomechanics), nonlocal theory, active stress in living biological tissues, biological growth, and large-strain plasticity. Recent developments in finite element methods. Permission of the department required prior to enrollment. (Fall and spring, Every Year) Credit cannot be earned for this course and CE 8330.

MAE 6291. Special Topics in Mechanical Engineering. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include tribology, power systems design, solar heating systems, HVAC, and plasticity theory. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6292. Special Topics in Aerospace Engineering. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include environmental noise control, aeroacoustics, hypersonic flow, and flight vehicle aerodynamics. May be repeated for credit. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6298. Research. 1-6 Credits.

Basic research projects as arranged. May be repeated for credit.

MAE 6998. MS Thesis Research. 3 Credits.

. (Fall and spring, Every Year).

MAE 6999. MS Thesis Research. 3 Credits.

. (Fall and spring, Every Year).

MAE 8350. Advanced Topics in Materials Science. 3 Credits.

Topics such as surface science that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 8351. Advanced Topics in Mechanical Engineering. 3 Credits.

Topics such as advanced analytical mechanics, advanced mechanics of continua, and advanced theory of elasticity that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 8352. Advanced Topics in Aerospace Engineering. 3 Credits.

Topics such as nonsteady flow, physical gas dynamics, turbulence, and nonlinear wave propagation that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination. (Fall and spring, Every Year).

MAE 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall and spring, Every Year).

UNDERGRADUATE PROGRAMS

BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY

The bachelor of arts with a major in applied science and technology is a broad-based, engineering-oriented degree program that includes significant exposure to the liberal arts. It is designed for students who intend to make their careers in fields allied to science and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media.

The program can be enhanced with a second major in the Columbian College of Arts and Sciences (p. 77), Elliott School of International Affairs (p. 830), or GW School of Business (p. 517). The Department of Engineering Management and Systems Engineering does not offer a second major in applied science and technology.

Bachelor of Arts with a Second Major in Applied Science and Technology

The Department of Engineering Management and Systems Engineering does not offer a second major in applied science and technology.

Visit the program website (<http://www.emse.seas.gwu.edu/bachelor-arts-applied-science-technology/>) for additional informational.

REQUIREMENTS

The following requirements must be fulfilled:

A total of 128 credits taken as outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00. All technical courses taken during the fifth through eighth semesters as outlined by the four-year curriculum sheet respective to each major and approved by the student's faculty advisor are counted towards the student's technical GPA.

Plan of Study

The plan of study lists in sequence all course requirements for the degree. Students should review this information carefully and speak to their advisor before changing the sequence of any of these courses.

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I ¹	
EMSE 1001	Introduction to Systems Engineering	
SEAS 1001	Engineering Orientation	
MATH 1231	Single-Variable Calculus I ¹	
UW 1020	University Writing ²	
Humanities or social sciences elective ³		
Second semester		
CHEM 1112	General Chemistry II ¹	
CSCI 1121	Introduction to C Programming	
or CSCI 1111	Introduction to Software Development	
MATH 1232	Single-Variable Calculus II ¹	
Humanities or social sciences elective ³		
Arts elective ⁴		
Third semester		
CSCI 1132	Data Structures and Software Design	
or CSCI 1112	Algorithms and Data Structures	
PHYS 1011	General Physics I ¹	
or PHYS 1021	University Physics I	
Literature elective ⁵		
Two unrestricted electives ⁶		
Fourth semester		

APSC 3115	Engineering Analysis III
EMSE 4410	Engineering Economic Analysis
PHYS 1012	General Physics II ¹
or PHYS 1022	University Physics II
Literature elective ⁵	
Unrestricted elective ⁶	
Fifth semester	
BISC 1111	Introductory Biology: Cells and Molecules
EMSE 3850	Quantitative Models in Systems Engineering
COMM 1040	Public Communication ¹
or COMM 1041	Interpersonal Communication
or COMM 1042	Business and Professional Speaking
MAE 1004	Engineering Drawing and Computer Graphics
Allied minor elective ⁸	
Sixth semester	
BISC 1112	Introductory Biology: The Biology of Organisms
ISTM 4121	Database Principles and Applications
Humanities or social sciences elective ³	
Two allied minor electives ⁸	
Seventh semester	
MAE 3192	Manufacturing Processes and Systems
EMSE 3740W	Systems Thinking and Policy Modeling
EMSE 6005	Organizational Behavior for the Engineering Manager
Allied minor elective ⁸	
SEAS elective ⁹	
Eighth semester	
CE 4330W	Contracts and Specifications
Allied minor elective ⁸	
Humanities or social sciences elective ³	

Electives

Students choose electives in specified categories from lists of courses available from the advisor. Allied minor electives are selected, with the approval of the advisor, to form a coherent and meaningful program of 15 credits. Popular selections include biology, communication, computer science, design, economics, engineering, environmental studies, finance, international business, management, mathematics, medical preparation, psychology, statistics, and operations research.

¹Course satisfies the University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) in either mathematics or statistics, natural or physical laboratory sciences, or writing.

²Writing (10 credits). UW 1020 (a required freshman writing course) and COMM 1040, COMM 1041, or COMM 1042. In addition to UW 1020, the student's academic program must include two writing-intensive courses to satisfy the GW Writing in the Disciplines (WID) requirement; two such courses are CE 4330W and EMSE 3740W.

³Humanities (6 credits) and Social Sciences (6 credits). Two two-course sequences selected from the SEAS list of electives in the humanities and social sciences.

⁴Creative and performing arts (3 credits). One of the following: ENGL 1210; FA 1014, FA 1017, FA 1021, or FA 1041; MUS 1103, MUS 1104, MUS 1107, MUS 1108, or performance study course; PHIL 3162; TRDA 1015, TRDA 1017, TRDA 1025, TRDA 1150, TRDA 1151, TRDA 1152, TRDA 1153, TRDA 1214, or an advanced performance course. Other choices are possible.

⁵Literature (6 credits). One two-course sequence selected from among CHIN 3111 and CHIN 3112; ENGL 1410 and ENGL 1411, ENGL 1510 and ENGL 1511, ENGL 1710 and ENGL 1711, or ENGL 1830 and ENGL 1840; FREN 3210 and FREN 3220; GER 2091 and GER 2092; JAPN 3111 and JAPN 3112; REL 1009 and REL 1010; SLAV 1391 and SLAV 1392; SPAN 3210 and SPAN 3220. Other choices are possible.

⁶Unrestricted (or "free") electives (18 credit). The academic advisor must approve the student's selection of unrestricted electives. If necessary, unrestricted electives may be used to satisfy prerequisite requirements for the allied minor. Such electives also may be used to convert the allied minor into an official minor or second major. Exercise and sport activities courses may not be used as unrestricted electives.

⁷Allied minor (15 credits). The student constructs a coherent program with the assistance of the academic advisor. Popular selections include biology, chemistry, business, communication, design, economics, engineering, environmental studies, finance, international business, management, mathematics, media, medical preparation, physics, psychology, public health, statistics, and operations

research. The allied minor may be part of a second major in CCAS, ESIA, or SEAS, part of the concentration in general business, or part of an official minor.

⁸See the advisor for details.

Humanities and Social Sciences 4 courses (12 credits)

All APSC majors must take the following two humanities and two social science. Social and behavioral sciences courses must be selected from the University General Education Requirement list (<http://bulletin.gwu.edu/university-regulations/general-education/>); At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>).

(A) Art Elective 1 course (3 credits)

All Applied Science and Technology majors must choose one of the following: ENGL 1210, FA 1014, MUS 1103, MUS 1104, MUS 1107 Music of the World, MUS 1108, or performance study course; PHIL 3162; TRDA 1015, TRDA 1025, TRDA 1151, TRDA 1152, TRDA 1153, TRDA 1214, or an advanced performance course. Other options may be approved in advance by the Faculty Advisor.

(B) Literature Elective 2 course (6 credits)

All applied science and technology majors must choose one two-course sequence selected from among CHIN 3111 and CHIN 3112; or ENGL 2410 and ENGL 2411; or ENGL 2510 and ENGL 2511; or ENGL 2710 and ENGL 2711; or FREN 3210 and FREN 3220; GER 2091 and GER 2092; or JAPN 3111 and JAPN 3112; or REL 1009 and REL 1010; or SLAV 1391 and SLAV 1392; Other options may be approved in advance by the Faculty Advisor.

BACHELOR OF ARTS WITH A MAJOR IN COMPUTER SCIENCE

Bachelor of Arts Degree Program

The bachelor of arts with a major in computer science degree program provides a broad-based liberal arts curriculum for students who wish to augment technical computer knowledge with humanities, social sciences, business, communication, or management skills. Foundation courses focus on mathematics, science, software design and programming, computer systems and architecture, and algorithm design. Additional breadth or depth is afforded by selection of technical track courses that build on the foundations to provide in-depth exposure to a specific field in computer science. The program is designed for those with interests in two or more disciplines, as students must complete a second major or two minors in another academic department. The program also offers a medical preparation

option for students interested in pursuing a computer science major with preparation for application to medical school.

Visit the program website (<http://www.cs.seas.gwu.edu/bachelor-arts-program/>) for additional information.

Second Major in Computer Science

Students who are not enrolled in the School of Engineering and Applied Science (SEAS), who are enrolled in a bachelor of arts program and wish to declare a second major in computer science, must apply and be admitted to the computer science program. See the department website (<http://www.seas.gwu.edu/department-computer-science/>) for more information about curriculum requirements for the second major in computer science.

Admission criteria for a second major in computer science

To be considered for admission to the second major in computer science, a student must satisfy the following criteria:

- Prior completion of CSCI 1011, CSCI 1111, CSCI 1121, or CSCI 1112 with a minimum grade of B.
- Prior completion of MATH 1220 and MATH 1221, or MATH 1231 with a minimum grade of B-.
- A minimum overall grade-point average of 3.0 at the time of application to the major.

Application deadline

The application is due no later than the start of the fifth semester of study at GW or completion of the sixtieth credit, whichever comes first. Contact the School of Engineering and Applied Science Undergraduate Advising Office (<https://www.seas.gwu.edu/undergraduate-student-services-advising/>) for specific application deadlines.

Credits in residence requirement

- For a second major, at least 24 credits in computer science courses must be completed in SEAS.

Graduation grade-point average criteria

- To satisfactorily complete a second major in computer science, a student must have a minimum grade-point average of 2.2 in all the computer science courses.

REQUIREMENTS

Residency Requirement

As part of a residency requirement, all computer science majors must take a minimum of 30 credits in computer science courses at GW. Should a student pursue an approved study abroad program, credits earned in that program count toward this requirement. For a second major, at least 24 credits in computer science courses must be completed in SEAS.

Recommended program of study

Code	Title	Credits
First semester		15
CSCI 1010	Computer Science Orientation	1
CSCI 1111	Introduction to Software Development	3
SEAS 1001	Engineering Orientation	1
UW 1020	University Writing ¹	4
Mathematics requirement ¹		3
Social sciences elective ²		3
Second semester		15
CSCI 1112	Algorithms and Data Structures	3
CSCI 1311	Discrete Structures I	3
Mathematics requirement ¹		3
Natural or physical sciences with a lab elective ¹		3
Social sciences elective ²		3
Third semester		15
CSCI 2113	Software Engineering	3
CSCI 2460	Introduction to Computer Systems	2,1
Natural or physical sciences with a lab elective ¹		3
Humanities elective ²		3
Statistics/linear algebra requirement ³		3
Fourth semester		15
CSCI 2441W	Database Systems and Team Projects	0,3
Humanities elective ²		3
Second major elective		3
Natural or physical sciences with a lab elective ¹		3
Unrestricted elective ⁴		3
Fifth semester		15
One of the following computer science restricted electives:		3
CSCI 3212	Algorithms	4
CSCI 3313	Foundations of Computing	4
CSCI 3410	Systems Programming	3

CSCI 3411	Operating Systems	4
Arts elective		3
Second major elective		3
Second major elective		3
Second major elective		3
Sixth semester		15
CS technical track elective ⁵		3
Humanities elective ²		3
Global or cross-cultural elective ²		3
Second major elective		3
Second major elective		3
Seventh semester		15
One of the following computer science restricted electives: (different from the CS restricted elective already taken in fifth semester)		3
CSCI 3212	Algorithms	4
CSCI 3313	Foundations of Computing	4
CSCI 3410	Systems Programming	3
CSCI 3411	Operating Systems	4
CS technical track elective ⁵		3
Global or cross-cultural elective ²		3
Second major elective		3
Second major elective		3
Eighth semester		15
CS technical track elective ⁵		3
Humanities elective ²		3
Unrestricted elective ⁴		3
Second major elective		3
Second major elective		3
Significant independent project ⁶		

¹Course satisfies the University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) in science and writing. UW 1020 must be completed prior to any writing course in the major, including CSCI 2441W or CSCI 2541W. The mathematics requirement

can be met by taking MATH 1220 and MATH 1221 or MATH 1231 and MATH 1232.

²This course should be selected from the Columbian College General Education Curriculum (G-PAC) (<https://advising.columbian.gwu.edu/general-education-curriculum/>). From the G-PAC webpage, select the corresponding types of classes. For example, choose "G-PAC: Global or Cross-cultural" to find the courses that satisfy the "Global and cross-cultural elective". Two of the natural or physical sciences with lab electives must have a laboratory section.

³Statistics or linear algebra requirement—The statistics requirement can be met by choosing APSC 3115, CSCI 3362, CSCI 6362, CSCI 4341, or STAT 4157. The linear algebra requirement can be met by taking one of MATH 2184, CSCI 4342, or EMSE 2705. Students who were admitted prior to fall 2014 may count STAT 1051 and STAT 1053 toward the statistics requirement, if they took the course prior to the spring 2015 semester. Students doing a premedical concentration may substitute the linear algebra requirement with a science course required by the premedical requirements.

⁴Unrestricted electives—All students in the BA in computer science program are required to complete four unrestricted elective courses. All courses used to fulfill this requirement must have the explicit, documented approval from the faculty advisor, even when such courses are required for a minor or have transferred to the University as Advanced Placement (AP) credit. Guidance for unrestricted electives is available on the Department of Computer Science website (<https://www.cs.seas.gwu.edu/>).

The following guidelines and/or restrictions apply to selecting courses to satisfy this requirement:

1. Additional CSCI courses numbered above 2461 may count toward this requirement. Students may take a maximum of two research and independent study courses, for which the student must provide documentation of output, such as papers, presentations, or software. For courses from other departments, the student must obtain the approval of the faculty advisor.
2. Approved courses from the SEAS Humanities and Social Science Electives lists may count toward this requirement.
3. Approved courses listed in non-technical track lists may count toward this requirement. However, such courses cannot count toward both the non-technical track requirement and as an unrestricted elective.
4. Computer science courses taught by another department generally do not count toward this requirement. Courses that significantly overlap with, or are not as advanced as, the required content for the computer science degree program do not count toward this requirement. Such courses include, but are not limited to, the following: BADM 2301, EMSE 4197, ISTM 3119, ISTM 4120, ISTM 4121, ISTM 4123, STAT 1051, STAT 1053, and STAT 1129.

5. Courses that significantly overlap with any other course(s) used toward the computer science degree, regardless of the department(s) in which they are taken, may not count toward this requirement.

Because of content overlap among courses in general, some courses may be approved for one student and not for another, based on other courses the student has taken. For example, if a student uses PHYS 1021 toward either the science, math/science, or unrestricted electives requirement, PHYS 1011 may not be used to fulfill this requirement, but PHYS 1011 would count for a student who has not taken PHYS 1021.

⁵Technical Track Requirement. All students in the BA in computer science program are required to take three technical courses (for a minimum of 9 credits) of computer science coursework for their technical track. These courses must have CSCI 2113 as a prerequisite or within their prerequisite chain. The faculty advisor's documented approval is required before these courses may be applied towards degree completion.

⁶Significant Independent Project. Students pursuing a second major must complete a significant independent project. This requires completion of either (1) a course in the second major that includes a thesis or significant project, or (2) completion of CSCI 4243 and CSCI 4244. The student's selection is subject to approval of the advisor.

BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING

The Department of Biomedical Engineering offers a bachelor's degree in biomedical engineering that is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>). The curriculum provides students the opportunity to select a subset of courses to suit their interests and needs through a variety of technical electives. These electives include courses in leading-edge biomedical engineering topics, as well as advanced courses in computer science, electrical engineering, mechanical engineering, cell biology, physiology, the physical sciences, and mathematics.

Visit the program website (<http://www.bme.seas.gwu.edu/programs-degrees/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
First semester		
BISC 1111	Introductory Biology: Cells and Molecules	

BME 1010	Introduction to Biomedical Engineering
CHEM 1111	General Chemistry I ¹
MATH 1231	Single-Variable Calculus I ¹
SEAS 1001	Engineering Orientation
UW 1020	University Writing ¹

Second semester

BISC 1112	Introductory Biology: The Biology of Organisms
BME 1020	Introduction to Biomedical Engineering
CHEM 1112	General Chemistry II ¹
MATH 1232	Single-Variable Calculus II ¹
PHYS 1025	University Physics I with Biological Applications ¹

Third semester

APSC 2113	Engineering Analysis I
BME 2810	Biomedical Engineering Seminar I
ECE 2110	Circuit Theory
MATH 2233	Multivariable Calculus ¹
PHYS 1026	University Physics II with Biological Applications ¹

Fourth semester

BME 2815	Biomedical Engineering Seminar II
ECE 2210	Circuits, Signals, and Systems
Programming Elective I ²	
Restricted Engineering Elective ³	
Restricted Engineering Elective ³	
Humanities or social sciences elective ⁴	

Fifth semester

BME 3820	Principles and Practice of Biomedical Engineering
BME 4820	Anatomy and Physiology for Engineers
ECE 3220	Introduction to Digital Signal Processing
Programming Elective II ²	
Technical elective ⁵	

BME 3910 Capstone Design Preparation

Sixth semester

APSC 3115 Engineering Analysis III

BME 3915W Biomedical Engineering Capstone Project Lab I

Two humanities or social sciences electives ⁴

Two technical electives ⁵

Seventh semester

BME 4920W Biomedical Engineering Capstone Project Lab II

MAE 4168 Introduction to Biomaterials

PHYS 3127 Biophysics: Macroscopic Physics in the Life Sciences

Humanities or social sciences elective ⁴

Technical elective ⁵

Eighth semester

BME 4925W Biomedical Engineering Capstone Project Lab III

PHIL 2135 Ethics in Business and the Professions

Humanities or social sciences elective ⁴

Technical elective ⁵

Science Elective ⁶

¹Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

²Programming elective pairs (take one pair):

a) MAE 1117 Introduction to Engineering Computations.
& MAE 2117 Engineering Computations

b) CSCI 1111 Introduction to Software Development
& CSCI 1112 Algorithms and Data Structures

c) ECE 1120 C Programming for Electrical and Computer Engineering
& ECE 1125 Data Structures and Algorithms for ECE

³Potential restricted engineering electives (take 2):

MAE 2131 Thermodynamics

APSC 2057 Analytical Mechanics I

APSC 2058 Analytical Mechanics II

CE 2220 Introduction to the Mechanics of Solids

ECE 2115 Engineering Electronics

ECE 2140 Design of Logic Systems

ECE 3310 Introduction to Electromagnetics

⁴At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 42); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>). At least one humanities course must be selected from the University General Education Requirement list; the remaining two courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

⁵All technical electives must be approved by the academic advisor and must include at least three courses approved by the advisor as having engineering content.

⁶Science electives (take one):

PHYS 3128 Biophysics: Microscopic Physics in the Life Sciences

CHEM 3165 Biochemistry I

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and of the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

Visit the program website (<http://www.cee.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Science With a Second Major in Civil Engineering

Any undergraduate student who is enrolled at GW, may declare a second major in civil engineering only if their primary degree is a bachelor of science and the student must follow all the same degree requirements as those receiving a bachelor of science in civil engineering which include SEAS general, major, engineering electives, humanities/social science, and SEAS/technical GPA requirements. See the University Bulletin for more information on BS in Civil Engineering curriculum requirements for all the courses needed to complete the second major.

All other scenarios (BA, BBA, BFA, etc.) require the student to complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in civil engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CSCI 1012	Introduction to Programming with Python	
MATH 1232	Single-Variable Calculus II *	
MAE 1004	Engineering Drawing and Computer Graphics	
PHYS 1021	University Physics I *	
One humanities or social sciences elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus	
PHYS 1022	University Physics II *	
One humanities or social sciences elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	

GEOL 1001 Physical Geology *

One humanities or social sciences elective **

Fifth semester

APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I

One humanities or social sciences elective **

Sixth semester

CE 3240	Structural Theory II
CE 3310	Reinforced Concrete Structures
CE 3611	Hydraulics Laboratory
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3610	Hydraulics
CE 3521	Environmental Engineering Laboratory

One humanities or social sciences elective **

Seventh semester

CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4320	Metal Structures
CE 4341	Senior Design Project I
CE 4620	Hydrology and Hydraulic Design
CE 4530	Environmental Engineering II: Water Supply and Pollution Control

One engineering elective selected from list below

Eighth semester

CE 4330W	Contracts and Specifications
CE 4342	Senior Design Project II

CE 6403	Foundation Engineering	
Two engineering electives from the list below		
Code	Title	Credits
Engineering electives		
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6201	Advanced Strength of Materials	
CE 6202	Methods of Structural Analysis	
CE 6203	Reliability Analysis of Engineering Structures	
CE 6204	Analysis of Plates and Shells	
CE 6205	Theory of Structural Stability	
CE 6206	Continuum Mechanics	
CE 6207	Theory of Elasticity I	
CE 6208	Plasticity	
CE 6209	Mechanics of Composite Materials	
CE 6210	Introduction to Finite Element Analysis	
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6310	Advanced Reinforced Concrete Structures	
CE 6311	Bridge Design	
CE 6320	Design of Metal Structures	
CE 6321	Advanced Metal Structures	
CE 6340	Structural Dynamics	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6401	Fundamentals of Soil Behavior	
CE 6402	Theoretical Geomechanics	
CE 6403	Foundation Engineering	
CE 6404	Geotechnical Earthquake Engineering	
CE 6405	Rock Engineering	
CE 6501	Environmental Chemistry	

CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement and Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6730	Sustainable Urban Planning
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 42) the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>). At least one humanities course must be selected from the University General Education Requirement list; (p. 42) the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>)

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, ENVIRONMENTAL ENGINEERING OPTION

Graduates with the degree of bachelor of science in civil engineering, environmental engineering option, can identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications. The program of study prepares students to understand the impact of engineering solutions in a global economic, environmental, and social context. The well-structured curriculum enables students to design systems, components, or processes to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability.

Visit the program website (<http://www.cee.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Science With a Second Major in Civil Engineering

Any undergraduate student who is enrolled at GW, may declare a second major in civil engineering only if their primary degree is a bachelor of science and the student must follow all the same degree requirements as those receiving a bachelor of science in civil engineering which include SEAS general, major, engineering electives, humanities/social science, and SEAS/technical GPA requirements. See the University Bulletin for more information on BS in Civil Engineering curriculum requirements for all the courses needed to complete the second major.

All other scenarios (BA, BBA, BFA, etc.) require the student to complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in civil engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CHEM 1112	General Chemistry II *	
CSCI 1012	Introduction to Programming with Python	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
One humanities or social sciences elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	
GEOL 1001	Physical Geology *	
One humanities or social sciences elective **		
Fifth semester		

APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
MAE 3126	Fluid Mechanics I

Two humanities or social sciences electives **

Sixth semester

CE 3240	Structural Theory II
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory

One humanities or social sciences elective **

Seventh semester

CE 4320	Metal Structures
CE 4341	Senior Design Project I
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design

One engineering elective selected from list below

Eighth semester

CE 4330W	Contracts and Specifications
CE 4342	Senior Design Project II
CE 6502	Advanced Sanitary Engineering Design

Two engineering electives selected from the list below

Code	Title	Credits
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Engineering electives

CE 6102	Application of Probability Methods in Civil Engineering
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CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6203	Reliability Analysis of Engineering Structures
CE 6204	Analysis of Plates and Shells
CE 6205	Theory of Structural Stability
CE 6206	Continuum Mechanics
CE 6207	Theory of Elasticity I
CE 6208	Plasticity
CE 6209	Mechanics of Composite Materials
CE 6210	Introduction to Finite Element Analysis
CE 6301	Design of Reinforced Concrete Structures
CE 6302	Prestressed Concrete Structures
CE 6310	Advanced Reinforced Concrete Structures
CE 6311	Bridge Design
CE 6320	Design of Metal Structures
CE 6321	Advanced Metal Structures
CE 6340	Structural Dynamics
CE 6342	Structural Design to Resist Natural Hazards
CE 6401	Fundamentals of Soil Behavior
CE 6402	Theoretical Geomechanics
CE 6403	Foundation Engineering
CE 6404	Geotechnical Earthquake Engineering
CE 6405	Rock Engineering
CE 6501	Environmental Chemistry
CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers

CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement and Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6730	Sustainable Urban Planning
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 42); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>). At least one humanities course must be selected from the University General Education Requirement list (p. 42); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement

list (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>).

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, MEDICAL PREPARATION OPTION

The degree program for the bachelor of science in civil engineering, medical preparation option, focuses on proficiency in mathematics through differential equations, probability and statistics, calculus-based physics, and general chemistry; and the ability to conduct laboratory experiments and to critically analyze and interpret data. The curriculum prepares students to use their technical knowledge and expertise in mathematics, science, and engineering to identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications with special emphasis on the medical field.

Visit the program website (<http://www.cee.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Science With a Second Major in Civil Engineering

Any undergraduate student who is enrolled at GW, may declare a second major in civil engineering only if their primary degree is a bachelor of science and the student must follow all the same degree requirements as those receiving a bachelor of science in civil engineering which include SEAS general, major, engineering electives, humanities/social science, and SEAS/technical GPA requirements. See the University Bulletin for more information on BS in Civil Engineering curriculum requirements for all the courses needed to complete the second major.

All other scenarios (BA, BBA, BFA, etc.) require the student to complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in civil engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I ¹	

MATH 1231	Single-Variable Calculus I ¹
SEAS 1001	Engineering Orientation
UW 1020	University Writing ¹
One humanities or social sciences elective ²	
Second semester	
CHEM 1112	General Chemistry II ¹
CSCI 1012	Introduction to Programming with Python
MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II ¹
PHYS 1021	University Physics I ¹
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
BISC 1111	Introductory Biology: Cells and Molecules
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
One humanities or social sciences elective ²	
Fourth semester	
APSC 2058	Analytical Mechanics II
BISC 1112	Introductory Biology: The Biology of Organisms
CE 2210	Engineering Computations
CE 2220	Introduction to the Mechanics of Solids
CE 2710	Introduction to Transportation Engineering
GEOL 1001	Physical Geology ¹
Fifth semester	
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CHEM 2151	Organic Chemistry I ¹

CHEM 2153	Organic Chemistry Laboratory I ¹
ECE 2110	Circuit Theory
MAE 3126	Fluid Mechanics I
Sixth semester	
CE 3240	Structural Theory II
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3611	Hydraulics Laboratory
CE 3610	Hydraulics
CHEM 2152	Organic Chemistry II ¹
CHEM 2154	Organic Chemistry Laboratory II ¹
Seventh semester	
CE 4320	Metal Structures
CE 4341	Senior Design Project I
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
Two humanities or social sciences elective ²	
Eighth semester	
APSC 3115	Engineering Analysis III
CE 4330W	Contracts and Specifications
CE 4342	Senior Design Project II
CE 6403	Foundation Engineering
Two humanities or social sciences electives ²	

¹ Course satisfies the university general education requirement in math, science, and writing.

² At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 42); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>) At least one humanities course

must be selected from the University General Education Requirement list (p. 42); the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>)

BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING, TRANSPORTATION AND SUSTAINABILITY ENGINEERING OPTION

Graduates with the degree of bachelor of science in civil engineering, transportation and sustainability engineering option, have an in-depth understanding of traffic engineering concepts, analysis and design methods related to traffic flow, highway capacity, and measurement and control. Students gain basic understanding of human processes and interactions dictating urban demand for space and modes of movements of passengers and goods and how to plan urban transportation infrastructure to answer such demand in a sustainable manner.

Visit the program website (<http://www.cee.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Science With a Second Major in Civil Engineering

Any undergraduate student who is enrolled at GW, may declare a second major in civil engineering only if their primary degree is a bachelor of science and the student must follow all the same degree requirements as those receiving a bachelor of science in civil engineering which include SEAS general, major, engineering electives, humanities/social science, and SEAS/technical GPA requirements. See the University Bulletin for more information on BS in Civil Engineering curriculum requirements for all the courses needed to complete the second major.

All other scenarios (BA, BBA, BFA, etc.) require the student to complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in civil engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities and social science elective **		
Second semester		
CSCI 1012	Introduction to Programming with Python	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
SUST 1001	Introduction to Sustainability	
One humanities and social science elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
One humanities and social science elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	
GEOL 1001	Physical Geology *	
One humanities and social science elective **		

Fifth semester	
APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I
One humanities and social science elective *	
Sixth semester	
CE 3240	Structural Theory II
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory
One humanities and social science elective **	
Seventh semester	
CE 4320	Metal Structures
CE 4341	Senior Design Project I
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design
One humanities and social science elective **	
One engineering elective selected from the list below	
Eighth semester	
CE 4330W	Contracts and Specifications
CE 4342	Senior Design Project II
CE 6730	Sustainable Urban Planning
Two engineering electives selected from the list below	

Code	Title	Credits
Engineering electives		
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6201	Advanced Strength of Materials	
CE 6202	Methods of Structural Analysis	
CE 6203	Reliability Analysis of Engineering Structures	
CE 6204	Analysis of Plates and Shells	
CE 6205	Theory of Structural Stability	
CE 6206	Continuum Mechanics	
CE 6207	Theory of Elasticity I	
CE 6208	Plasticity	
CE 6209	Mechanics of Composite Materials	
CE 6210	Introduction to Finite Element Analysis	
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6310	Advanced Reinforced Concrete Structures	
CE 6311	Bridge Design	
CE 6320	Design of Metal Structures	
CE 6321	Advanced Metal Structures	
CE 6340	Structural Dynamics	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6401	Fundamentals of Soil Behavior	
CE 6402	Theoretical Geomechanics	
CE 6403	Foundation Engineering	
CE 6404	Geotechnical Earthquake Engineering	
CE 6405	Rock Engineering	
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	

CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement and Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6730	Sustainable Urban Planning
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

Code	Title	Credits
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Additional elective options

ECON 8375	Econometrics I
EMSE 3855W	Critical Infrastructure Systems

STAT 6201	Mathematical Statistics I
STAT 6207	Methods of Statistical Computing I
STAT 6210	Data Analysis
STAT 6215	Applied Multivariate Analysis I

*Satisfies the University General Education Requirement (p. 42) in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>) At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING

Computer engineering combines electronic design, computer architecture, programming of computing systems, computer networks, and applied mathematics. The bachelor of science with a major in computer engineering degree program prepares students in the theory and application of hardware and software design, computer networks, embedded systems, and very large scale integrated (VLSI) circuit design and applications. Students may take electives in advanced topics such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

The computer engineering program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Bachelor of Science With a Second Major in Computer Engineering

An undergraduate student enrolled at GW whose primary degree is a bachelor of science may declare a second major in computer engineering. The student must meet all degree requirements for the bachelor of science in computer engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students receiving other bachelor's degrees (e.g., BBA, BFA, BA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in computer engineering, a student must have a minimum grade-point

average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum. Visit the program website (<http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>) for additional information.

REQUIREMENTS

All computer engineering majors must fulfill the following requirements:

A total of 133 credits hours as outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00. A student's technical GPA is calculated using all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semester of curriculum.

Recommended program of study

The plan of study lists all course requirements in sequence for the degree. Students should review this information carefully and consult their advisor before changing the sequence of any courses.

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I ¹	
ECE 1010	Introduction to Electrical and Computer Engineering I	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing ¹	
1 Humanities or social sciences elective ²		
Second semester		
CSCI 1311	Discrete Structures I	
ECE 1020	Introduction to Electrical and Computer Engineering II	
ECE 1120	C Programming for Electrical and Computer Engineering	
MATH 1232	Single-Variable Calculus II ¹	
PHIL 2135	Ethics in Business and the Professions	
PHYS 1021	University Physics I ¹	
or PHYS 1025	University Physics I with Biological Applications	
Third semester		
APSC 2113	Engineering Analysis I	

ECE 1125	Data Structures and Algorithms for ECE
ECE 2110	Circuit Theory
ECE 2120	Engineering Seminar
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
or PHYS 1026	University Physics II with Biological Applications

Fourth semester	
APSC 3115	Engineering Analysis III
CSCI 2113	Software Engineering
ECE 2115	Engineering Electronics
ECE 2140	Design of Logic Systems
ECE 2210	Circuits, Signals, and Systems
Fifth semester	
ECE 3130	Digital Electronics and Design
ECE 3220	Introduction to Digital Signal Processing
ECE 3515	Computer Organization
ECE 3520	Microprocessors: Software, Hardware, and Interfacing
1 Technical elective ³	
Sixth semester	
ECE 3135	Digital Design with FPGAs
ECE 3525	Introduction to Embedded Systems
ECE 3915W	Electrical and Computer Engineering Capstone Project Lab I
ECE 4415	Introduction to Computer Networks
ECE 4425	Data Communications Laboratory
1 Technical elective ³	
Seventh semester	
ECE 4140	VLSI Design and Simulation
ECE 4535	Computer Architecture and Design
ECE 4920W	Electrical and Computer Engineering Capstone Project Lab II
1 Humanities or social sciences elective ²	

1 Technical elective ³

Eighth semester

ECE 4150	ASIC Design and Testing of VLSI Circuits
ECE 4925W	Electrical and Computer Engineering Capstone Project Lab III

2 Humanities or social sciences electives ²

1 Technical elective ³

¹ Course satisfies the university general education requirement in math, science, and writing.

² To satisfy the ECE humanities and social science/non-technical requirement, all electrical and computer engineering students must take five courses. Three of these five courses (one in humanities and two in social sciences) must be on the University General Education Requirement list. One of these five courses must be PHIL 2135 Ethics in Business and the Professions (or NSC 4176 Leadership and Ethics for students in the NROTC Program). The one remaining course can be a humanities/social science course, or a non-technical course related to public health, safety, and welfare; global cultural, social, environmental, and economic factors; innovation, entrepreneurship, and creativity. The non-technical course cannot focus on scientific/mathematical approaches, or on technology. All courses selected to satisfy this requirement must be taken for a minimum of 3 credits and be approved by the academic advisors.

³ Four 3-credit technical elective courses must be chosen with the approval of the advisor from upper division undergraduate (2000 to 4000 level) or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. At least one of the technical electives must be math or science course at the 2000-level or above. Exceptions from the rule must be approved by the advisor.

BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE

The bachelor of science (BS) in computer science program combines software development, computer systems and architecture, algorithms, project design, science, and mathematics to provide a strong foundation in computer science. Students are prepared to design and implement software needed for Internet operations, computer graphics and animation, secure systems, and applications for small, large, and embedded systems. In consultation with the advisor, students choose a technical track and a non-technical track. The technical track provides depth in a particular area of computer science, while the non-technical track enables students to stay current with the rapidly evolving field and to establish

the relevance of their studies in the ever-changing global environment. The program is accredited by ABET.

Visit the program website (<http://www.cs.seas.gwu.edu/bachelor-science-program/>) for additional information.

Bachelor of Science With a Second Major in Computer Science

Students enrolled in a BS program outside of the School of Engineering and Applied Sciences (SEAS) who wish to declare a second major in computer science must apply and be admitted to the second major program in computer science. Students in this program must follow the same degree requirements as those receiving a BS in computer science as their primary major. See the department web page (<http://www.seas.gwu.edu/department-computer-science/>) for additional information.

Criteria for admission:

To be considered for admission to the second major in computer science, a student must satisfy the following criteria:

- Prior completion of CSCI 1011, CSCI 1012, CSCI 1111, CSCI 1121, or CSCI 1112 with a minimum grade of B.
- Prior completion of MATH 1220 (<https://current.bulletin.gwu.edu/search/?P=MATH%201220>) and MATH 1221 (<https://current.bulletin.gwu.edu/search/?P=MATH%201221>), or MATH 1231 (<https://current.bulletin.gwu.edu/search/?P=MATH%201231>), with a minimum grade of B-.
- A minimum overall grade-point average of 3.0 at the time of application to the major.

Application Deadline

The application is due no later than the start of the 5th semester of study at GW or completion of the 60th credit, whichever comes first. Contact the School of Engineering and Applied Science Undergraduate Advising Office (<https://www.seas.gwu.edu/undergraduate-student-services-advising/>) for specific application deadlines.

Credits in residence requirement:

- For a second major, at least 24 credits in computer science courses must be completed in SEAS.

Graduation grade-point average criteria:

- To satisfactorily complete a second major in computer science, a student must have a minimum grade-point average of 2.2 in all courses taken that count towards the degree.

REQUIREMENTS

Residency Requirement

As part of a residency requirement, all computer science majors must take a minimum of 30 credits in computer science

courses at GW. Should a student pursue an approved study abroad program, credits earned in that program count toward this requirement. For a second major (p. 755), at least 24 credits in computer science courses must be completed in SEAS.

Recommended program of study

Code	Title	Credits
First semester		15
UW 1020	University Writing *	4
CSCI 1010	Computer Science Orientation	1
CSCI 1111	Introduction to Software Development	3
SEAS 1001	Engineering Orientation	1
Mathematics requirement *		3
Humanities or social sciences elective		3
Second semester		16
CSCI 1311	Discrete Structures I	3
CSCI 1112	Algorithms and Data Structures	3
Mathematics requirement *		3
Science requirement *		4
Humanities or social sciences elective		3
Third semester		16
CSCI 2312	Discrete Structures II	3
CSCI 2461	Computer Architecture I	3
CSCI 2113	Software Engineering	3
Science requirement *		4
Humanities or social sciences elective		3
Fourth semester		17
CSCI 3410	Systems Programming	3
CSCI 2541W	Database Systems and Team Projects	3
CSCI 2501	Ethical Issues in Computing	1
CSCI 3313	Foundations of Computing	3
Science requirement *		4
Statistics or linear algebra requirement *		3
Fifth semester		14

CSCI 3212	Algorithms	4
CSCI 3411	Operating Systems	4
CS technical track elective		3
Humanities or social sciences electives		3
Sixth semester		15
Statistics or linear algebra requirement *		3
CS technical track elective		3
Non-technical track elective		3
Humanities or social sciences elective		3
Unrestricted elective (see below)		3
Seventh semester		16
CSCI 4243W	Capstone Design Project I	4
CS technical track elective		3
Non-technical track elective		3
Humanities or social sciences elective		3
Unrestricted elective (see below)		3
Eighth semester		16
CSCI 4244	Capstone Design Project II	4
CS technical track elective		3
Non-technical track elective		3
Unrestricted elective (see below)		3
Unrestricted elective (see below)		3

*Course satisfies the University General Education Requirement (<http://bulletin.gwu.edu/university-regulations/general-education/>) in mathematics, science, or writing. UW 1020 (<http://bulletin.gwu.edu/search/?P=UW%201020>) must be completed prior to enrolling in any writing course in the major, including CSCI 2441W (<http://bulletin.gwu.edu/search/?P=CSCI%202441W>) and CSCI 2541W (<http://bulletin.gwu.edu/search/?P=CSCI%202541W>).

Humanities and social science requirements: All BS in computer science students must take one humanities course and two social science courses from the Columbian College G-PAC Requirement (<https://advising.columbian.gwu.edu/general-education-courses/>) list and three additional humanities, social science, and/or non-technical courses from the SEAS General Education Requirement list (<https://www.seas.gwu.edu/humanities-and-social-science->

requirement/). All courses selected to satisfy this requirement must be at least 3 credits and approved by the faculty advisor.

Mathematics requirement: Can be met by taking MATH 1220 (<http://bulletin.gwu.edu/search/?P=MATH%201220>) and MATH 1221 (<http://bulletin.gwu.edu/search/?P=MATH%201221>) and MATH 1232 (<http://bulletin.gwu.edu/search/?P=MATH%201232>) or by taking MATH 1231 (<http://bulletin.gwu.edu/search/?P=MATH%201231>) and MATH 1232 (<http://bulletin.gwu.edu/search/?P=MATH%201232>). All students must take two MATH courses not counting MATH 1220 (<http://bulletin.gwu.edu/search/?P=MATH%201220>); students who take MATH 1220 (<http://bulletin.gwu.edu/search/?P=MATH%201220>) must take it as one of their unrestricted electives.

Science requirement: Can be met by choosing from BISC 1111 and BISC 1112; CHEM 1111 (<http://bulletin.gwu.edu/search/?P=CHEM%201111>) and CHEM 1112 (<http://bulletin.gwu.edu/search/?P=CHEM%201112>); and PHYS 1021 (<http://bulletin.gwu.edu/search/?P=PHYS%201021>) and PHYS 1022 (<http://bulletin.gwu.edu/search/?P=PHYS%201022>). The three science requirement courses must include a two-course sequence.

Statistics or linear algebra requirement: Students must take both a statistics class, and a linear algebra class. The Statistics requirement can be met by choosing from APSC 3115, CSCI 3362 (<http://bulletin.gwu.edu/search/?P=CSCI%203362>) or CSCI 6362 (<http://bulletin.gwu.edu/search/?P=CSCI%206362>), CSCI 4341 (<http://bulletin.gwu.edu/search/?P=CSCI%204341>), or STAT 4157 (<http://bulletin.gwu.edu/search/?P=STAT%204157>). The Linear algebra requirement can be met by taking one of MATH 2184, CSCI 4342, or EMSE 2705. Students who were admitted prior to fall 2014 may count STAT 1051 (<http://bulletin.gwu.edu/search/?P=STAT%201051>) and STAT 1053 (<http://bulletin.gwu.edu/search/?P=STAT%201053>) toward the statistics requirement, if they took the course prior to the spring 2015 semester. Students pursuing a pre-medical concentration may substitute the linear algebra requirement with a science course required by the pre-medical requirements.

Non-technical track requirement

All BS in computer science students must complete a non-technical track (<https://www.cs.seas.gwu.edu/non-technical-tracks/>) that consists of at least three non-technical courses (for a minimum of 9 credits) with prior approval of the faculty advisor. To satisfy this requirement, students may choose one of the following:

- Technology and law—three pre-law related courses, for a minimum total of 9 credits, from the following: CSCI 4532 (<http://bulletin.gwu.edu/search/?P=CSCI%204532>), EMSE 6018 (<http://bulletin.gwu.edu/search/?P=EMSE%206018>), MAE 3171 (<http://bulletin.gwu.edu/search/?P=MAE%203171>), and MAE 4172 (<http://bulletin.gwu.edu/search/?P=MAE%204172>). Additional courses may be included with prior approval of the faculty advisor.

- Business—three courses, for a minimum total of 9 credits, in Business Administration (BADM) coursework. Courses that may be taken as part of this track include ACCY 2001 (<http://bulletin.gwu.edu/search/?P=ACCY%202001>), ACCY 2002 (<http://bulletin.gwu.edu/search/?P=ACCY%202002>), BADM 3401 (<http://bulletin.gwu.edu/search/?P=BADM%203401>), and BADM 3501 (<http://bulletin.gwu.edu/search/?P=BADM%203501>). Other BADM courses may be included with prior approval of the faculty advisor.
- Premedical—three courses, for a minimum total of 9 credits, from the following: BISC 1111 (<http://bulletin.gwu.edu/search/?P=BISC%201111>) and BISC 1112 (<http://bulletin.gwu.edu/search/?P=BISC%201112>); CHEM 1111 (<http://bulletin.gwu.edu/search/?P=CHEM%201111>) and CHEM 1112 (<http://bulletin.gwu.edu/search/?P=CHEM%201112>), CHEM 2151 (<http://bulletin.gwu.edu/search/?P=CHEM%202151>), CHEM 2152 (<http://bulletin.gwu.edu/search/?P=CHEM%202152>), CHEM 2153 (<http://bulletin.gwu.edu/search/?P=CHEM%202153>), CHEM 2154 (<http://bulletin.gwu.edu/search/?P=CHEM%202154>), PHYS 1011 (<http://bulletin.gwu.edu/search/?P=PHYS%201011>) and PHYS 1012 (<http://bulletin.gwu.edu/search/?P=PHYS%201012>), or PHYS 1021 (<http://bulletin.gwu.edu/search/?P=PHYS%201021>) and PHYS 1022 (<http://bulletin.gwu.edu/search/?P=PHYS%201022>). Additional courses may be included with prior approval of the faculty advisor.
- Project management and leadership—three courses, for a minimum total of 9 credits, of project management, communication, leadership, or engineering management coursework, including COMM 1041 (<http://bulletin.gwu.edu/search/?P=COMM%201041>), COMM 1042 (<http://bulletin.gwu.edu/search/?P=COMM%201042>), COMM 3174 (<http://bulletin.gwu.edu/search/?P=COMM%203174>), EMSE 4410 (<http://bulletin.gwu.edu/search/?P=EMSE%204410>), EMSE 6001 (<http://bulletin.gwu.edu/search/?P=EMSE%206001>), EMSE 6005 (<http://bulletin.gwu.edu/search/?P=EMSE%206005>), MGT 3201 (<http://bulletin.gwu.edu/search/?P=MGT%203201>), NSC 2175 (<http://bulletin.gwu.edu/search/?P=NSC%202175>), NSC 4176 (<http://bulletin.gwu.edu/search/?P=NSC%204176>), ORSC 1109 (<http://bulletin.gwu.edu/search/?P=ORSC%201109>), and ORSC 2116 (<http://bulletin.gwu.edu/search/?P=ORSC%202116>). Additional courses may be included with prior approval of the faculty advisor.
- Global engineering—three non-technical courses, for a minimum total of 9 credits, in one of the following options with prior approval the faculty advisor: (1) while studying abroad; (2) in a single foreign language; (3) in International Affairs; or, (4) in aspects of non-English speaking cultures from the fields of anthropology, history, literatures, geography, political science, or religion.
- Environment and climate change—three courses, for a minimum total of 9 credits, related to the environment and climate change which may include BISC 2454 (<http://bulletin.gwu.edu/search/?P=BISC%202454>), BISC 3460

(<http://bulletin.gwu.edu/search/?P=BISC%203460>), CE 6503 (<http://bulletin.gwu.edu/search/?P=CE%206503>), CHEM 2085 (<http://bulletin.gwu.edu/search/?P=CHEM%202085>), ECON 2136 (<http://bulletin.gwu.edu/search/?P=ECON%202136>), EMSE 6200 (<http://bulletin.gwu.edu/search/?P=EMSE%206200>), EMSE 6220 (<http://bulletin.gwu.edu/search/?P=EMSE%206220>), EMSE 6260 (<http://bulletin.gwu.edu/search/?P=EMSE%206260>), EMSE 6225 (<http://bulletin.gwu.edu/search/?P=EMSE%206225>), EMSE 6235 (<http://bulletin.gwu.edu/search/?P=EMSE%206235>), EMSE 6230 (<http://bulletin.gwu.edu/search/?P=EMSE%206230>), GEOG 2108 (<http://bulletin.gwu.edu/search/?P=GEOG%202108>), GEOG 2110 (<http://bulletin.gwu.edu/search/?P=GEOG%202110>), GEOG 2134 (<http://bulletin.gwu.edu/search/?P=GEOG%202134>), GEOG 2136 (<http://bulletin.gwu.edu/search/?P=GEOG%202136>), and GEOG 3132 (<http://bulletin.gwu.edu/search/?P=GEOG%203132>). Additional courses may be included with prior approval of the faculty advisor.

- Public health—three courses, for a minimum total of 9 credits, in public health coursework that may include PUBH 1101 (<http://bulletin.gwu.edu/search/?P=PUBH%201101>), PUBH 1102 (<http://bulletin.gwu.edu/search/?P=PUBH%201102>), PUBH 2114 (<http://bulletin.gwu.edu/search/?P=PUBH%202114>), PUBH 2115 (<http://bulletin.gwu.edu/search/?P=PUBH%202115>), and PUBH 3133 (<http://bulletin.gwu.edu/search/?P=PUBH%203133>). Additional courses may be included with prior approval of the faculty advisor.
- Individually designed—student select a series of related three non-technical courses (for a minimum of 9 credits). Any course completed for this track must be approved by the faculty advisor prior to completing the course.
- Special option: minor or second major—students can combine at least three non-technical courses (for a minimum total of 9 credits), not closely related to the discipline of computing allotted to their non-technical track with their unrestricted electives to complete a non-technical minor or second major.

Computer science technical track requirements

All students in the BS in computer science program are required to take four technical courses (for a minimum of 12 credits) of computer science coursework for their technical track. All courses must have CSCI 2113 (<http://bulletin.gwu.edu/search/?P=CSCI%202113>) as a prerequisite or within the prerequisite chain. Two of these technical classes must be taken from within core technical areas. Guidance on these areas is available on the Department of Computer Science website (<https://www.cs.seas.gwu.edu/>). The faculty advisor's documented approval is required before courses may be applied towards degree completion.

Unrestricted electives

All students in the BS in Computer Science are required to complete four unrestricted elective courses. All courses used

to fulfill this requirement must have the explicit, documented approval from the faculty adviser, even when such courses are required for a minor or have transferred to the University as Advanced Placement (AP) credit. Guidance concerning unrestricted electives is available on the Department of Computer Science website (<https://www.cs.seas.gwu.edu/>).

The following guidelines and/or restrictions apply to selecting courses to satisfy this requirement:

1. Additional CSCI courses numbered above 2461 may count toward this requirement. Students may take a maximum of two research and independent study courses, for which the student must provide documentation of output, such as papers, presentations, or software. For courses from other departments, the student must obtain the approval of the faculty advisor.
2. Approved courses from the SEAS Humanities and Social Science Electives (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>) lists may count toward this requirement.
3. Approved courses listed in non-technical track lists may count toward this requirement, but not both. Such a course cannot count towards both the non-technical track requirement and as an unrestricted elective.
4. Computer science courses taught by another department generally do not count toward this requirement. Courses that significantly overlap with, or are not as advanced as, the required content for the computer science degree program do not count toward this requirement. Such courses include, but are not limited to, the following: BADM 2301 (<http://bulletin.gwu.edu/search/?P=BADM%202301>), EMSE 4197 (<http://bulletin.gwu.edu/search/?P=EMSE%204197>), ISTM 3119 (<http://bulletin.gwu.edu/search/?P=ISTM%203119>), ISTM 4120 (<http://bulletin.gwu.edu/search/?P=ISTM%204120>), ISTM 4121 (<http://bulletin.gwu.edu/search/?P=ISTM%204121>), ISTM 4123 (<http://bulletin.gwu.edu/search/?P=ISTM%204123>), STAT 1051 (<http://bulletin.gwu.edu/search/?P=STAT%201051>), STAT 1053 (<http://bulletin.gwu.edu/search/?P=STAT%201053>), and STAT 1129 (<http://bulletin.gwu.edu/search/?P=STAT%201129>).
5. Courses that significantly overlap with any other course(s) used towards the computer science degree, regardless of the department(s) in which they are taken, may not count toward this requirement.
6. Because of content overlap among courses in general, some courses may be approved for one student and not for another, based on other courses the student has taken. For example, if a student uses PHYS 1021 (<http://bulletin.gwu.edu/search/?P=PHYS%201021>) towards either the science, math/science, or unrestricted elective requirement, PHYS 1011 (<http://bulletin.gwu.edu/search/?P=PHYS%201011>) may not be used to fulfill this

requirement, but PHYS1011 would count for a student who has not taken PHYS 1021 (<http://bulletin.gwu.edu/search/?P=PHYS%201021>).

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING

Electrical engineers design the enabling technology for all applications of electricity; examples include energy, telecommunications, the Internet, biomedical instrumentation, and electromagnetic applications. The bachelor of science with a major in electrical engineering degree program focuses on signal processing; communication theory and practice; voice, data, video and multimedia communication networks; very large scale integrated (VLSI) circuit design and applications; and control and power systems. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

The electrical engineering program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Bachelor of Science With a Second Major in Electrical Engineering

Any undergraduate student who is enrolled at GW may declare a second major in electrical engineering only if their primary degree is a Bachelor of Science. The student must meet the degree requirements for Bachelor of Science in electrical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students in other bachelor's degree programs (e.g., BA, BBA, BFA) are required to complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in electrical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

Visit the program website (<http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>) for additional information.

REQUIREMENTS

All electrical engineering majors must fulfill the following requirements:

A total of 132 credits hours outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00.

A student's technical GPA is calculated using all technical

engineering courses outlined in the fifth, sixth, seventh, and eighth semester of curriculum.

Recommended program of study

The plan of study lists all course requirements in sequence for the degree. Students should review this information carefully and consult their advisor before changing the sequence of any courses.

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I ¹	
ECE 1010	Introduction to Electrical and Computer Engineering I	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing ¹	
1 Humanities or social sciences elective ²		
Second semester		
ECE 1020	Introduction to Electrical and Computer Engineering II	
ECE 1120	C Programming for Electrical and Computer Engineering	
MATH 1232	Single-Variable Calculus II ¹	
PHIL 2135	Ethics in Business and the Professions	
PHYS 1021	University Physics I ¹	
or PHYS 1025	University Physics I with Biological Applications	
1 Humanities or social sciences elective ²		
Third semester		
APSC 2113	Engineering Analysis I	
ECE 1125	Data Structures and Algorithms for ECE	
ECE 2110	Circuit Theory	
ECE 2120	Engineering Seminar	
MATH 2233	Multivariable Calculus ¹	
PHYS 1022	University Physics II ¹	
or PHYS 1026	University Physics II with Biological Applications	
Fourth semester		

APSC 2114	Engineering Analysis II
ECE 2115	Engineering Electronics
ECE 2140	Design of Logic Systems
ECE 2210	Circuits, Signals, and Systems
1 Humanities or social sciences elective ²	
Fifth semester	
APSC 3115	Engineering Analysis III
ECE 3130	Digital Electronics and Design
ECE 3220	Introduction to Digital Signal Processing
ECE 3315	Fields and Waves I
ECE 3520	Microprocessors: Software, Hardware, and Interfacing
Sixth semester	
ECE 3125	Analog Electronics Design
ECE 3135	Digital Design with FPGAs
ECE 3410	Communications Engineering
ECE 3915W	Electrical and Computer Engineering Capstone Project Lab I
ECE 4320	Fields and Waves II
Seventh semester	
ECE 4710	Control Systems Design
ECE 4920W	Electrical and Computer Engineering Capstone Project Lab II
1 Technical elective ³	
2 ECE restricted electives ⁴	
Eighth semester	
ECE 4610	Electrical Energy Conversion
ECE 4925W	Electrical and Computer Engineering Capstone Project Lab III
1 Humanities or social sciences elective ²	
2 Technical electives ³	

¹ Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

² To satisfy the ECE humanities and social science/non-technical requirement, all electrical and computer engineering

students must take five courses. Three of these five courses (one in humanities and two in social sciences) must be on the University General Education Requirement list. One of these five courses must be PHIL 2135 Ethics in Business and the Professions (or NSC 4176 Leadership and Ethics for students in the NROTC Program). The one remaining course can be a humanities/social science course, or a non-technical course related to public health, safety, and welfare; global cultural, social, environmental, and economic factors; innovation, entrepreneurship, and creativity. The non-technical course cannot focus on scientific/mathematical approaches, or on technology. All courses selected to satisfy this requirement must be taken for a minimum of 3 credits and be approved by the academic advisors.

³ Three 3-credit technical elective courses must be selected with the approval of the advisor from upper-division undergraduate (2000 to 4000 level) or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. Exceptions must be approved by the advisor.

⁴ The two ECE restricted electives must be selected with the approval of the advisor from ECE courses at the 3000 level or above. Exceptions must be approved by the advisor.

*Course satisfies the university general education requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list (p. 42); the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list (<https://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>). At least one humanities course must be selected from the University General Education Requirement list; the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list.

The two ECE-restricted electives must be selected from upper level ECE courses with approval of the advisor. Three 3-credit technical elective courses must be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

Visit the program website (<http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING, ENERGY OPTION

The bachelor of science with a major in electrical engineering, energy option prepares students to work in technical energy fields such as electric utility companies and in research

into improved methods of generation, transmission, and distribution of electrical energy.

The electrical engineering program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Bachelor of Science With a Second Major in Electrical Engineering

Any undergraduate student who is enrolled at GW may declare a second major in electrical engineering only if their primary degree is a bachelor of science. The student must meet the degree requirements for bachelor of science in electrical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other bachelor degrees (e.g., BA, BBA, BFA) must complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in electrical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

Visit the program website (<http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>) for additional information.

REQUIREMENTS

Additional graduation requirements that all electrical engineering–energy option majors must fulfill:

A total of 131 credits hours outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00. A student’s technical GPA is calculated using all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semester of curriculum.

Recommended program of study

The plan of study lists all course requirements in sequence for the degree. Students should review this information carefully and consult their advisor before changing the sequence of any courses.

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I ¹	
ECE 1010	Introduction to Electrical and Computer Engineering I	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing ¹	

1 Humanities or social sciences elective ²

Second semester

ECE 1020	Introduction to Electrical and Computer Engineering II
ECE 1120	C Programming for Electrical and Computer Engineering
MATH 1232	Single-Variable Calculus II ¹
PHIL 2135	Ethics in Business and the Professions
PHYS 1021	University Physics I ¹
or PHYS 1025	University Physics I with Biological Applications

1 Humanities or social sciences elective ²

Third semester

APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
ECE 2110	Circuit Theory
ECE 2120	Engineering Seminar
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
or PHYS 1026	University Physics II with Biological Applications

Fourth Semester

APSC 2058	Analytical Mechanics II
APSC 2114	Engineering Analysis II
ECE 2115	Engineering Electronics
ECE 2210	Circuits, Signals, and Systems
ECE 2140	Design of Logic Systems

Fifth Semester

APSC 3115	Engineering Analysis III
ECE 3130	Digital Electronics and Design
ECE 3220	Introduction to Digital Signal Processing
ECE 3315	Fields and Waves I
ECE 3520	Microprocessors: Software, Hardware, and Interfacing

Sixth Semester

ECE 3125	Analog Electronics Design
ECE 3915W	Electrical and Computer Engineering Capstone Project Lab I
ECE 4320	Fields and Waves II
MAE 2131	Thermodynamics
MAE 3134	Linear System Dynamics
Seventh Semester	
ECE 4620	Electrical Power Systems
ECE 4710	Control Systems Design
ECE 4920W	Electrical and Computer Engineering Capstone Project Lab II
1 Humanities or social sciences elective ²	
1 Technical elective ³	
Eighth Semester	
ECE 3410	Communications Engineering
ECE 4610	Electrical Energy Conversion
ECE 4925W	Electrical and Computer Engineering Capstone Project Lab III
ECE 6662	Power Electronics
1 Humanities or social sciences elective ²	

¹ Course satisfies the University General Education Requirement (p. 42) in math, science, and writing..

² To satisfy the ECE humanities and social science/non-technical requirement, all electrical and computer engineering students must take five courses. Three of these five courses (one in humanities and two in social sciences) must be on the University General Education Requirement list. One of these five courses must be PHIL 2135 Ethics in Business and the Professions (or NSC 4176 Leadership and Ethics for students in the NROTC Program). The one remaining course can be a humanities/social science course, or a non-technical course related to public health, safety, and welfare; global cultural, social, environmental, and economic factors; innovation, entrepreneurship, and creativity. The non-technical course cannot focus on scientific/mathematical approaches, or on technology. All courses selected to satisfy this requirement must be taken for a minimum of 3 credits and be approved by the academic advisors.

³ One 3-credit technical elective course must be selected with the approval of the advisor from upper-division undergraduate (2000 to 4000 level) or graduate courses in engineering, computer science, mathematics, physical sciences, or

biological sciences. Exceptions must be approved by the advisor.

BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING, MEDICAL PREPARATION OPTION

The bachelor of science with a major in electrical engineering, medical option degree program prepares students for application to medical school. Students are prepared to work in various health sciences fields, to conduct research toward development of electronic equipment to assist in diagnosing and treating disease, or to continue as a graduate student in engineering with exceptional qualifications for biomedical engineering.

The electrical engineering program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Bachelor of Science With a Second Major in Electrical Engineering

Any undergraduate student who is enrolled at GW may declare a second major in electrical engineering only if their primary degree is a Bachelor of Science. The student must meet the degree requirements for bachelor of science in electrical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other bachelor degrees (e.g., BA, BBA, BFA) must complete a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in electrical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

Visit the program website (<http://www.ece.seas.gwu.edu/bachelor-science-electrical-engineering/>) for additional information.

REQUIREMENTS

Electrical engineering–medical prep option majors must fulfill the following requirements:

A total of 134 credits hours as outlined below.

A minimum technical GPA of 2.20 and SEAS GPA of 2.00. A student's technical GPA is calculated using all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semester of curriculum.

Recommended program of study

The plan of study lists all course requirements in sequence for the degree. Students should review this information carefully

and consult their advisor before changing the sequence of any courses.

Code	Title	Credits
First semester		
BISC 1111	Introductory Biology: Cells and Molecules	
CHEM 1111	General Chemistry I ¹	
ECE 1010	Introduction to Electrical and Computer Engineering I	
MATH 1231	Single-Variable Calculus I ¹	
UW 1020	University Writing ¹	
SEAS 1001	Engineering Orientation	
Second semester		
CHEM 1112	General Chemistry II	
ECE 1020	Introduction to Electrical and Computer Engineering II	
ECE 1120	C Programming for Electrical and Computer Engineering	
MATH 1232	Single-Variable Calculus II ¹	
PHYS 1021	University Physics I ²	
or PHYS 1025	University Physics I with Biological Applications	
Third semester		
APSC 2113	Engineering Analysis I	
ECE 1125	Data Structures and Algorithms for ECE	
ECE 2110	Circuit Theory	
ECE 2120	Engineering Seminar	
MATH 2233	Multivariable Calculus ¹	
PHYS 1022	University Physics II ¹	
or PHYS 1026	University Physics II with Biological Applications	
Fourth Semester		
BISC 1112	Introductory Biology: The Biology of Organisms	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems	

ECE 2210 Circuits, Signals, and Systems

1 Humanities or social sciences elective ²

Fifth Semester

APSC 3115	Engineering Analysis III
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
ECE 3130	Digital Electronics and Design
ECE 3220	Introduction to Digital Signal Processing
ECE 3520	Microprocessors: Software, Hardware, and Interfacing

Sixth Semester

CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
ECE 3125	Analog Electronics Design
ECE 3310	Introduction to Electromagnetics
ECE 3410	Communications Engineering
ECE 3915W	Electrical and Computer Engineering Capstone Project Lab I

Seventh Semester

BME 3820	Principles and Practice of Biomedical Engineering
ECE 4710	Control Systems Design
ECE 4920W	Electrical and Computer Engineering Capstone Project Lab II

1 Humanities or social sciences elective ²

1 Technical elective ³

Eighth Semester

ECE 4925W	Electrical and Computer Engineering Capstone Project Lab III
PHIL 2135	Ethics in Business and the Professions

2 Humanities or social sciences electives ²

1 Technical elective ³

¹ Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

² To satisfy the ECE humanities and social science/non-technical requirement, all electrical and computer engineering students must take five courses. Three of these five courses (one in humanities and two in social sciences) must be on the University General Education Requirement (p. 42) list. One of these five courses must be PHIL 2135 (or NSC 4176 for students in the NROTC Program). The one remaining course can be a humanities/social science course, or a non-technical course related to public health, safety, and welfare; global cultural, social, environmental, and economic factors; innovation, entrepreneurship, and creativity. The non-technical course cannot focus on scientific/mathematical approaches, or on technology. All courses selected to satisfy this requirement must be taken for a minimum of 3 credits and be approved by the academic advisor.

³ Two 3-credit technical elective courses must be selected with the approval of the advisor from upper-division undergraduate (2000 to 4000 level) or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences. Exceptions must be approved by the advisor.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The Department of Mechanical and Aerospace Engineering offers the bachelor of science with a major in mechanical engineering degree program to prepare students for work in these fields. The mechanical engineering (ME) program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Sciences with a Second Major in Mechanical Engineering

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if their primary degree is a bachelor of science. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other bachelor's degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I (or CHEM 1113) ¹	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing	
Humanities or social sciences elective ²		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MAE 1117	Introduction to Engineering Computations	
MATH 1232	Single-Variable Calculus II ¹	
MATH 2184	Linear Algebra I	
PHYS 1021	University Physics I ¹	
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus ¹	
PHYS 1022	University Physics II ¹	
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
ECE 2110	Circuit Theory	
MAE 2131	Thermodynamics	
Humanities or social sciences elective ²		

Fifth semester	
APSC 3115	Engineering Analysis III
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
MAE 3166W	
MAE 3191	Mechanical Design of Machine Elements
MAE 3192	Manufacturing Processes and Systems
Humanities or social sciences elective ²	
Sixth semester	
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3167W	Mechanics of Materials Lab
MAE 3187	Heat Transfer
MAE 3193	Mechanical Systems Design
Humanities or social sciences elective ²	
Seventh semester	
MAE 4149	Thermal Systems Design
MAE 4151	Capstone Design Project I
MAE 4182	Electromechanical Control System Design
Technical elective ³	
Technical elective	
Humanities or social sciences elective ²	
Eighth semester	
MAE 4152W	Capstone Design Project II
Technical elective ³	
Technical elective	
Technical elective	
Humanities or social sciences elective ²	

¹Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

²To satisfy the SEAS Humanities and Social Science requirement, all mechanical engineering students must take one humanities course and two social Sciences courses from University General Education requirement; PHIL 2135, and two additional humanities or social science or non-technical courses from the MAE Department's pre-approved list of electives. All courses selected to satisfy this requirement must be at least 3-credits each. NOTE: Students in the patent law concentration must take MAE 2170 in lieu of one of the additional humanities or social science or non-technical course.

³All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair.

Code	Title	Credits
Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding:		
MAE 3171	Patent Law for Engineers	
MAE 4172	Engineering Design and the Patent System	
MAE 6298	Research	
MAE 6998 & MAE 6999	MS Thesis Research and MS Thesis Research	

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, AEROSPACE OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, aerospace option degree program prepares students to work in the aerospace industry or to pursue graduate study in aerospace engineering. It provides a strong foundation in aerodynamics, airplane performance, propulsion, aerospace structures, orbital mechanics, spacecraft dynamics, and aircraft and spacecraft design. The mechanical engineering (ME) program is accredited by the Engineering Accreditation Commission of ABET (<http://www.abet.org>).

Visit the program website (<https://www.mae.seas.gwu.edu/programs-degrees/>) for more information.

Bachelor of Sciences with a Second Major in Mechanical Engineering, Aerospace Option

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if his or her primary degree is a BS. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I (or CHEM 1113) ¹	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing ¹	
Humanities or social sciences elective ²		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II ¹	
MATH 2184	Linear Algebra I	
PHYS 1021	University Physics I ¹	
MAE 1117	Introduction to Engineering Computations	
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MAE 2117	Engineering Computations	
MATH 2233	Multivariable Calculus ¹	

PHYS 1022 University Physics II ¹

Fourth semester

APSC 2058 Analytical Mechanics II

ECE 2110 Circuit Theory

MAE 2131 Thermodynamics

CE 2220 Introduction to the Mechanics of Solids

Humanities or social sciences elective ²

Fifth semester

MAE 3126 Fluid Mechanics I

MAE 3166W

MAE 3127 Fluid Mechanics Lab

MAE 3191 Mechanical Design of Machine Elements

MAE 3192 Manufacturing Processes and Systems (Humanities or Social Sciences Elective)

APSC 3115 Engineering Analysis III

Aero elective

Sixth semester

MAE 3120 Methods of Engineering Experimentation

MAE 3134 Linear System Dynamics

MAE 3155 Aerodynamics

MAE 3167W Mechanics of Materials Lab

MAE 3193 Mechanical Systems Design

MAE 3187 Heat Transfer

Seventh semester

MAE 4151 Capstone Design Project I

MAE 4157 Aerodynamics Laboratory

MAE 4182 Electromechanical Control System Design

MAE 3162 Aerospace Structures

Humanities or social sciences elective

Technical elective ³

Eighth semester

MAE 4152W Capstone Design Project II

MAE 6229 Propulsion

Humanities or social sciences elective ²

Humanities or social sciences elective ²

Aerospace elective ³

¹ Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

² To satisfy the SEAS humanities and social science requirement, all mechanical engineering students must take one (1) humanities course and two (2) social sciences courses from the University General Education Requirement (p. 42); PHIL 2135 Ethics in Business and the Professions; and two (2) additional humanities or social science or non-technical courses from the MAE Department's pre-approved list of electives. Each course selected to satisfy this requirement must be taken for at least 3 credits. NOTE: Students in the patent law concentration must take MAE 2170 History and Impact of the U.S. Patent System in lieu of one of the additional humanities or social science or non-technical course.

³ Space: Students take MAE 3145 Orbital Mechanics and Spacecraft Dynamics in the fifth semester and MAE 6249 Spacecraft Design in the eighth semester.

Aero: Students take MAE 4163 Airplane Performance in the seventh semester and MAE 6247 Aircraft Design I in the eighth semester.

⁴ All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair. Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research, and MAE 6999 MS Thesis Research. Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, BIOMECHANICAL OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing,

power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, biomechanical option degree program prepares students to work in the biomedical industry or to pursue graduate study in biomedical engineering. It provides a strong foundation in human anatomy and physiology, biomechanics, biomaterials, and design of biomedical devices. The mechanical engineering (ME) program is accredited by the Accreditation Commission of ABET (<https://www.abet.org/>).

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Sciences with a Second Major in Mechanical Engineering, Biomedical Option

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if his or her primary degree is a BS. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
SEAS 1001	Engineering Orientation	
CHEM 1111	General Chemistry I (or CHEM 1113)	
MATH 1231	Single-Variable Calculus I ¹	
UW 1020	University Writing ¹	
Humanities or Social Sciences Elective ²		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MAE 1117	Introduction to Engineering Computations	

MATH 1232	Single-Variable Calculus II ¹
MATH 2184	Linear Algebra I
PHYS 1021	University Physics I ¹
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2220	Introduction to the Mechanics of Solids
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
Humanities or Social Sciences Elective ²	
Fifth semester	
APSC 3115	Engineering Analysis III
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
MAE 3166W	
MAE 3191	Mechanical Design of Machine Elements
MAE 3192	Manufacturing Processes and Systems
BME 4820	Anatomy and Physiology for Engineers
Sixth semester	
MAE 3120	Methods of Engineering Experimentation
MAE 3128	Biomechanics I
MAE 3134	Linear System Dynamics
MAE 3167W	Mechanics of Materials Lab
MAE 3187	Heat Transfer
MAE 3193	Mechanical Systems Design
Seventh semester	

MAE 4149	Thermal Systems Design
MAE 4182	Electromechanical Control System Design
MAE 6238	Biomaterials
MAE 4151	Capstone Design Project I
Two Humanities or Social Sciences Elective ²	
Eighth semester	
MAE 4152W	Capstone Design Project II
MAE 3171	Patent Law for Engineers
Two humanities or social sciences electives ²	
One Technical electives ³	

¹ Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

² To satisfy the SEAS Humanities and Social Science requirement, all mechanical engineering students must take one humanities course and two social sciences courses from the University General Education Requirement (p. 42) list; PHIL 2135, and two additional humanities or social science or non-technical courses from the MAE Department pre-approved list of electives. All courses selected to satisfy this requirement must be at least 3 credits each. NOTE: Students in the patent law concentration must take MAE 2170 in lieu of one of the additional humanities or social science or non-technical course.

³ Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research, and MAE 6999 MS Thesis Research. Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, MEDICAL PREPARATION OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, medical preparation option degree program prepares students for application to medical school. Students are prepared to work in research and development or to pursue graduate study in the fields of biomechanics and

biotechnology. The mechanical engineering (ME) program is accredited by the Engineering Accreditation Commission of ABET (<https://www.abet.org/>).

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Sciences with a Second Major in Mechanical Engineering, Medical Preparation Option

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if his or her primary degree is a BS. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
BISC 1115	Introductory Biology: Cells and Molecules	
BISC 1125	Introduction to Cells and Molecules Laboratory	
CHEM 1111	General Chemistry I ¹	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing ¹	
Second semester		
CHEM 1112	General Chemistry II ¹	
MATH 1232	Single-Variable Calculus II ¹	
MATH 2184	Linear Algebra I	
MAE 1117	Introduction to Engineering Computations	

PHYS 1021	University Physics I ¹
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
BISC 1116	Introductory Biology: The Biology of Organisms
BISC 1126	Introduction to Organisms Laboratory
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
Fourth semester	
APSC 2058	Analytical Mechanics II
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
CE 2220	Introduction to the Mechanics of Solids
MAE 1004	Engineering Drawing and Computer Graphics
Fifth semester	
CHEM 2151	Organic Chemistry I ¹
CHEM 2153	Organic Chemistry Laboratory I ¹
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
APSC 3115	Engineering Analysis III
MAE 3191	Mechanical Design of Machine Elements
Humanities or social sciences elective ²	
Sixth semester	
CHEM 2152	Organic Chemistry II ¹
CHEM 2154	Organic Chemistry Laboratory II ¹
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3193	Mechanical Systems Design
MAE 3187	Heat Transfer

Seventh semester

MAE 4149	Thermal Systems Design
MAE 4182	Electromechanical Control System Design
MAE 3192	Manufacturing Processes and Systems
MAE 4151	Capstone Design Project I
MAE 3166W	
One humanities or social sciences elective ²	

Eighth semester

MAE 4152W	Capstone Design Project II
MAE 3167W	Mechanics of Materials Lab
Four humanities or social sciences electives ²	

¹ Course satisfies the university general education requirement in math, science, and writing.

² To satisfy the SEAS humanities and social science requirement, all mechanical engineering students must take one humanities course and two social science courses from the University General Education Requirement (p. 42); PHIL 2135, and two additional humanities or social science or non-technical courses from the MAE Department's pre-approved list of electives. Each course selected to satisfy this requirement must be taken for at least 3 credits. NOTE: Students in the patent law concentration must take MAE 2170 in lieu of one of the additional humanities or social science or non-technical course.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, PATENT LAW OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical engineering, patent law option degree program provides a strong foundation in fundamental principles of patent law and the influences of the U.S. patent system on modern engineering design. Students in this option obtain skills and knowledge that can lead to work as a technical specialist in a patent law firm or in the patent department of an industrial employer. The option provides excellent preparation for pursuit of a law degree that may focus on intellectual

property law. The mechanical engineering (ME) program is accredited by the Accreditation Commission of ABET (<https://www.abet.org/>).

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Sciences with a Second Major in Mechanical Engineering, Patent Law Option

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if his or her primary degree is a BS. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I (or CHEM 1113) ¹	
UW 1020	University Writing ¹	
Humanities or social sciences elective ²		
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
Second semester		
MATH 2184	Linear Algebra I	
MAE 1004	Engineering Drawing and Computer Graphics	
MAE 1117	Introduction to Engineering Computations	
MATH 1232	Single-Variable Calculus II ¹	
PHYS 1021	University Physics I ¹	
Third semester		

APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
Fourth semester	
APSC 2058	Analytical Mechanics II
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
MAE 2170	History and Impact of the U.S. Patent System ^{H/SS Requirement}
CE 2220	Introduction to the Mechanics of Solids
Humanities or social sciences elective ²	
Fifth semester	
MAE 3126	Fluid Mechanics I
MAE 3192	Manufacturing Processes and Systems
APSC 3115	Engineering Analysis III
MAE 3127	Fluid Mechanics Lab
MAE 3166W	
MAE 3191	Mechanical Design of Machine Elements
MAE 3171	Patent Law for Engineers
Sixth semester	
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3187	Heat Transfer
MAE 3193	Mechanical Systems Design
MAE 3167W	Mechanics of Materials Lab
Humanities or social sciences elective ²	
Seventh semester	
MAE 4149	Thermal Systems Design
MAE 4182	Electromechanical Control System Design

MAE 4151	Capstone Design Project I
Two Humanities or social sciences elective ²	
Technical elective ³	
Eighth semester	
MAE 4152W	Capstone Design Project II
MAE 4172	Engineering Design and the Patent System
Humanities or social sciences elective ²	
Two Technical electives ³	

¹Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

²To satisfy the SEAS humanities and social sciences requirement, all mechanical engineering students must take one (1) humanities course and two social sciences courses from the University General Education Requirement (p. 42); PHIL 2135 Ethics in Business and the Professions; and two additional humanities or social sciences or non-technical courses from the MAE Department's pre-approved list of electives. Each course selected to satisfy this requirement must be taken for at least 3 credits. NOTE: Students in the patent law concentration must take MAE 2170 History and Impact of the U.S. Patent System in lieu of one of the additional humanities or social sciences or non-technical course.

³ All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair. Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research, and MAE 6999 MS Thesis Research. Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING, ROBOTICS OPTION

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems. The bachelor of science with a major in mechanical

engineering, robotics option degree program prepares students to work in the robotics industry or to pursue graduate study in robotics engineering. It provides a strong foundation in robotic mechanisms design, analysis, and integration; kinematics, dynamics, and control of robots; mechatronics design; sensing, actuation, and measurement; microprocessors for robotic systems; robotic haptics; and topics on artificial intelligence. The mechanical engineering (ME) program is accredited by the Accreditation Commission of ABET (<https://www.abet.org/>).

Visit the program website (<http://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

Bachelor of Sciences with a Second Major in Mechanical Engineering, Robotics Option

Any undergraduate student who is enrolled at GW may declare a second major in mechanical engineering only if his or her primary degree is a BS. The student must meet the degree requirements for a bachelor of science in mechanical engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students earning other degrees (e.g., BA, BBA, BFA) must meet the requirements for a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in biomedical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I ¹	
or CHEM 1113	General Chemistry for Engineers	
UW 1020	University Writing ¹	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
Humanities or social sciences elective ²		
Second semester		
MATH 2184	Linear Algebra I	

MAE 1004	Engineering Drawing and Computer Graphics
MATH 1232	Single-Variable Calculus II ¹
MAE 1117	Introduction to Engineering Computations
PHYS 1021	University Physics I ¹
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
Fourth semester	
APSC 2058	Analytical Mechanics II
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
CE 2220	Introduction to the Mechanics of Solids
Humanities or social sciences elective ²	
Fifth semester	
MAE 3166W	
MAE 3191	Mechanical Design of Machine Elements
MAE 3192	Manufacturing Processes and Systems
APSC 3115	Engineering Analysis III
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
Sixth semester	
ECE 2115	Engineering Electronics
MAE 3120	Methods of Engineering Experimentation
MAE 3187	Heat Transfer
MAE 3193	Mechanical Systems Design
MAE 3134	Linear System Dynamics
MAE 3167W	Mechanics of Materials Lab

Seventh semester

MAE 4182 Electromechanical Control System Design

MAE 4151 Capstone Design Project I

Technical elective or robotics elective ^{3,4}

Technical elective ³

Two humanities or social sciences electives ²

Eighth semester

MAE 4152W Capstone Design Project II

MAE 4194 Mechatronics Design

MAE 6245 Robotic Systems

Technical elective or robotics elective ^{3,4}

Two Humanities or social sciences elective ²

¹Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

²To satisfy the SEAS humanities and social sciences requirement, all mechanical engineering students must take one humanities course and two social sciences courses from the University General Education Requirement (p. 42); PHIL 2135 Ethics in Business and the Professions; and two additional humanities or social sciences or non-technical courses from the MAE Department's pre-approved list of electives. Each course selected to satisfy this requirement must be taken for at least 3 credits. NOTE: Students in the patent law concentration must take MAE 2170 History and Impact of the U.S. Patent System in lieu of one of the additional humanities or social sciences or non-technical course.

³Robotics option students must take two technical electives. All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair. Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding: MAE 3171 Patent Law for Engineers, MAE 4172 Engineering Design and the Patent System, MAE 6298 Research, MAE 6998 MS Thesis Research, and MAE 6999 MS Thesis Research.

⁴Robotics option students must take one 3-credit robotics elective, which must be selected from the following: MAE 6246 Electromechanical Control Systems, MAE 6254 Applied Nonlinear Control, BME 4835 Introduction to Assistive Robotics, BME 4489 Socially Assistive Robotics and Interactive Learning, or a technical elective course relevant to robotics with

the approval of the undergraduate advisor and department chair.

Visit the program website (<https://www.mae.seas.gwu.edu/programs-degrees/>) for additional information.

BACHELOR OF SCIENCE WITH A MAJOR IN SYSTEMS ENGINEERING

The bachelor of science with a major in systems engineering degree program provides students with a broad and solid education in the basics of mathematical modeling, software and information systems, and the treatment of uncertainty. Systems engineering can be applied in many areas, including communications, energy, environment, finance, health care, information technology, marketing, national defense, project management, software development, and transportation. The program emphasizes analytical thinking and fosters communication skills and awareness of the current professional world in order to prepare students for graduate education or productive professional employment.

Bachelor of Science with a Second Major in Systems Engineering

Any undergraduate student who is enrolled at GW may declare a second major in systems engineering only if their primary degree is a Bachelor of Science. The student must complete all degree requirements for the Bachelor of Science in systems engineering, including SEAS general, major, technical electives, humanities/social science, and SEAS/technical GPA requirements. Students enrolled in other bachelor's degree programs (e.g., BA, BBA, BFA) are required to complete the major as a double degree (p.).

Graduation grade-point average criteria:

To satisfactorily complete a second major in electrical engineering, a student must have a minimum grade-point average of 2.2 in all technical engineering courses outlined in the fifth, sixth, seventh, and eighth semesters of the curriculum.

Visit the program website (<http://www.emse.seas.gwu.edu/bachelor-science-systems-engineering/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled:

- Completion of a total of 129 credits as outlined below.
- Completion of an appropriate internship/co-op experience during the last two years of the program. This requirement may be satisfied by an approved full-time summer position after the second or third year, or by one or two approved part-time positions requiring 15 to 20 hours of work per week during two of the final four semesters. The position may be paid or unpaid. A position obtained through the GW Center for Career Services (<https://>

careerservices.gwu.edu/) usually is acceptable. Consult the faculty advisor for approval.

- A minimum technical GPA of 2.2 and SEAS GPA of 2.0. All technical courses taken during the fifth through eighth semesters, as outlined by the 4-year curriculum sheet respective to each major and approved by the student's faculty advisor, are counted towards the student's technical GPA.
- Completion of an approved technical minor that uses the five professional electives courses built into the curriculum.

Plan of Study

The plan of study lists in sequence all course requirements for the degree. Students should review this information carefully and speak to their advisor before changing the sequence of any of these courses.

Code	Title	Credits
First semester		
EMSE 1001	Introduction to Systems Engineering	1
MATH 1231	Single-Variable Calculus I ¹	3
SEAS 1001	Engineering Orientation	1
UW 1020	University Writing ¹	4
Science elective ²		4
Computing track elective ³		3
Second semester		
COMM 1040	Public Communication	3
or COMM 1041	Interpersonal Communication	
or COMM 1042	Business and Professional Speaking	
ECON 1011	Principles of Economics I ¹	3
MATH 1232	Single-Variable Calculus II ¹	3
PHYS 1021	University Physics I	4
Computing track elective ³		3
Third semester		
APSC 3115	Engineering Analysis III	3
EMSE 2801	Fundamentals of Systems Engineering	3
MATH 2233	Multivariable Calculus ¹	3
PHYS 1022	University Physics II	4
Computing track elective ³		3
Fourth semester		

EMSE 2705	Mathematics of Operations Research	3
EMSE 3815	Requirements Analysis and Elicitation	3
EMSE 4765	Data Analysis for Engineers and Scientists	3
Computing track elective ³		3
Humanities or social sciences elective ⁴		3
Fifth semester		
APSC 2113	Engineering Analysis I	3
EMSE 3740W	Systems Thinking and Policy Modeling	3
EMSE 3850	Quantitative Models in Systems Engineering	3
EMSE 4755	Quality Control and Acceptance Sampling	3
Humanities or social sciences elective ⁴		3
Engineering elective ⁵		3
Sixth semester		
EMSE 3820	Project Management for Engineering Systems	3
EMSE 3855W	Critical Infrastructure Systems	3
EMSE 4410	Engineering Economic Analysis	3
EMSE 4770	Techniques of Risk Analysis and Management	3
PHIL 2135	Ethics in Business and the Professions	3
Engineering elective ⁵		3
Seventh semester		
EMSE 3760	Discrete Systems Simulation	3
EMSE 4190	Senior Project in Systems Engineering I	3
EMSE 4710	Applied Optimization Modeling	3
Two professional electives ⁶		6
Eighth semester		
EMSE 4191	Senior Project in Systems Engineering II	3
STAT 2183W	Intermediate Statistical Laboratory: Statistical Computing Packages	3

Three professional electives ⁶	9
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Total Credits 129

Code	Title	Credits
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Computing track electives: ³

Option One

Taken sequentially:

CSCI 1111	Introduction to Software Development	3
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CSCI 1112	Algorithms and Data Structures	3
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CSCI 2113	Software Engineering	3
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CSCI 2441W	Database Systems and Team Projects	0,3
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Option Two

Taken sequentially:

CSCI 1111	Introduction to Software Development	3
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or CSCI 1121	Introduction to C Programming	
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or CSCI 1131	Introduction to Programming with C	
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EMSE 6574	Programming for Analytics	3
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EMSE 6575	Applied Machine Learning for Analytics	3
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EMSE 6577	Data-Driven Policy	3
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¹Course satisfies the university general education requirement in math, science, and writing.

² One course, or pair of courses, from the following for a total of 4 credits: BISC 111 or BISC 1115 and BISC 1125; or BISC 1112 or BISC 1116 and BISC 1126; or CHEM 1111; or CHEM 1112. Note that Honors Program students and those who have been invited to join the Scholars in Quantitative and Natural Sciences (SQNS) Program take BISC 1120 instead of BISC 1125 for the lab component.

³ Computing track elective requirements may be met with the courses in either option in the list directly above.

⁴ One social and behavioral sciences course and one humanities course must be selected from the University General Education Requirement (p. 42) list.

⁵ In consultation with the faculty advisor, the student selects two approved courses with engineering topics, both offered by the same SEAS department.

⁶ Professional electives: Each systems engineering major will gain specific expertise in a chosen technical area by taking a five-course sequence leading to a minor from another

department of the University. Technical electives are selected with the approval of the student's academic advisor. Areas frequently chosen are computer science, economics, finance, management, mathematics, naval science, statistics, or specific fields of engineering. Consult the advisor for other approved areas and requirements.

Internship requirement—All EMSE majors are required to complete an appropriate internship/co-op experience during the last two years of the program. This requirement may be satisfied by an approved full-time summer position after the second or third year, or by one or two approved part-time positions requiring 15 to 20 hours per week during two of the final four semesters. A position obtained through the GW Career Center (<http://gwired.gwu.edu/career/>) will usually be acceptable; the position may be either paid or unpaid. Consult the advisor for approval.

DUAL BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of arts with a major in applied science and technology (p. 738) (with a minor in computer science (p. 788)) and master of science in the field of computer science (p. 795) degree program. All requirements for both degrees and the minor program must be fulfilled.

6 graduate credits (two courses) may be shared between the two degrees, 3 credits of which should be in CSCI 6011. Students may substitute comparable undergraduate coursework in systems/architecture for CSCI 6011, in which case another 6000-level course must be taken in its place. Students must select two of the following courses as electives for the minor program: CSCI 3212, CSCI 3410, or CSCI 3411. CSCI 6212 may be substituted for CSCI 3212. However, CSCI 6212 cannot be counted as one of the two graduate courses taken during the undergraduate program.

Students must have a minimum 3.4 technical GPA at the time of graduation from the undergraduate program to continue to the master's program as part of a dual degree.

DUAL BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY AND MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of arts with a major in applied science and technology (p. 738) (with a minor in computer science (p. 788)) and master of science in the field of cybersecurity in computer science (p. 796) degree program. All requirements for both degrees and the minor program must be fulfilled.

6 graduate credits (two courses) may be shared between the two degrees, 3 credits of which should be in CSCI 6011. Students may substitute comparable undergraduate coursework in systems/architecture for CSCI 6011, in which case another 6000-level course must be taken in its place. Students must select two of the following courses as electives for the minor program: CSCI 3212, CSCI 3410, or CSCI 3411. CSCI 6212 may be substituted for CSCI 3212. However, CSCI 6212 cannot be counted as one of the two graduate courses taken during the undergraduate program.

Students must have a minimum 3.4 technical GPA at the time of graduation from the undergraduate program to continue to the master's program as part of a dual degree.

DUAL BACHELOR OF ARTS WITH A MAJOR IN APPLIED SCIENCE AND TECHNOLOGY AND MASTER OF SCIENCE IN THE FIELD OF DATA ANALYTICS

The School of Engineering and Applied Science offers a dual bachelor of arts with a major in applied science and technology (p. 738) and master of science in the field of data analytics (p. 798) degree program. All requirements for both degrees must be fulfilled.

6 graduate credits (two courses) may be shared between the two degrees, 3 credits of which should be in CSCI 6011. Students may substitute comparable undergraduate coursework in systems/architecture for CSCI 6011, in which case another 6000-level course must be taken in its place. Students must select two of the following courses as electives for the minor program: CSCI 3212, CSCI 3410, or CSCI 3411. CSCI 6212 may be substituted for CSCI 3212. However, CSCI 6212 cannot be counted as one of the two graduate courses taken during the undergraduate program.

Students must have a minimum 3.4 technical GPA at the time of graduation from the undergraduate program to continue to the master's program as part of a dual degree.

DUAL BACHELOR OF ARTS WITH A MAJOR IN COMPUTER SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of arts with a major in computer science (p. 740) and master of science in the field of computer science (p. 795) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.seas.gwu.edu/bams-or-bsms-computer-science/>) for additional information.

DUAL BACHELOR OF ARTS WITH A MAJOR IN COMPUTER SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of arts with a major in computer science (p. 740) and master of science in the field of cybersecurity in computer science (p. 796) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.seas.gwu.edu/babs-computer-sciencems-cybersecurity-computer-science/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING AND MASTER OF ENGINEERING IN THE FIELD OF REGULATORY BIOMEDICAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in biomedical engineering (p. 743) and master of engineering in the field of regulatory biomedical engineering (p. 791) degree program. The program allows students to take up to 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://graduate.seas.gwu.edu/five-year-program/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF BIOMEDICAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in biomedical engineering (<http://bulletin.gwu.edu/engineering-applied-science/biomedical-engineering/bs/>) and master of engineering in the field of regulatory biomedical engineering (<http://bulletin.gwu.edu/engineering-applied-science/biomedical-engineering/ms/>) degree program. The program allows students to take up to 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://graduate.seas.gwu.edu/bs-ms-biomedical-engineering/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN BIOMEDICAL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of science with a major in biomedical engineering and masters of science in the field of computer science degree program. 6 credits are shared between degrees. Students are expected to complete the minor program in computer science while enrolled in their undergraduate program. All requirements for both the bachelor's and master's programs must be fulfilled.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF ENVIRONMENTAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in civil engineering (p. 744) and master of science in the field of environmental engineering (p. 793) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.cee.seas.gwu.edu/five-year-dual-degree-program-bs-and-ms-civil-engineering/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF STRUCTURAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in civil engineering (p. 744) and master of science in the field of structural engineering (<https://www.programs.gwu.edu/graduate/structural-engineering/>) degree program. The program allows students to take up to 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.cee.seas.gwu.edu/five-year-dual-degree-program-bs-and-ms-civil-engineering/>) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CSCI 1121	Introduction to C Programming	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
One humanities or social sciences elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
One humanities or social sciences elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	

GEOL 1001 Physical Geology

One humanities or social sciences elective **

Fifth semester

APSC 3115	Engineering Analysis III
CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I

One humanities or social sciences course **

Sixth semester

CE 3240	Structural Theory II
CE 3310	Reinforced Concrete Structures
Civil engineering elective	
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory (One humanities or social sciences elective)

One humanities or social sciences elective **

Seventh semester

CE 4320	Metal Structures
CE 4341	Senior Design Project I
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design

One engineering elective

Eighth semester

CE 4330W	Contracts and Specifications
CE 4342	Senior Design Project II

Two engineering electives

One CE master of science course

Ninth semester

Four CE master of science courses

Tenth semester

Four CE master of science courses

*Course satisfies the university general education requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 42) the remaining course must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>) At least one humanities course must be selected from the University General Education Requirement list; (p. 42) the remaining courses must be selected from either the University General Education Requirement list or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>)

A complete list of engineering electives can be found on the department's website (<http://www.cee.seas.gwu.edu/programs-degrees/>).

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN CIVIL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF TRANSPORTATION ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in civil engineering (p. 744) and master of science in the field of transportation engineering (<https://www.programs.gwu.edu/graduate/transportation-engineering/>) degree program. The program allows students to take up to 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.cee.seas.gwu.edu/five-year-dual-degree-program-bs-and-ms-civil-engineering/>) for additional information.

REQUIREMENTS

Recommended program of study

Code	Title	Credits
First semester		
CE 1010	Introduction to Civil and Environmental Engineering	
CHEM 1111	General Chemistry I *	
MATH 1231	Single-Variable Calculus I *	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing *	
One humanities or social sciences elective **		
Second semester		
CSCI 1121	Introduction to C Programming	
MAE 1004	Engineering Drawing and Computer Graphics	
MATH 1232	Single-Variable Calculus II *	
PHYS 1021	University Physics I *	
One humanities or social sciences elective **		
Third semester		
APSC 2057	Analytical Mechanics I	
APSC 2113	Engineering Analysis I	
MATH 2233	Multivariable Calculus *	
PHYS 1022	University Physics II *	
One humanities or social sciences elective **		
Fourth semester		
APSC 2058	Analytical Mechanics II	
CE 2210	Engineering Computations	
CE 2220	Introduction to the Mechanics of Solids	
CE 2710	Introduction to Transportation Engineering	
GEOL 1001	Physical Geology *	
One humanities or social sciences elective **		
Fifth semester		
APSC 3115	Engineering Analysis III	

CE 3110W	Civil Engineering Materials
CE 3111W	Civil Engineering Materials Lab
CE 3230	Structural Theory I
CE 3720	Highway Engineering and Design
MAE 3126	Fluid Mechanics I
One humanities or social sciences elective **	

Sixth semester

CE 3240	Structural Theory II
CE 3310	Reinforced Concrete Structures
CE 3520	Environmental Engineering I: Water Resources and Water Quality
CE 3521	Environmental Engineering Laboratory
CE 3610	Hydraulics
CE 3611	Hydraulics Laboratory
STAT 2183	Intermediate Statistics Lab/Packages

Seventh semester

CE 4320	Metal Structures
CE 4341	Senior Design Project I
CE 4410	Introduction to Geotechnical Engineering
CE 4411	Geotechnical Engineering Laboratory
CE 4530	Environmental Engineering II: Water Supply and Pollution Control
CE 4620	Hydrology and Hydraulic Design
One humanities or social sciences course **	

Eighth semester

CE 4330W	Contracts and Specifications
CE 4342	Senior Design Project II
CE 6403	Foundation Engineering
Two engineering electives	
One CE master of science course	

Ninth semester

Four CE master of science courses	
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Tenth semester

Four CE master of science courses		
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Code	Title	Credits
Engineering electives		

CE 6102	Application of Probability Methods in Civil Engineering	
CE 6201	Advanced Strength of Materials	
CE 6202	Methods of Structural Analysis	
CE 6203	Reliability Analysis of Engineering Structures	
CE 6204	Analysis of Plates and Shells	
CE 6205	Theory of Structural Stability	
CE 6206	Continuum Mechanics	
CE 6207	Theory of Elasticity I	
CE 6208	Plasticity	
CE 6209	Mechanics of Composite Materials	
CE 6210	Introduction to Finite Element Analysis	
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6310	Advanced Reinforced Concrete Structures	
CE 6311	Bridge Design	
CE 6320	Design of Metal Structures	
CE 6321	Advanced Metal Structures	
CE 6340	Structural Dynamics	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6401	Fundamentals of Soil Behavior	
CE 6402	Theoretical Geomechanics	
CE 6403	Foundation Engineering	
CE 6404	Geotechnical Earthquake Engineering	
CE 6405	Rock Engineering	
CE 6501	Environmental Chemistry	

CE 6502	Advanced Sanitary Engineering Design
CE 6503	Principles of Environmental Engineering
CE 6504	Water and Wastewater Treatment Processes
CE 6505	Environmental Impact Assessment
CE 6506	Microbiology for Environmental Engineers
CE 6507	Advanced Treatment Processes
CE 6508	Industrial Waste Treatment
CE 6509	Introduction to Hazardous Wastes
CE 6601	Open Channel Flow
CE 6602	Hydraulic Engineering
CE 6603	Design of Dams
CE 6604	Advanced Hydrology
CE 6605	Ground Water and Seepage
CE 6606	Mechanics of Water Waves
CE 6607	Water Resources Planning and Control
CE 6608	Hydraulic Modeling
CE 6609	Numerical Methods in Environmental and Water Resources
CE 6701	Analytical Mechanics
CE 6702	Vehicle Dynamics
CE 6705	Nonlinear Finite Element Modeling and Simulation
CE 6706	Pavement and Runway Design
CE 6707	Systems Dynamics Modeling and Control
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems
CE 6730	Sustainable Urban Planning
CE 6800	Special Topics
EMSE 6410	Survey of Finance and Engineering Economics

*Course satisfies the university general education requirement in math, science, and writing.

**At least two social and behavioral sciences courses must be selected from the University General Education Requirement list; (p. 42) the remaining course must be selected from either the University General Education Requirement list (p. 42) or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>) At least one humanities course must be selected from the University General Education Requirement list; (p. 42) the remaining courses must be selected from either the University General Education Requirement list (p. 42) or the SEAS General Education Requirement list. (<https://www.seas.gwu.edu/humanities-and-social-science-requirement/>)

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in computer engineering (p. 753) and master of science in the field of computer engineering (p. 794) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.ece.seas.gwu.edu/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF ELECTRICAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in computer engineering (p. 753) and master of science in the field of electrical engineering (p. 799) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.ece.seas.gwu.edu/>) for additional information.

graduate.seas.gwu.edu/five-year-program/) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF TELECOMMUNICATIONS ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in computer engineering (p. 753) and master of science in the field of telecommunications engineering (p. 807) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://graduate.seas.gwu.edu/five-year-program/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of science with a major in computer science (p. 740) and master of science in the field of computer science (p. 755) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.seas.gwu.edu/bams-or-bsms-computer-science/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN COMPUTER SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

The School of Engineering and Applied Science offers a dual bachelor of science with a major in computer science (p. 755) and master of science in the field of cybersecurity in computer science (p. 796) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.seas.gwu.edu/babs-computer-sciencems-cybersecurity-computer-science/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in electrical engineering (p. 759) and master of science in the field of computer engineering (p. 794) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://graduate.seas.gwu.edu/five-year-program/>) for additional information.

DUAL BS WITH A MAJOR IN ELECTRICAL ENGINEERING AND MS IN THE FIELD OF ELECTRICAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in electrical engineering (p. 759) and master of science in the field of electrical engineering (p. 799) degree program. The

program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://graduate.seas.gwu.edu/bs-ms-electrical-engineering/>) for additional information.

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN MECHANICAL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF MECHANICAL ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in mechanical engineering (p. 764) and master of science in the field of mechanical engineering (p. 804) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://www.mae.seas.gwu.edu/5-year-dual-degree-program/>) for additional information.

REQUIREMENTS

Code	Title	Credits
First semester		
CHEM 1111	General Chemistry I (or CHEM 1113) ¹	
MAE 1001	Introduction to Mechanical and Aerospace Engineering	
MATH 1231	Single-Variable Calculus I ¹	
SEAS 1001	Engineering Orientation	
UW 1020	University Writing	
Humanities or social sciences elective ²		
Second semester		
MAE 1004	Engineering Drawing and Computer Graphics	
MAE 1117	Introduction to Engineering Computations	

MATH 1232	Single-Variable Calculus II ¹
MATH 2184	Linear Algebra I
PHYS 1021	University Physics I ¹
Third semester	
APSC 2057	Analytical Mechanics I
APSC 2113	Engineering Analysis I
MAE 2117	Engineering Computations
MATH 2233	Multivariable Calculus ¹
PHYS 1022	University Physics II ¹
Fourth semester	
APSC 2058	Analytical Mechanics II
CE 2220	Introduction to the Mechanics of Solids
ECE 2110	Circuit Theory
MAE 2131	Thermodynamics
Humanities or social sciences elective ²	
Fifth semester	
APSC 3115	Engineering Analysis III
MAE 3126	Fluid Mechanics I
MAE 3127	Fluid Mechanics Lab
MAE 3166W	
MAE 3191	Mechanical Design of Machine Elements
MAE 3192	Manufacturing Processes and Systems
Humanities or social sciences elective ²	
Sixth semester	
MAE 3120	Methods of Engineering Experimentation
MAE 3134	Linear System Dynamics
MAE 3167W	Mechanics of Materials Lab
MAE 3187	Heat Transfer
MAE 3193	Mechanical Systems Design
Humanities or social sciences elective ²	
Seventh semester	

DUAL BACHELOR OF SCIENCE WITH A MAJOR IN ELECTRICAL ENGINEERING AND MASTER OF SCIENCE IN THE FIELD OF TELECOMMUNICATIONS ENGINEERING

The School of Engineering and Applied Science offers a dual bachelor of science with a major in electrical engineering (p. 759) and master of science in the field of telecommunications engineering (p. 807) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the program website (<https://graduate.seas.gwu.edu/five-year-program/>) for additional information.

DUAL SEAS BACHELOR OF SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

The School of Engineering and Applied Science (SEAS) offers a dual degree program that includes a bachelor of science in one of the SEAS majors listed below (p. 688) (with a minor in computer science (p. 788)) and master of science in the field of computer science (p. 795). All requirements for both degrees and the minor program must be fulfilled.

The following bachelor of science majors are eligible for this program:

- Biomedical engineering
- Civil engineering
- Civil engineering, option in environment engineering, medical preparation, civil engineering, or transportation and sustainability
- Computer engineering
- Electrical engineering
- Electrical engineering, option in energy or medical preparation
- Systems engineering
- Mechanical engineering
- Mechanical engineering, option in aerospace, biomechanical, medical preparation, patent law, or robotics

6 graduate credits (two courses) may be shared between the two degrees, 3 credits of which should be in CSCI 6011. Students may substitute comparable undergraduate coursework in systems/architecture for CSCI

MAE 4149	Thermal Systems Design
MAE 4151	Capstone Design Project I
MAE 4182	Electromechanical Control System Design
Technical elective ³	
Technical elective	
Humanities or social sciences elective ²	
Eighth semester	
MAE 4152W	Capstone Design Project II
Technical elective ³	
Technical elective	
Technical elective	
Humanities or social sciences elective ²	

¹Course satisfies the University General Education Requirement (p. 42) in math, science, and writing.

²To satisfy the SEAS Humanities and Social Science requirement, all mechanical engineering students must take one humanities course and two social Sciences courses from University General Education requirement; PHIL 2135, and two additional humanities or social science or non-technical courses from the MAE Department's pre-approved list of electives. All courses selected to satisfy this requirement must be at least 3-credits each. NOTE: Students in the patent law concentration must take MAE 2170 in lieu of one of the additional humanities or social science or non-technical course.

³All technical electives must be approved by the undergraduate advisor. On a case-by-case basis, technical electives may be chosen from other departments if approved by both the undergraduate advisor and the department chair.

Code	Title	Credits
Technical electives are chosen from MAE courses in the 3000, 4000, and 6000 series, excluding:		
MAE 3171	Patent Law for Engineers	
MAE 4172	Engineering Design and the Patent System	
MAE 6298	Research	
MAE 6998 & MAE 6999	MS Thesis Research and MS Thesis Research	

6011, in which case another 6000-level course must be taken in its place. Students must select two of the following courses as electives for the minor program: CSCI 3410, CSCI 3212, or CSCI 3411. CSCI 6212 may be substituted for CSCI 3212. However, CSCI 6212 cannot be counted as one of the two graduate courses taken during the undergraduate program.

Students must have a minimum 3.4 technical GPA at the time of graduation from the undergraduate program to continue to the master's program as part of a dual degree.

DUAL SEAS BACHELOR OF SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

The School of Engineering and Applied Science (SEAS) offers a dual degree program that includes a bachelor of science in one of the SEAS majors listed below (p. 688) (with a minor in computer science (p. 788)) and master of science in the field of cybersecurity in computer science (p. 796). All requirements for both degrees and the minor program must be fulfilled.

The following bachelor of science majors are eligible for this program:

- Biomedical engineering
- Civil engineering
- Civil engineering, option in environment engineering, medical preparation, civil engineering, or transportation and sustainability
- Computer engineering
- Electrical engineering
- Electrical engineering, option in energy or medical preparation
- Systems engineering
- Mechanical engineering
- Mechanical engineering, option in aerospace, biomechanical, medical preparation, patent law, or robotics

6 graduate credits (two courses) may be shared between the two degrees, 3 credits of which should be in CSCI 6011. Students may substitute comparable undergraduate coursework in systems/architecture for CSCI 6011, in which case another 6000-level course must be taken in its place. Students must select two of the following courses as electives for the minor program: CSCI 3212, CSCI 3410, or CSCI 3411. CSCI 6212 may be substituted for CSCI 3212. However, CSCI 6212 cannot be counted as one of

the two graduate courses taken during the undergraduate program.

Students must have a minimum 3.4 technical GPA at the time of graduation from the undergraduate program to continue to the master's program as part of a dual degree.

DUAL SEAS BACHELOR OF SCIENCE AND MASTER OF SCIENCE IN THE FIELD OF DATA ANALYTICS

The School of Engineering and Applied Science (SEAS) offers a dual degree program that includes a bachelor of science in one of the SEAS majors listed below (p. 688) (with a minor in computer science (p. 788)) and master of science in the field of data analytics (p. 798). All requirements for both degrees and the minor program must be fulfilled.

The following bachelor of science majors are eligible for this program:

- Biomedical engineering
- Civil engineering
- Civil engineering, option in environment engineering, medical preparation, civil engineering, or transportation and sustainability
- Computer engineering
- Electrical engineering
- Electrical engineering, option in energy or medical preparation
- Systems engineering
- Mechanical engineering
- Mechanical engineering, option in aerospace, biomechanical, medical preparation, patent law, or robotics

6 graduate credits (two courses) may be shared between the two degrees, 3 credits of which should be in CSCI 6011. Students may substitute comparable undergraduate coursework in systems/architecture for CSCI 6011, in which case another 6000-level course must be taken in its place. Students must select two of the following courses as electives for the minor program: CSCI 3212, CSCI 3410, or CSCI 3411. CSCI 6212 may be substituted for CSCI 3212. However, CSCI 6212 cannot be counted as one of the two graduate courses taken during the undergraduate program.

Students must have a minimum 3.4 technical GPA at the time of graduation from the undergraduate program to continue to the master's program as part of a dual degree.

MINOR IN BIOMEDICAL ENGINEERING

REQUIREMENTS

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program:		
APSC 2113	Engineering Analysis I	
PHYS 1022	University Physics II	
Required		
BME 3820	Principles and Practice of Biomedical Engineering	
ECE 2110	Circuit Theory	
ECE 2210	Circuits, Signals, and Systems	
Electives		
Two of the following:		
BME 4830	Introduction to Medical Imaging Methods	
ECE 3220	Introduction to Digital Signal Processing	
MAE 3128	Biomechanics I	
MAE 4168	Introduction to Biomaterials	
PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences	
PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences	

Visit the program website (<https://www.seas.gwu.edu/undergraduate-programs/>) for additional information.

MINOR IN COMPUTER ENGINEERING

REQUIREMENTS

The curriculum consists of prerequisite, core, and elective courses. Excluding prerequisite courses, 18 credits are required for the minor; at least 9 of those credits must be in courses not required, but could be taken as electives, for the major.

Students must have a grade-point average of 2.2 or above and elective ECE courses taken for the minor in order to fulfill minor requirements.

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program.		
APSC 2113	Engineering Analysis I ¹	
ECE 1120	C Programming for Electrical and Computer Engineering	
PHYS 1022	University Physics II ¹	
or PHYS 1026	University Physics II with Biological Applications	
Core		
ECE 2110	Circuit Theory	
ECE 2115	Engineering Electronics	
ECE 2140	Design of Logic Systems	
Electives		
Two of the following:		
ECE 3130	Digital Electronics and Design	
ECE 3135	Digital Design with FPGAs	
ECE 3220	Introduction to Digital Signal Processing ¹	
ECE 3310	Introduction to Electromagnetics	
ECE 3515	Computer Organization	
ECE 3520	Microprocessors: Software, Hardware, and Interfacing	
ECE 3525	Introduction to Embedded Systems ¹	
ECE 4140	VLSI Design and Simulation ¹	
ECE 4535	Computer Architecture and Design ¹	
ECE 4415	Introduction to Computer Networks ²	
ECE 4425	Data Communications Laboratory ²	

¹ Requires additional prerequisites.

² ECE 4415 Introduction to Computer Networks and ECE 4425 Data Communications Laboratory must be taken concurrently.

To earn a minor in computer engineering, a student must have a GPA of 2.20 or higher in the ECE courses defining the minor.

Visit the program website (<https://www.ece.seas.gwu.edu/minor-computer-engineering/>) for additional information.

MINOR IN ELECTRICAL ENGINEERING REQUIREMENTS

The curriculum consists of prerequisite, core, and elective courses. Excluding prerequisite courses, 17 credits are required for the minor; at least 9 of those credits must be in courses not required, but could be taken as electives, for the major.

Students must have a 2.2 GPA or above in required and elective ECE courses taken for the minor in order to fulfill minor requirements.

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor:		
APSC 2113	Engineering Analysis I *	
PHYS 1022	University Physics II *	
or PHYS 1026	University Physics II with Biological Applications	
Required core		
ECE 2110	Circuit Theory	
ECE 2115	Engineering Electronics	
ECE 2210	Circuits, Signals, and Systems	
Electives		
Two of the following:		
ECE 3125	Analog Electronics Design	
ECE 3130	Digital Electronics and Design *	
ECE 3220	Introduction to Digital Signal Processing	
ECE 3315	Fields and Waves I *	
ECE 3410	Communications Engineering *	
ECE 3520	Microprocessors: Software, Hardware, and Interfacing *	
ECE 4415	Introduction to Computer Networks **	

ECE 4425	Data Communications Laboratory **
ECE 4610	Electrical Energy Conversion
ECE 4620	Electrical Power Systems
ECE 4710	Control Systems Design *

*Requires additional prerequisites.

**ECE 4415 Introduction to Computer Networks and ECE 4425 Data Communications Laboratory must be taken concurrently.

MINOR IN MECHANICAL ENGINEERING REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses for the minor and successful completion of all prerequisite courses.

Code	Title	Credits
Required		
Prerequisites		
The following courses must be completed before beginning the minor:		
APSC 2113	Engineering Analysis I	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
PHYS 1021	University Physics I	
Minor courses		
APSC 2057	Analytical Mechanics I	
APSC 2058	Analytical Mechanics II	
CE 2220	Introduction to the Mechanics of Solids	
MAE 2131	Thermodynamics	
MAE 3126	Fluid Mechanics I (taken for 3 credits)	
MAE 3187	Heat Transfer	
or MAE 3191	Mechanical Design of Machine Elements	

MINOR IN OPERATIONS RESEARCH

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses, and successful completion of all prerequisite courses.

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program:		
APSC 3115	Engineering Analysis III	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus	
Minor courses		
Required		
EMSE 2705	Mathematics of Operations Research	
EMSE 3701		
EMSE 3740W	Systems Thinking and Policy Modeling	
EMSE 4755	Quality Control and Acceptance Sampling	
Electives		
6 credits (two courses) selected in consultation with the minor advisor.		

MINOR IN SYSTEMS ENGINEERING

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in courses for the minor, including 15 credits in required courses and one 3-credit elective course, and satisfactory completion of all prerequisite courses.

Code	Title	Credits
Prerequisites		
The following courses must be completed before beginning the minor program:		

APSC 3115	Engineering Analysis III
COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
or COMM 1042	Business and Professional Speaking
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
MATH 2233	Multivariable Calculus
MATH 2184	Linear Algebra I
or EMSE 2705	Mathematics of Operations Research
UW 1020	University Writing
Required	
EMSE 2801	Fundamentals of Systems Engineering
EMSE 3815	Requirements Analysis and Elicitation
EMSE 3820	Project Management for Engineering Systems
EMSE 3850	Quantitative Models in Systems Engineering
EMSE 4765	Data Analysis for Engineers and Scientists

Elective

One additional EMSE course selected in consultation with the advisor.

MINOR IN COMPUTER SCIENCE

This minor, offered by the Department of Computer Science, is for students in other GW schools as well as other majors within the School of Engineering and Applied Science. The curriculum consists of two segments: core courses and electives whose purpose is to provide the student with depth in an area of computer science. The total number of credits for the minor is 18.

Criteria for admission

To be considered for admission to the second major in computer science, a student must satisfy the following criteria:

- Prior completion of CSCI 1011 CSCI 1111, CSCI 1121 CSCI 1121, or CSCI 1112 with a minimum grade of B.
- Prior completion of MATH 1220 and MATH 1221, or MATH 1231, with a minimum grade of B-.

- A minimum overall grade-point average of 3.0 at the time of application to the major.

Application deadline

The application is due no later than the start of the 5th semester of study at GW or completion of the 60th credit, whichever comes first. Contact the School of Engineering and Applied Science Undergraduate Advising Office (<https://www.seas.gwu.edu/academic-advising/>) for specific application deadlines.

Credits in residence requirement

- For students pursuing a minor, at least 15 credits in computer science courses must be completed at GW.

Graduation grade-point average criteria

- To satisfactorily complete a minor in computer science, a student must have a minimum grade-point average of 2.2 in all the computer science courses.

Visit the program website (<https://www.cs.seas.gwu.edu/minor-computer-science/>) for additional information.

REQUIREMENTS

Code	Title	Credits
Required		
CSCI 1111	Introduction to Software Development	
CSCI 1112	Algorithms and Data Structures	
CSCI 1311	Discrete Structures I	
CSCI 2113	Software Engineering	
Electives		
A minimum of two CSCI elective courses requiring CSCI 2113 or above as a prerequisite (excluding CSCI 2312 and equivalent courses). Possible courses include:		
CSCI 2441	Database Systems and Team Projects	
CSCI 2461	Computer Architecture I	
CSCI 3212	Algorithms	
CSCI 3313	Foundations of Computing	
CSCI 3410	Systems Programming	
CSCI 3411	Operating Systems	
CSCI 4237	Software Design for Handheld Devices	
CSCI 4331	Cryptography	
CSCI 4341	Continuous Algorithms	

CSCI 4342 Computational Linear Algebra and Applications

CSCI 4364 Machine Learning

CSCI 4431 Computer Networks I

CSCI 4527 Introduction to Computer Vision

CSCI 4531 Computer Security

CSCI 4541 Network Security

CSCI 4554 Computer Graphics I

CSCI 4561 Design of User-Interface Programs

Other electives may be substituted with the approval of the program advisor.

MASTER'S PROGRAMS

MASTER OF ENGINEERING IN THE FIELD OF CLOUD COMPUTING MANAGEMENT

The master of engineering (MEng) in the field of cloud computing management is an interdisciplinary program that draws courses from three departments across SEAS: computer science, electrical and computer engineering, and engineering management and systems engineering. The purpose of the MEng in cloud computing management is to address the broad scope of business and technical issues associated with managing an IT infrastructure in a cloud-based environment. Students study issues of strategy, security, data analytics, and delivery of microservices across multiple cloud computing models. The program is designed for students with technical degrees or nontechnical degrees who wish to study the evolving issues of transforming critical business operations to thrive in the dynamic cloud computing environment.

Visit the SEAS online programs website (<https://onlinecybersecurity.seas.gwu.edu/me-cloud-computing-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
CSCI 6012	Cybersecurity and Privacy	
CSCI 6018	Cloud Application Architecture	
ECE 6005	Computer Architecture and Design	

ECE 6130	Big Data and Cloud Computing (Prerequisite: ECE 6005 or ECE 6015)
ECE 6132	Secure Cloud Computing
EMSE 6767	Applied Data Analytics
EMSE 6769	Applied Machine Learning for Engineers
EMSE 6820	Program and Project Management
SEAS 6411	Management and Compliance in Cloud Computing (Prerequisite: ECE 6132)
SEAS 6412	Cloud Migration Strategy (Prerequisite: ECE 6132)

MASTER OF ENGINEERING IN THE FIELD OF CONSTRUCTION ENGINEERING

GW's Department of Civil and Environmental Engineering offers the master of engineering (MEng) in construction engineering. The program helps students approach, evaluate and devise solutions to some of the largest problems facing modern infrastructure and the environment today. This program provides students with the knowledge of main trends and technological innovations in the modern construction industry through coursework and interaction with prominent industry leaders. The curriculum is designed to reflect the most up-to-date knowledge in the areas of planning, financing, procuring, constructing, and managing constructed facilities. Upon completion of the program, graduates can expect to have the knowledge and skills needed to be construction engineering experts, locally and nationally.

See the School of Engineering and Applied Science (<https://www.seas.gwu.edu/graduate-programs/>) website for additional information.

REQUIREMENTS

Code	Title	Credits
Required		
Eight courses (24 credits) from the following:		
CE 6111	Project Management For Construction	
CE 6112	Construction Project Acquisition	
CE 6113	Construction Contracts, Insurance, and Bonds	
CE 6114	Construction Methods, Materials, Equipment, and Systems	

CE 6115	Project Planning and Scheduling
CE 6116	Green Building Design and Construction
CE 6117	Construction Finance and Engineering Economics
CE 6118	Advanced Construction and Computer-Aided Design
CE 6119	Construction Safety And Quality Control
CE 6121	Construction Project Control

Electives

6 credits in elective courses, which may be in other SEAS departments with the advisor's approval.

MASTER OF ENGINEERING IN THE FIELD OF CYBERSECURITY POLICY AND COMPLIANCE

The online master's in cybersecurity policy and compliance offers an engineering management-focused course of study, providing an overview of cryptography, security systems, algorithms, and software paradigms, a perfect choice for those interested in exploring the complex intersections between policy, business, and technology. Students of the program will become familiar with industry-recognized frameworks and methodologies, training them to take charge in the fast-paced world of information security.

Upon graduating, master's in cybersecurity students will be better prepared to implement appropriate forensic analyses of cyber incidents and use predictive analytics modeling to forecast cyberattacks. They will be able to devise and implement solutions that go beyond traditional IT practices to delineate specific and actionable cyber intelligence. In addition, they will be adept at formulating short- and long-term cybersecurity strategies and policies for their enterprises by identifying compliance laws and applying the industry's best practices. Students will be able to design an organization's mobility solution while integrating mobile device management with these practices.

Finally, graduates of our online cybersecurity master's degree will be able to manage threat vulnerabilities and exploits, designing and implementing cybersecurity situational awareness procedures for an organization to safeguard its sensitive data and sustain its fundamental operations. They will be ready to face the future of information assurance with the creative, technical, and managerial skills that employers are seeking in government, intelligence, and security analysts and executives.

Visit the SEAS online programs website (<https://onlinecybersecurity.seas.gwu.edu/me-cybersecurity-policy-compliance/>) for additional information.

REQUIREMENTS

Credit Requirements

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
CSCI 6012	Cybersecurity and Privacy	
CSCI 6532	Information Policy	
EMSE 6540	Management of Information and Systems Security	
CSCI 6013	Security in Mobile Computing	
CSCI 6534	Information Security in Government	
ECE 6132	Secure Cloud Computing	
EMSE 6542	Cybersecurity Risk Management and Compliance	
EMSE 6543	Managing the Protection of Information Assets and Systems	
EMSE 6544	Auditing, Monitoring, and Intrusion Detection for Information Security Managers	
EMSE 6546	Cybercrime for Information Security Managers	

MASTER OF ENGINEERING IN THE FIELD OF CYBERSECURITY ANALYTICS

The master of engineering (MEng) in the field of cybersecurity analytics is an interdisciplinary program that draws courses from departments across SEAS: computer science, electrical and computer engineering, and engineering management and systems engineering. The purpose of the MEng in cybersecurity analytics is to address technical challenges in the rapidly changing field of cybersecurity. In this program, students will explore topics related to protecting critical infrastructure including secure systems and hardware design, cyber resilience, intrusion detection, and defensive cybersecurity operations. The program is designed for students with a technical background but is accessible to those with relevant nontechnical degrees as well.

Visit the SEAS online program website (<https://onlinecybersecurity.seas.gwu.edu/me-cybersecurity-analytics/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
Required		
SEAS 6014	Introduction to Software and Hardware Security	
CSCI 6016	Applied Network Defense (Prerequisite: SEAS 6014)	
CSCI 6015	Cyber Forensics	
ECE 6132	Secure Cloud Computing	
EMSE 6540	Management of Information and Systems Security	
EMSE 6544	Auditing, Monitoring, and Intrusion Detection for Information Security Managers (Prerequisite: EMSE 6540)	
EMSE 6547	Cyber Resilience	
EMSE 6560	Open-source Intelligence Analysis	
EMSE 6767	Applied Data Analytics	
SEAS 6410	Security Data Visualization (Prerequisite: EMSE 6767)	

MASTER OF ENGINEERING IN THE FIELD OF REGULATORY BIOMEDICAL ENGINEERING

The master of engineering in regulatory biomedical engineering is an interdisciplinary program offered through the Department of Biomedical Engineering in partnership with GW's School of Medicine and Health Sciences. The program addresses an unmet need for a graduate program to train engineers in the specific set of skills of regulatory science, biomedical innovation, and entrepreneurship. Students with training in engineering or physics and/or relevant industry/government experience study the fundamentals of biomedical engineering, global regulatory affairs, regulatory strategy in the development of devices and diagnostics, regulatory compliance, engineering patent law, medical measurements, and instrument design.

In addition to coursework, students gain experience in SBIR/STTR grant applications and/or FDA Premarket Notification (510(k)) submissions for medical devices. The program is

30 credit hours distributed across four areas: Biomedical engineering coursework and practicum (12 credits) Regulatory issues (9 credits) Patent law for engineers (3 credits) Targeted electives from various disciplines (6 credits) Students will require 12-24 months or 3 semesters for completion.

Students who complete the program acquire skill sets comparable to those of an engineer with five to seven years of experience, making them competitive in the medical device or imaging industries. Graduates are equipped to provide in-house regulatory expertise to device companies, or join government regulatory and compliance institutions.

Visit the program website (<https://www.bme.seas.gwu.edu/master-engineering-regulatory-biomedical-engineering-rbme/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 24 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
BME 6481	Regulatory Law for Medical Devices	
BME 6482	Medical Measurements	
BME 6483	Medical Instrumentation Design	
BME 6994	Biomedical Engineering Regulatory Practicum I	
BME 6995	Biomedical Engineering Regulatory Practicum II	
RAFF 6201	Introduction to Global Regulatory Affairs	
RAFF 6203	Regulatory Device Diagnostics	
RAFF 6205	Regulatory Affairs Compliance	
Elective		
6 credits from the following:		
BME 6486	Clinical Medicine for Engineers	
BME 6820	Anatomy and Physiology for Engineers	
BME 6830	Introduction to Medical Imaging Methods	
BME 6487	Rehabilitation Medicine Engineering	
CSCI 4531	Computer Security	
CSCI 4532	Information Policy	

ECE 6565	Telecommunications Security
EMSE 6020	Decision Making with Uncertainty
EMSE 6765	Data Analysis for Engineers and Scientists
EMSE 6770	Techniques of Risk Analysis and Management
MAE 6204	Tissue Engineering
MAE 6238	Biomaterials

MASTER OF SCIENCE IN THE FIELD OF BIOMEDICAL ENGINEERING

The School of Engineering and Applied Science offers the MS degrees in biomedical engineering through the Department of Biomedical Engineering. The MS program in biomedical engineering at GW is a 30-credit-hour graduate program, which can include a 6-credit master's thesis.

The program is strongly interdisciplinary and prepares students to apply engineering principles to problems in medicine and biology, to understand and model multiple attributes of living systems, and to use this knowledge to develop novel biomedical systems and devices. Graduate students can choose from among a large array of areas of study, mentored by both core Departmental faculty and external faculty from SEAS and elsewhere in GW, who qualify, on the basis of their expertise and teaching abilities, for joint or secondary appointments in the Biomedical Engineering Department. The core faculty expertise includes cancer therapy, cardiac electrophysiology, biosensors, microfluidics, ultrasound applications in medicine, and medical imaging and image analysis.

The program is offered on the main campus in Foggy Bottom, and take full advantage of the close proximity of the Department's home in the new Science and Engineering Hall to the GW School of Medicine, the Milken Institute School of Public Health at GW, and the GW Hospital. These interactions are supplemented by collaborations that take advantage of nearby clinical and research facilities, including Children's National Health System and Federal agencies such as the FDA and NIH.

Visit the program website (<http://www.bme.seas.gwu.edu/master-science-biomedical-engineering/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 15 credits in required courses and 15 credits in elective courses (non-thesis option) or 6 credits in thesis and

6 credits in elective courses (thesis option). Students are required to attend a minimum of 8 engineering colloquia during their MS studies, at least five of these must be BME Department events.

Code	Title	Credits
Required		
Five 6000-level BME courses (15 credits) excluding BME 6050.		
Required of students who have selected the thesis option		
BME 6998	Thesis Research	
BME 6999	Thesis Research	
Electives		
For non-thesis option, five elective courses (15 credits). For thesis option, three elective courses (9 credits). All electives must be approved by the advisor. Some possible electives listed below.		
ANAT 8120	Graduate Human Gross Anatomy	
APSC 6212	Analytical Methods in Engineering II	
APSC 6213	Analytical Methods in Engineering III	
BME 6481	Regulatory Law for Medical Devices	
ECE 6030	Device Electronics	
ECE 6035	Introduction to Computer Networks	
ECE 6215	Introduction to MEMS	
ECE 6800	Computational Techniques in Electrical Engineering	
EHS 6227	Introduction to Human Health in Space	
EMSE 6765	Data Analysis for Engineers and Scientists	
EXNS 6202	Advanced Exercise Physiology I	
EXNS 6223	Biomechanical Analysis	
MAE 6204	Tissue Engineering	
MAE 6238	Biomaterials	
MATH 6522	Introduction to Numerical Analysis	
MATH 6540	Topics in Numerical Analysis	
PUBH 6002	Biostatistical Applications for Public Health	

MASTER OF SCIENCE IN THE FIELD OF CIVIL AND ENVIRONMENTAL ENGINEERING

Civil and environmental engineering graduate students have extraordinary opportunities to learn about the state-of-the-art in their studies. Environmental engineering students use one of the world’s largest wastewater treatment plants as a real-world laboratory to improve the water quality of the Potomac River and the Chesapeake Bay watershed. Structural engineering students study earthquake engineering, extreme event design of structures and bridge design on a state-of-the-art, six-degrees-of-freedom earthquake simulator.

The master of science program in civil and environmental engineering at GW is a 33-credit-hour graduate program without a thesis, or 30 credits with a thesis.

The master’s program emphasizes the professional development of our graduate students and the mastery of technical and applied aspects of the chosen specialty. Evening classes are scheduled to suit working professionals, and students may choose the thesis or non-thesis option.

Visit the program website (<https://www.cee.seas.gwu.edu/degree-programs/>)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: Non-thesis option –33 credits; thesis option–30 credits, including 6 credits of thesis. In either option, the student must select one focus area from below and complete the required 9 credits of courses in that area. The remaining credits are selected by the student in consultation with a faculty advisor.

Code	Title	Credits
Required		
All courses in one of the following concentrations:		
Engineering Mechanics		
APSC 6213	Analytical Methods in Engineering III	
CE 6206	Continuum Mechanics	
CE 6210	Introduction to Finite Element Analysis	
Environmental engineering		
CE 6501	Environmental Chemistry	
CE 6503	Principles of Environmental Engineering	
CE 6609	Numerical Methods in Environmental and Water Resources	

Geotechnical engineering

CE 6210	Introduction to Finite Element Analysis
CE 6402	Theoretical Geomechanics
CE 6605	Ground Water and Seepage

Structural engineering

CE 6201	Advanced Strength of Materials
CE 6202	Methods of Structural Analysis
CE 6301	Design of Reinforced Concrete Structures
or CE 6320	Design of Metal Structures

Transportation safety engineering

CE 6102	Application of Probability Methods in Civil Engineering
CE 6721	Traffic Engineering and Highway Safety
CE 6722	Intelligent Transportation Systems

Water resources engineering

CE 6601	Open Channel Flow
CE 6604	Advanced Hydrology
CE 6609	Numerical Methods in Environmental and Water Resources

Thesis

Required of students who have selected the thesis option:

CE 6998	Thesis Research
CE 6999	Thesis Research

Students should consult with the advisor concerning their program of study.

MASTER OF SCIENCE IN THE FIELD OF COMPUTER ENGINEERING

Students in the computer engineering master's program learn sophisticated computer architecture and integrated circuit design techniques using industry-standard computer-aided design tools. The master's program offers a flexible schedule that includes late afternoon and evening classes as well as the ability to choose a thesis or non-thesis degree option

Students acquire up-to-date knowledge and skills in the advances of computer systems architecture and networking,

and in the rapidly growing use of superscalar microprocessors, real-time embedded systems, VLSI and ASIC design modules, digital signal processors and networked computing platforms.

More information is available on the departmental website (<https://www.ece.seas.gwu.edu/master-science-computer-engineering/>).

REQUIREMENTS

The following requirements must be fulfilled:

30 credits are required for the degree. Non-thesis and thesis options are available. For the thesis option, 6 of these credits are taken in ECE 6998 and ECE 6999. For either option, the student must select one focus area from the chart below and complete the specified number of credits for that area.

Colloquium requirement: In addition to required coursework, students must attend five non-credit bearing colloquia as part of their program of study. Each colloquium attended is verified by a faculty member also in attendance. After attending five colloquia, the student must submit to the department prior to applying for graduation a colloquium attendance form signed by the faculty advisor.

Computer Architecture and high-performance computing

Code	Title	Credits
Required		
ECE 6005	Computer Architecture and Design	
At least five of the following courses:		
ECE 6105	Introduction to High-Performance Computing	
ECE 6120	Advanced Microarchitecture	
ECE 6125	Parallel Computer Architecture	
ECE 6130	Big Data and Cloud Computing	
ECE 6140	Embedded Systems	
ECE 6150	Design of Interconnection Networks for Parallel Computer Architectures	
ECE 8150	Advanced Topics in Computer Architecture	
For thesis option		
ECE 6998	Thesis Research I	
ECE 6999	Thesis Research II	
Electives*		

Non-thesis option—12 credits in elective courses; thesis option—6 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.

MEMS, electronics, and photonics

Code	Title	Credits
Required		
ECE 6030	Device Electronics	
4 of the following:		
ECE 6213	Design of VLSI Circuits	
ECE 6214	High-Level VLSI Design Methodology	
ECE 6215	Introduction to MEMS	
ECE 6216	RF/VLSI Circuit Design	
ECE 6218	Advanced Analog VLSI Circuit Design	
ECE 6221	Introduction to Physical Electronics	
ECE 6240	VLSI Design and Simulation	
ECE 6245	Micro- and Nanofabrication Technology	
ECE 6250	ASIC Design and Testing of VLSI Circuits	
ECE 6255	Sensors, Networks, and Applications	
ECE 6260	Introduction to Nanoelectronics	
ECE 6765	Photonics and Fiber Optics	
For thesis option		
ECE 6998	Thesis Research I	
ECE 6999	Thesis Research II	
Electives*		
Non-thesis option—15 credits in elective courses; thesis option—9 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.		

*Normally, no more than two courses taken outside the Department of Electrical and Computer Engineering may be counted toward the requirements for the degree. Courses taken outside the department must have prior approval from the student's faculty advisor. In addition, no more than three 3000- or 4000-level ECE courses that have been approved for graduate credit may be counted toward the requirements for the degree.

Educational Planner

In consultation with an academic advisor, each student must develop an Educational Planner through DegreeMAP that governs the student's plan of study. The Educational Planner should be established soon after matriculation and must be completed before the end of the student's first semester. The Educational Planner must be approved by the advisor.

Additional program requirements can found on the Department of Electrical and Computer Engineering Master's Degree requirements (<https://www.ece.seas.gwu.edu/graduate-programs/>) webpage.

MASTER OF SCIENCE IN THE FIELD OF COMPUTER SCIENCE

Students in the master of science program in computer science learn excellent skills at the forefront of computing, get individualized attention from world-class faculty, and benefit from evening classes that accommodate the schedules of those who are working professionals. Students may choose a thesis or non-thesis option.

Our graduate students choose from among numerous focus areas, including: Algorithms and Theory; Computer Architecture, Networks, Parallel and Distributed Computing; Computer Security and Information Assurance; Database and Information Retrieval Systems; Machine Intelligence and Cognition; Multimedia, Animation, Graphics and User Interface; and Software Engineering and Systems.

Visit the program website (<http://www.cs.seas.gwu.edu/master-science-computer-science/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: Thesis option—30 credits, including 9 credits in required courses and 15 credits in elective courses, and 6 credits in thesis; non-thesis option—30 credits, including 9 credits in required courses and 21 credits in elective courses.

At least 24 of the 30 credits required for the degree must be taken at the 6000 level or above. As a general rule, any course taken below the 6000 level must be a CSCI course and must be eligible to be taken for graduate credit according to the course description in this Bulletin. Any course below the 6000 level must receive the prior written approval of the student's faculty advisor.

Code	Title	Credits
Required Courses		
CSCI 6212	Design and Analysis of Algorithms	
CSCI 6221	Advanced Software Paradigms	
CSCI 6461	Computer System Architecture	

Electives

Students pursuing the thesis option take 15 credits and students pursuing the non-thesis option take 21 credits in elective computer science (CSCI) courses offered for graduate credit. Unless a student's admission letter states that they are required to take CSCI 6010 and CSCI 6011, students may take up to 6 of these credits in non-CSCI courses with the prior written approval of their advisor. Students who are required to take CSCI 6010 and CSCI 6011 cannot take any non-CSCI courses as part of their program requirements. Such students are strongly encouraged to take these two courses in their first semester.

Thesis

Students pursuing the thesis option take the following:*

CSCI 6998	Thesis Research
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CSCI 6999	Thesis Research
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* See additional information regarding regulations for the master thesis (p.).

Dual MS in the field of computer science and MS in the field of cybersecurity in computer science degree:

Students who complete the master of science in the field of computer science or the master of science in the field of cybersecurity in computer science and who subsequently wish to pursue the other degree as part of a dual degree program may count the following core courses towards both degrees.

Code	Title	Credits
CSCI 6212	Design and Analysis of Algorithms	
CSCI 6221	Advanced Software Paradigms	
CSCI 6461	Computer System Architecture	

MASTER OF SCIENCE IN THE FIELD OF CYBERSECURITY IN COMPUTER SCIENCE

This MS program in cybersecurity in computer science is offered by GW's Department of Computer Science. The program was created to respond to the large and fast-growing need for technical cybersecurity experts nationally and internationally. Students in the program acquire up-to-date knowledge and skills in cybersecurity, a field of ever-increasing importance to national security, the economy, and individual users. They also receive a firm grounding in requisite core knowledge in computer science, as well as the ability to take courses in related disciplines.

In this program, students receive individualized attention from world-class faculty, are able to take advanced topics courses

along with Ph.D. students, and benefit from evening classes that accommodate the schedules of those who are working professionals. Students may choose a thesis or non-thesis option.

REQUIREMENTS

Credit Requirements:

- Thesis option: 30 credits are required for graduation; 6 of these credits are thesis credits
- Non-thesis option: 30 credits are required for graduation
- With department approval, students who complete the MS in the field of computer science and then enroll in the MS in the field of cybersecurity in computer science degree or vice versa can count the following core courses towards both degrees: CSCI 6212 Design and Analysis of Algorithms, CSCI 6221 Advanced Software Paradigms, and CSCI 6461 Computer System Architecture.

Graduation and Scholarship Requirements:

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships.

Please visit the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_ms) section on this site to read the requirements.

Students should contact the department for additional information and requirements.

Program Restrictions:

- Student's whose admission letters state that they are required to take CSCI 6010 and CSCI 6011 are limited to EMSE 6540 Management of Information Systems and Security as their only non-CS course.
- Students required to take CSCI 6010 and CSCI 6011 must take these courses in their first semester.
- Students not required to take CSCI 6010 and CSCI 6011 may take up to three non-CS courses (9 credits) towards their degree with prior written approval from their faculty advisor.
- At least 24 of the 30 credits required for the degree must be at the 6000 level or above. As a general rule, any course taken below the 6000 level must be a Computer Science course and must be eligible to be taken for graduate credit according to the course description. Exceptions may be chosen to enhance an aspect of the student's degree program. Any course taken that is below the 6000 level must receive prior written approval from the student's faculty advisor.

Code	Title	Credits
Required		
CSCI 6212	Design and Analysis of Algorithms	
CSCI 6221	Advanced Software Paradigms	
CSCI 6461	Computer System Architecture	
EMSE 6540	Management of Information and Systems Security	
One of the following applied cryptography courses:		
CSCI 6331	Cryptography	
CSCI 6541	Network Security	
CSCI 6545	Software Security	
One of the following computer science security courses, which may not be used to fulfill applied cryptography course requirement.		
CSCI 6331	Cryptography	
CSCI 6541	Network Security	
CSCI 6545	Software Security	
CSCI 6531	Computer Security	
CSCI 6532	Information Policy	
CSCI 6542	Computer Network Defense	
CSCI 6547	Wireless and Mobile Security	
CSCI 6548	E-Commerce Security	
CSCI 8331	Advanced Cryptography	
CSCI 8531	Advanced Topics in Security *	
CSCI 6907	Special Topics *	
Any special topics course taken for credit towards the degree must focus on security or cryptography and be approved by the faculty advisor.		
Two additional security courses (6 credits) from across the university*.		
All computer science security courses listed above not used to meet the applied cryptography or computer science security course requirements as well as the following courses may be used:		
EMSE 6537	Information Operations	

EMSE 6543	Managing the Protection of Information Assets and Systems
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EMSE 6545	Internet and Online Law for Security Managers
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Any other cybersecurity-related course from across the university must be reviewed and approved by the student's advisor to ensure that it is sufficiently advanced and rigorous before it can be taken for credit towards the degree.

Electives

Students who are not taking the thesis option and are not required to take CSCI 6010 or CSCI 6011 can choose any two additional courses (6 credits) numbered 6000 or higher.

Students who choose the thesis option must obtain the written approval of their thesis advisor before registering for the following courses:

CSCI 6998	Thesis Research
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CSCI 6999	Thesis Research
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If the admissions letter states that students are required to take CSCI 6010 and CSCI 6011, they will be limited to EMSE 6540 Management of Information Systems and Security as their only non-computer science course. Students required to take CSCI 6010 and CSCI 6011 are required to take these courses in their first semester. Students not required to take CSCI 6010 and CSCI 6011 may take up to three non-computer science courses (9 credits) towards their degree with prior written approval from their advisor.

At least 24 of the 30 credits required for the degree must be at the 6000 level or above. As a general rule, any course taken below the 6000 level must be a computer science course and must be eligible to be taken for graduate credit according to the course description. Exceptions may be chosen to enhance an aspect of the student's degree program. Any course taken that is below the 6000 level must receive prior written approval from the student's advisor.

With department approval, students who complete the Master of Science in Computer Science and then enroll in the Master of Science in the field of Cybersecurity in Computer Science or vice versa can count the following core courses towards both degrees:

CSCI 6212	Design and Analysis of Algorithms
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CSCI 6221	Advanced Software Paradigms
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CSCI 6461	Computer System Architecture
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*Any special topics course taken for credit toward the degree must be approved by the faculty advisor and it must focus on security or cryptography.

**Any cybersecurity-related course not specifically listed here must be approved in advance by the student's advisor to

ensure it is sufficiently advanced and rigorous to count toward credit for the degree.

MASTER OF SCIENCE IN THE FIELD OF DATA ANALYTICS

Administered jointly through the Department of Computer Science and the Department of Engineering Management and Systems Engineering, the master of science in data analytics aims to address the growing demand for professionals skilled in big data and data analytics in government, industry and research organizations.

Through courses led by top faculty members at the School of Engineering and Applied Science and the School of Business, this program is conducted in small cohorts and covers topics in computer science, business analytics and systems engineering while focusing on the foundations of analytics from a technical engineering perspective.

As part of their program requirements, students choose either the computer science or the engineering management and systems engineering track.

Students in the program should expect the following program outcomes:

- Apply data science and analytics techniques in the decision-making process of a wide range of organizations.
- Demonstrate the ability to store, clean and transform data.
- Demonstrate improvements in the decision-making process by using and applying analytics techniques to interpret results
- Design and implement computing infrastructure and algorithmic techniques for big data analytics.
- Explore the engineering foundations that propel the fields of data science and analytics.
- Gain hands-on experience with analytical tools for big data.
- Pursue or enhance careers as data analysts or data scientists.

REQUIREMENTS

Credit Requirements

The following requirements must be fulfilled: 33 credits, including 18 credits in required courses and 15 credits in elective courses.

Code	Title	Credits
Required		
CSCI 6362	Probability for Computer Science	
or EMSE 6765	Data Analysis for Engineers and Scientists	

CSCI 6441	Database Management Systems
or EMSE 6586	Data Management Systems for Data Analytics
CSCI 6444	Introduction to Big Data and Analytics
EMSE 6574	Programming for Analytics
SEAS 6401	Data Analytics Foundations and Practicum
SEAS 6402	Data Analytics Capstone

Additional coursework

Five additional courses are required. At least three of these courses (two required and one elective) must be in either the computer science track or in the engineering management and systems engineering track, effectively constituting a concentration in one of the two tracks. With the advisor's approval, the remaining elective course may be taken outside of the selected track and may include courses outside SEAS.

Computer science track

If the computer science track is selected, students must take CSCI 6212 and CSCI 6364 and one elective course from the list below.

Required	
CSCI 6212	Design and Analysis of Algorithms
CSCI 6364	Machine Learning
Electives	
CSCI 6312	Graph Theory and Applications
CSCI 6341	Continuous Algorithms
CSCI 6342	Computational Linear Algebra and Applications
CSCI 6351	Data Compression
CSCI 6365	Advanced Machine Learning
CSCI 6421	Distributed and Cluster Computing
CSCI 6442	Database Systems II
CSCI 6443	Data Mining
CSCI 6451	Information Retrieval Systems
CSCI 6515	Natural Language Understanding
CSCI 6527	Introduction to Computer Vision

Engineering management and systems engineering track

If the engineering management and systems engineering track is selected, students must take EMSE 6575 and EMSE 6577 and one elective course from the list below.

Required

EMSE 6575 Applied Machine Learning for Analytics

EMSE 6577 Data-Driven Policy

Electives

EMSE 6020 Decision Making with Uncertainty

EMSE 6035 Marketing Analytics for Design Decisions

EMSE 6510 Decision Support Systems and Models

EMSE 6579 Applied Data Mining in Engineering Management

EMSE 6740 Systems Thinking and Policy Modeling I

EMSE 6760 Discrete Systems Simulation

EMSE 6770 Techniques of Risk Analysis and Management

Graduation and Scholarship Requirements

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships.

Please visit the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_ms) section on this site to read the requirements.

Students should contact the department for additional information and requirements.

Program Restrictions

Normally, only 6000 level courses (or higher) may be counted toward the requirements for the graduate degree.

MASTER OF SCIENCE IN THE FIELD OF ELECTRICAL ENGINEERING

Students in the MS program in electrical engineering choose focus areas from the following: applied electromagnetics; communications and networks; electrical power and energy; electronic, photonics, and MEMS (VLSI systems and microelectronics); signal and image processing; systems and controls. Our location in Washington, D.C. – home to one of the nation's largest concentrations of high-technology enterprises – gives our students and faculty access to new advances in technology through government agencies, private industry and defense centers.

Students in our master's program benefit from a flexible schedule that includes both late afternoon and evening classes. Additionally, students may choose a thesis or non-thesis option.

For additional information on the on-campus program, visit the on-campus program website (<https://www.ece.seas.gwu.edu/master-science-electrical-engineering/>).

For additional information on the online program, visit the online program website (<https://engineering.gwu.edu/online-programs/ms-in-electrical-engineering/>).

REQUIREMENTS

The following requirements must be fulfilled:

30 credits are required for the degree. Non-thesis and thesis options are available. For the thesis option, 6 of these credits are taken in ECE 6998 and ECE 6999. For either option, the student must select one focus area from the chart below and complete the specified number of credits for that area.

Colloquium requirement: In addition to required coursework, students must attend five non-credit bearing colloquia as part of their program of study. Each colloquium attended is verified by a faculty member also in attendance. After attending five colloquia, the student must submit to the department prior to applying for graduation a colloquium attendance form signed by the faculty advisor.

Communications and networks

Code	Title	Credits
Required		
ECE 6015	Stochastic Processes in Engineering	
ECE 6035	Introduction to Computer Networks	
ECE 6510	Communication Theory	
At least two of the following:		
ECE 6500	Information Theory	
ECE 6505	Error Control Coding	
ECE 6520	Mobile and Wireless Communication Systems	
ECE 6525	Satellite Communication Systems	
ECE 6530	Electronic Warfare	
ECE 6550	Network Architectures and Protocols	
ECE 6560	Network Performance Analysis	
ECE 6565	Telecommunications Security	
ECE 6570	Telecommunications Security Protocols	

ECE 6575	Optical Communication Networks
ECE 6580	Wireless Networks
ECE 6760	Propagation Modeling in Wireless Communications

For thesis option

ECE 6998	Thesis Research I
ECE 6999	Thesis Research II

Electives*

Non-thesis option—15 credits in elective courses; thesis option—9 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.

Electrical power and energy

Code	Title	Credits
Required		
ECE 6060	Electric Power Generation	
At least two of the following:		
ECE 6010	Linear Systems Theory	
ECE 6020	Applied Electromagnetics	
ECE 6025	Signals and Transforms in Engineering	
At least three of the following:		
ECE 6610	Electrical Energy Conversion	
ECE 6620	Electrical Power Systems	
ECE 6662	Power Electronics	
ECE 6666	Power System Transmission, Control, and Security	
ECE 6667	Nuclear Power Generation	
ECE 6668	Power Distribution Grids	
ECE 6669	Smart Power Grids	
ECE 6670	Power System Protection	
ECE 6690	Power Systems Economics	
ECE 6691	Power Systems Reliability	
ECE 6699	Energy and Sustainability	

For thesis option

ECE 6998	Thesis Research I
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ECE 6999	Thesis Research II
Electives*	

Non-thesis option—12 credits in elective courses; thesis option—6 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.

Applied electromagnetics

Code	Title	Credits
Required		
ECE 6020	Applied Electromagnetics	
At least four of the following:		
ECE 6710	Microwave Engineering	
ECE 6715	Antennas	
ECE 6720	Remote Sensing	
ECE 6725	Electromagnetic Radiation and Scattering	
ECE 6730	Waves in Random Media	
ECE 6735	Numerical Electromagnetics	
ECE 6745	Analysis of Nonlinear and Multivalued Devices	
ECE 6750	Modern Radar Systems	
ECE 6760	Propagation Modeling in Wireless Communications	
ECE 6765	Photonics and Fiber Optics	
ECE 6770	Applied Magnetism	

For thesis option

ECE 6998	Thesis Research I
ECE 6999	Thesis Research II

Electives*

Non-thesis option—15 credits in elective courses; thesis option—9 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.

MEMS, electronics, and photonics

Code	Title	Credits
Required		
ECE 6030	Device Electronics	

At least four of the following:

ECE 6213	Design of VLSI Circuits
ECE 6214	High-Level VLSI Design Methodology
ECE 6215	Introduction to MEMS
ECE 6216	RF/VLSI Circuit Design
ECE 6218	Advanced Analog VLSI Circuit Design
ECE 6221	Introduction to Physical Electronics
ECE 6240	VLSI Design and Simulation
ECE 6245	Micro- and Nanofabrication Technology
ECE 6250	ASIC Design and Testing of VLSI Circuits
ECE 6255	Sensors, Networks, and Applications
ECE 6260	Introduction to Nanoelectronics
ECE 6765	Photonics and Fiber Optics
For thesis option	
ECE 6998	Thesis Research I
ECE 6999	Thesis Research II

Electives*

Non-thesis option—15 credits in elective courses; thesis option—9 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.

Signal and image processing, systems, and controls

Code	Title	Credits
Required		
ECE 6015	Stochastic Processes in Engineering	
At least four of the following:		
ECE 6005	Computer Architecture and Design	
ECE 6010	Linear Systems Theory	
ECE 6025	Signals and Transforms in Engineering	
ECE 6666	Power System Transmission, Control, and Security	
ECE 6800	Computational Techniques in Electrical Engineering	
ECE 6810	Speech and Audio Processing by Computer	

ECE 6815	Multimedia Processing
ECE 6820	Real-Time Digital Signal Processing
ECE 6825	Computer Control Systems
ECE 6830	System Optimization
ECE 6835	Nonlinear Systems
ECE 6840	Digital Image Processing
ECE 6842	Image Engineering
ECE 6845	Image Synthesis
ECE 6850	Pattern Recognition
ECE 6855	Computer Vision
ECE 6860	Compression Techniques for Data, Speech, and Video
ECE 6865	Statistical Signal Estimation
ECE 6875	Wavelets and Their Applications
ECE 6880	Adaptive Signal Processing
ECE 6885	Computer Vision

For thesis option

ECE 6998	Thesis Research I
ECE 6999	Thesis Research II

Electives*

Non-thesis option—15 credits in elective courses; thesis option—9 credits in elective courses. For either option, at least 3 credits must come from outside of the area of focus list.

*Normally, no more than two courses taken outside the Department of Electrical and Computer Engineering may be counted toward the requirements for the degree. Courses taken outside the department must have prior approval from the student's faculty advisor. In addition, no more than three 3000- or 4000-level ECE courses that have been approved for graduate credit may be counted toward the requirements for the degree.

Educational Planner

In consultation with an academic advisor, each student must develop an Educational Planner through DegreeMAP that governs the student's plan of study. The Educational Planner should be established soon after matriculation and must be completed before the end of the student's first semester. The Educational Planner must be approved by the advisor.

Additional program requirements can found on the Department of Electrical and Computer Engineering Master's Degree requirements (<https://www.ece.seas.gwu.edu/graduate-programs/>) webpage.

MASTER OF SCIENCE IN THE FIELD OF ENGINEERING MANAGEMENT

Designed for the technical manager who needs a broad education to keep an organization operating efficiently and working ahead of its competitors, GW's engineering management program provides graduate education in the most current management techniques for technological and scientific organizations.

Graduate students can pursue their degrees in one of the following focus areas: crisis, emergency, and risk management; economics, finance, and cost engineering; engineering and technology management; environmental and energy management; and knowledge and information management.

Students pursuing a master's degree learn excellent skills at the cutting edge of engineering management. They also benefit from GW's many contacts with industry and governmental leaders. Students may choose from a thesis or non-thesis option for the master's degree.

For additional information on the on-campus program, visit the on-campus program website (<https://graduate.seas.gwu.edu/masters-engineering-management/>).

For additional information on the online program, visit the online program website (<https://engineering.gwu.edu/online-programs/ms-in-engineering-management/>).

REQUIREMENTS

Credit Requirements

Non-Thesis Option: The program of study consists of 12 graduate-level courses totaling 36 credits. Three types of course requirements are included in the curriculum: common course requirements, focus course requirements, and approved electives. Common course requirements are taken by all students in the MS program in engineering management. Focus course requirements are taken by all students within the area of focus. Approved elective requirements are courses that require the approval of the student's individual academic advisor.

Thesis Option: To register in the thesis option, students must submit their advisor-approved plan of study and thesis area to the department chair. In addition to the course requirements below, students should take the thesis course sequence: EMSE 6998 (Thesis Research) and EMSE 6999 (Thesis Research), ideally in the last two semesters prior to graduation. Note that such thesis credits may be used in lieu of the electives. Hence, the program of study requires a minimum of 36 credit

hours. While registered in the thesis course sequence, students shall work with the faculty member under whom the thesis is to be written. Students may consult with their advisors, but they have primary responsibility for their own thesis. Students defend their theses orally before a committee of SEAS faculty members. The course requirements for the program are detailed below.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6410	Survey of Finance and Engineering Economics	
EMSE 6801	Systems Engineering I	

Crisis, Emergency, and Risk Management

Code	Title	Credits
Required		
EMSE 6305	Crisis and Emergency Management	
EMSE 6310	Information Technology in Crisis and Emergency Management	
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	
EMSE 6325	Medical and Public Health Emergency Management	
or EMSE 6330	Management of Terrorism Preparedness and Response	
Two of the following:		
EMSE 6240	Environmental Hazard Management	
EMSE 6300	Homeland Security: The National Challenge	
EMSE 6345	Disaster Recovery and Organizational Continuity	
EMSE 6350	Hazard Mitigation in Disaster Management	
EMSE 6540	Management of Information and Systems Security	
EMSE 6820	Program and Project Management	
EMSE 6992	Special Topics (with program advisor approval)	

Electives

Two additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.

Engineering and Technology Management

Code	Title	Credits
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Required

EMSE 6005	Organizational Behavior for the Engineering Manager
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EMSE 6820	Program and Project Management
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EMSE 6099	Problems in Engineering Management and Systems Engineering
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Two of the following:

EMSE 6010

EMSE 6014	Management of Engineering Contracts
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EMSE 6018	Engineering Law
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EMSE 6023	Technology Issue Analysis
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EMSE 6026	Technical Enterprises
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EMSE 6030	Technological Forecasting and Management
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EMSE 6035	Marketing Analytics for Design Decisions
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EMSE 6070	Management of Research and Development
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EMSE 6430	Financial Management for Engineers
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EMSE 6505	Knowledge Management I
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EMSE 6760	Discrete Systems Simulation
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EMSE 6805	Systems Engineering II
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EMSE 6992	Special Topics (with program advisor approval)
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Electives

Three additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.

Environmental and Energy Management

Code	Title	Credits
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Required

EMSE 6220	Environmental Management
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EMSE 6225	Air Quality Management
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EMSE 6235	Water Quality Management
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EMSE 6260	Energy Management
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Two of the following:

EMSE 6200	Policy Factors in Environmental and Energy Management
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EMSE 6230	Hazardous Waste Management and Cleanup
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EMSE 6240	Environmental Hazard Management
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EMSE 6245	Analytical Tools for Environmental Management
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EMSE 6285	Analytical Tools for Energy Management
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EMSE 6290	Climate Change: Policy, Impacts, and Response
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EMSE 6295	Environmental Security
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EMSE 6992	Special Topics (with program advisor approval)
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Electives

Two additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.

Economics, Finance, and Cost Engineering

Code	Title	Credits
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Required

EMSE 6420	Uncertainty Analysis in Cost Engineering
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EMSE 6430	Financial Management for Engineers
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EMSE 6450	Quantitative Methods in Investment Engineering
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EMSE 6820	Program and Project Management
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Two of the following:

EMSE 6014	Management of Engineering Contracts
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EMSE 6018	Engineering Law
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EMSE 6026	Technical Enterprises
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EMSE 6701	Operations Research Methods
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EMSE 6840	Applied Enterprise Systems Engineering
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EMSE 6850	Quantitative Models in Systems Engineering
EMSE 6992	Special Topics (with program advisor approval)

Electives

Two additional Engineering Management and Systems Engineering (EMSE) courses with the advisor's approval.

Graduation and Scholarship Requirements

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships.

Please visit the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_ms) section on this site to read the requirements.

Students should contact the department for additional information and requirements.

Program Restrictions

Normally, only 6000 level courses (or higher) may be counted toward the requirements for the graduate degree.

MASTER OF SCIENCE IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

GW's mechanical and aerospace engineering program boasts areas of excellence in nanotechnology, biomimetics, biomedical engineering, and energy, in addition to its strengths in the discipline's traditional fields. Graduate students can pursue the following focus areas: aerospace engineering; design of mechanical engineering systems; fluid mechanics, thermal sciences and energy; industrial engineering; robotics, mechatronics, and controls; solid mechanics and materials science; and structures and dynamics.

Master's degree students learn excellent skills at the cutting edge of mechanical and aerospace engineering and benefit from GW's breadth of research in the discipline. Students may choose a thesis or non-thesis option for the master's degree.

More information is available on the departmental website (<https://www.mae.seas.gwu.edu/>).

REQUIREMENTS

The following requirements must be fulfilled: Non-thesis option—33 credits; thesis option—30 credits, including 6 credits of thesis. In addition, students must select one focus area and complete the required 9 credits of courses in that area. The remaining credits are selected by the student in consultation with a faculty advisor.

Normally, no more than two courses taken outside the Department of Mechanical and Aerospace Engineering may be counted toward the requirements for the graduate degree. In special circumstances this may be changed with the approval of the advisor.

Aerospace engineering

Code	Title	Credits
Required		
APSC 6212	Analytical Methods in Engineering II	
APSC 6213	Analytical Methods in Engineering III	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	
One of the following:		
MAE 6207	Theory of Elasticity I	
MAE 6221	Fluid Mechanics	

Electives

Remaining credits are taken as elective courses in aeroacoustics, aeronautics, astronautics, propulsion, or space systems.

Design of mechanical engineering systems

Code	Title	Credits
Required		
MAE 6243	Advanced Mechanical Engineering Design	
MAE 6251	Computer-Integrated Manufacturing	
One of the following:		
APSC 6212	Analytical Methods in Engineering II	
APSC 6213	Analytical Methods in Engineering III	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	

Electives

Remaining credits are taken as elective courses in computer-aided design, computer-integrated design and manufacturing, mechanical engineering design, or robotics.

Fluid Mechanics, thermal sciences, and energy

Code	Title	Credits
Required		
APSC 6213	Analytical Methods in Engineering III	

MAE 6221	Fluid Mechanics
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering

Electives

Remaining credits are taken in elective courses, selected in consultation with the advisor.

Industrial engineering

Code	Title	Credits
Required		
EMSE 6755	Quality Control and Acceptance Sampling	

EMSE 6770	Techniques of Risk Analysis and Management
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MAE 6251	Computer-Integrated Manufacturing
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One of the following:

APSC 6212	Analytical Methods in Engineering II
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APSC 6213	Analytical Methods in Engineering III
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Electives

Remaining credits are taken in elective courses, selected in consultation with the advisor.

Solid mechanics and materials science

Code	Title	Credits
Required		
APSC 6213	Analytical Methods in Engineering III	

Two of the following:

MAE 6210	Continuum Mechanics
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MAE 6238	Biomaterials
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MAE 6239	Computational Nanosciences
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MAE 6291	Special Topics in Mechanical Engineering
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ECE 6221	Introduction to Physical Electronics
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Electives

Remaining credits are taken in elective courses, selected in consultation with the advisor.

Structures and dynamics

Code	Title	Credits
Required		
APSC 6213	Analytical Methods in Engineering III	
MAE 6207	Theory of Elasticity I	
MAE 6286	Numerical Solution Techniques in Mechanical and Aerospace Engineering	

Electives

Remaining credits are taken in elective courses, selected in consultation with the advisor.

Robotics, mechatronics, and controls

Code	Title	Credits
Required		
MAE 6243	Advanced Mechanical Engineering Design	
MAE 6245	Robotic Systems	
MAE 6246	Electromechanical Control Systems	

Electives

Remaining credits are taken in elective courses, selected in consultation with the advisor.

Graduation and Scholarship Requirements—Students are responsible for knowing the University's minimum GPA requirement for graduation and scholarships (p.). Students should contact the department for additional information and requirements.

MASTER OF SCIENCE IN THE FIELD OF SYSTEMS ENGINEERING

The systems engineering program provides broad knowledge of the "systems approach" for designing and managing large-scale engineering systems throughout the life cycle, with faculty and students exploring case studies and methodologies from NASA, the U.S. Department of Defense and U.S. corporations. Graduate students can pursue their degrees in one of two focus areas: operations research and management science or systems engineering and integration.

Students pursuing a master's degree acquire excellent skills at the cutting edge of systems engineering. They also benefit from GW's many contacts with industry and governmental leaders. Students may choose a thesis or non-thesis option for the degree. GW's graduate systems engineering programs are offered for the general public at GW's campus in Arlington,

Va. They are also offered on site at U.S. corporate offices and facilities.

For additional on-campus program information, visit the on-campus program website (<http://www.emse.seas.gwu.edu/master-science-systems-engineering/>).

For additional online program information, visit the online program website (<https://engineering.gwu.edu/online-programs/ms-in-systems-engineering/>).

REQUIREMENTS

Curriculum requirements

Non-thesis option—36 credits in coursework. Three types of course requirements are included in the curriculum: common course requirements, focus course requirements, and approved electives. Common course requirements are taken by all students in the MS program in systems engineering. Focus course requirements are taken by all students within the area of focus. Elective courses require the approval of the student's academic advisor.

Thesis option—36 credits, including the thesis. To register in the thesis option, students must submit their advisor-approved plan of study and thesis area to the department chair. In addition to the course requirements, students take the thesis course sequence, EMSE 6998 and EMSE 6999, ideally in the final two semesters of the program. Thesis credits may be used in lieu of electives. Hence, the program of study requires a minimum of 36 credits. While registered in the thesis course sequence, students work with the faculty member under whom the thesis is to be written. Students may consult with their advisors, but they have primary responsibility for their own thesis. Students defend their theses orally before a committee of SEAS faculty members.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6410	Survey of Finance and Engineering Economics	
EMSE 6801	Systems Engineering I	

Operations Research and Management Science

Code	Title	Credits
Required		
EMSE 6701	Operations Research Methods	

EMSE 6710 Optimization Models and Algorithms

EMSE 6760 Discrete Systems Simulation

EMSE 6765 Data Analysis for Engineers and Scientists

EMSE 6770 Techniques of Risk Analysis and Management

Three of the following:

EMSE 6705 Mathematics in Operations Research

EMSE 6715 Theory of Games

EMSE 6730 Integer and Network Programming

EMSE 6740 Systems Thinking and Policy Modeling I

EMSE 6750 Stochastic Foundations of Operations Research

EMSE 6755 Quality Control and Acceptance Sampling

EMSE 6992 Special Topics

Systems Engineering

Code	Title	Credits
Required		
EMSE 6805	Systems Engineering II	
EMSE 6810	Systems Analysis and Management	
EMSE 6820	Program and Project Management	
EMSE 6850	Quantitative Models in Systems Engineering	
Two of the following:		
EMSE 6540	Management of Information and Systems Security	
EMSE 6580	Information and Software Engineering	
EMSE 6815	Requirements Engineering	
EMSE 6992	Special Topics (in consultation with advisor)	

Plus two courses (6 credits) selected in consultation with the advisor

Graduation and Scholarship Requirements

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships. Please visit the Graduation and Scholarship Requirements

(http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_ms) section on this site to read the requirements.

Students should contact the department for additional information and requirements.

Program Restrictions

Normally, only 6000 level courses (or higher) may be counted toward the requirements for the graduate degree.

MASTER OF SCIENCE
IN THE FIELD OF
TELECOMMUNICATIONS
ENGINEERING

The master of science in telecommunications engineering, which is offered by the department of electrical and computer engineering, is designed to help students understand and apply the fundamentals of telecommunications engineering, including topics such as computer networking, network architectures and protocols, and telecommunications security. In addition, students have the option to take courses on optical networking, wireless networking, and big data and cloud computing.

More information is available on the departmental website (<https://www.ece.seas.gwu.edu/master-science-telecommunications-engineering/>).

REQUIREMENTS

The following requirements must be fulfilled:

30 credits are required for the degree. Non-thesis and thesis options are available. For the thesis option, 6 of these credits are taken in ECE 6998 and ECE 6999.

Colloquium requirement: In addition to required coursework, students must attend five non-credit bearing colloquia as part of their program of study. Each colloquium attended is verified by a faculty member also in attendance. After attending five colloquia, the student must submit to the department prior to applying for graduation a colloquium attendance form signed by the faculty advisor.

Code	Title	Credits
Required		
ECE 6035	Introduction to Computer Networks	
ECE 6550	Network Architectures and Protocols	
ECE 6565	Telecommunications Security	
ECE 6575	Optical Communication Networks	

ECE 6580	Wireless Networks
Two of the following:	
ECE 6005	Computer Architecture and Design
ECE 6015	Stochastic Processes in Engineering
ECE 6130	Big Data and Cloud Computing
ECE 6560	Network Performance Analysis
ECE 6570	Telecommunications Security Protocols

Required for thesis option

ECE 6998	Thesis Research I
ECE 6999	Thesis Research II

Electives*

Non-thesis option—9 credits in elective courses; thesis option —3 credits in elective courses.

*Normally, no more than two courses taken outside the Department of Electrical and Computer Engineering may be counted toward the requirements for the degree. Courses taken outside the department must have prior approval from the student’s faculty advisor. In addition, no more than three 3000- or 4000-level ECE courses that have been approved for graduate credit may be counted toward the requirements for the degree.

Educational Planner

In consultation with an academic advisor, each student must develop an Educational Planner through DegreeMAP that governs the student’s plan of study. The Educational Planner should be established soon after matriculation and must be completed before the end of the student’s first semester. The Educational Planner must be approved by the advisor.

Additional program requirements can found on the Department of Electrical and Computer Engineering Master's Degree requirements (<https://www.ece.seas.gwu.edu/graduate-programs/>) webpage.

DOCTORAL PROGRAMS

DOCTOR OF ENGINEERING IN
THE FIELD OF ENGINEERING
MANAGEMENT

Designed for the technical manager who needs a broad education to keep an organization operating efficiently and working ahead of its competitors, GW’s engineering management program provides graduate education in the

most current management techniques for technological and scientific organizations.

Graduate students can pursue their degrees in one of the following focus areas: crisis, emergency, and risk management; economics, finance, and cost engineering; engineering and technology management; environmental and energy management; and knowledge and information management.

The doctoral program, tailored for each student, is designed to provide the ability to perform substantive research in an area of the student's choice. Students benefit from working closely with faculty whose applications research has been successfully used by major organizations.

Visit the SEAS online programs website (<https://seasonline.gwu.edu/doctoral-degrees/doctor-of-engineering/>) for additional information.

REQUIREMENTS

Credit Requirements

The following requirements must be fulfilled: 45 credits, including 30 credits in required courses and 15 credits in research culminating in a practice-based case study.

Code	Title	Credits
Required		
EMSE 6115	Uncertainty Analysis for Engineers	
EMSE 6992	Special Topics (Quantitative Methods for Engineering Managers)	
EMSE 8100	The Praxis Proposal	
A minimum of 6 credits of EMSE analytical methods courses selected in consultation with the advisor.		
A minimum of 9 credits of EMSE engineering management courses selected in consultation with the advisor.		
Electives		
6 credits in courses selected in consultation with the advisor.		
Praxis		
EMSE 8199	Praxis Research (taken for a total of 15 credits)	

Students must complete the praxis proposal examination by preparing and defending their proposal before a committee of at least two full-time members of the SEAS and one outside advisor external to the faculty.

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOMEDICAL ENGINEERING

The PhD program in biomedical engineering is strongly interdisciplinary and is designed to prepare students to apply engineering principles to problems in medicine and biology, to understand and model multiple attributes of living systems, and to use this knowledge to develop novel biomedical systems and devices. Graduate students can choose from among a large array of areas of study, mentored by both core departmental faculty and external faculty from SEAS and elsewhere in GW, who qualify, on the basis of their expertise and teaching abilities, for joint or secondary appointments in the Biomedical Engineering Department. The core faculty expertise includes cancer therapy, cardiac electrophysiology, biosensors, microfluidics, ultrasound applications in medicine, and medical imaging and image analysis.

The PhD program is offered on the main campus in Foggy Bottom, and takes full advantage of the close proximity of the department's home in the new Science and Engineering Hall to the GW School of Medicine, the Milken Institute School of Public Health at GW, and the GW Hospital. These interactions are supplemented by collaborations that take advantage of nearby clinical and research facilities, including Children's National Health System and Federal agencies such as the FDA and NIH.

More information is available on the departmental website (<https://www.bme.seas.gwu.edu/>).

REQUIREMENTS

Credit Requirements

The following requirements must be fulfilled:

General requirements are stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Credit requirements—For students with an MS degree, a minimum of 30 credits, of which at least 18 must be credits from courses available for graduate credit, and at least 12 must be in dissertation research is required. Course selections must be approved by the student's advisor.

For students with a BS degree, a minimum of 54 credits, of which at least 36 must be from courses available for graduate credit, and at least 12 must be in dissertation research is required. The remaining 6 credits may be in undergraduate courses, graduate courses, dissertation research credits, or a combination of all. Course selections must be approved by the student's advisor.

Preliminary/Qualifying Exams

All PhD in BME students are required to take a doctoral preliminary examination, which are held at the beginning of each semester. The goal of the exam is to determine the student's aptitude and ability to complete original and independent research at the doctoral level, to assess the student's ability to review previous work from the literature, and to determine the student's ability to understand and apply fundamental concepts in their technical area. A written proposal and an oral presentation of the predetermined question are required. All students should take the exam as early as possible after they complete at least 6 credits in core courses and 6 credits in elective courses and maintain a minimum average GPA of 3.4. The exam typically should be completed no later than the beginning of a student's fourth semester.

Dissertation

After successful completion of the preliminary examination the student is admitted to be a candidate for the PhD degree program and begins specialized research under the supervision of his/her dissertation advisor. Research direction may be shared by a full-time faculty member and an outstanding external scientist or engineer, but the final responsibility for the academic aspects of the dissertation work lies with the BME faculty advisor.

Dissertation research proposal

During the research phase, each doctoral candidate is required to give a research proposal presentation to the Dissertation Committee. The student's research progress is assessed by the committee and appropriate suggestions for continuing research directions are solicited from those in attendance. Scheduling of the research proposal presentation will be done at a minimum of one year before the final dissertation defense by the student's dissertation advisor. The committee helps the student to define the research topic, and ultimately approves the research proposal. The dissertation advisor should propose the membership of the dissertation research committee, which must be approved by the Associate Chair for Research and Graduate Affairs. At least four individuals should serve on the research proposal committee; the research advisor is the dissertation director (also called the advocate) and three others. Two of the committee members must be full-time BME faculty. Students are required to present the written dissertation proposal to the committee and to successfully defend the proposal in an oral defense subsequent to performing the bulk of their dissertation research. After the proposal defense, the student submits the revised proposal, complying with all suggestions, clarifications, and corrections, as required by the dissertation committee.

Dissertation Defense: The dissertation advisor may decide that the research achieved by the doctoral student is sufficient to satisfy the requirement of the degree. The advisor proposes an examining committee for the purpose of administering the final dissertation examination (dissertation defense). The

committee of examiners must consist of no fewer than five members, at least three of whom normally are full-time BME faculty members with scholarly specialties within the area of concentration; at least one member normally is from an academic specialty outside the area of concentration. An external examiner must be invited. The dissertation advisor serves on the examining committee both as advocate and as a non-voting committee member. As its first order of business, the committee elects its own chairman, who should not be the dissertation advisor or the student's faculty advisor. The dissertation examining committee must be approved by the Associate Chair for Research and Graduate Affairs prior to the date of the defense. Each member of the examination committee, no later than three weeks prior to the defense, should receive a copy of the dissertation document. At the same time, the candidate must provide a 350-word [JW1] (p. 809) abstract and other information to the department for the purpose of preparing an announcement of the defense. The dissertation defense is an oral examination, which is open to the public. When the dissertation is accepted as complete, it should be submitted electronically no later than the date specified by the Office of the Registrar.

Publication Requirements

Before the doctoral defense, the PhD student must publish at least one **first-author** manuscript in a peer-reviewed journal on original work related to the topic of the doctoral dissertation.

Graduation and Scholarship Requirements

Students are responsible for adhering to the university's minimum GPA requirement for graduation and scholarships. Consult SEAS Regulations (p. 679) section of this Bulletin. Students should contact the department for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF CIVIL AND ENVIRONMENTAL ENGINEERING

Environmental engineering students use one of the world's largest wastewater treatment plants as a real-world laboratory to improve the water quality of the Potomac River and the Chesapeake Bay watershed. Structural engineering students study earthquake engineering, extreme event design of structures and bridge design on a state-of-the-art, six-degrees-of-freedom earthquake simulator.

The PhD program requires a minimum of 30 credit hours in a formal program of study at the graduate level beyond master's study or, for students without a master's degree, a minimum of 54 credit hours in a formal program of study at the graduate level beyond the baccalaureate is required. Graduate students can pursue their degrees in one of the following focus areas: engineering mechanics, environmental

engineering, geotechnical engineering, structural engineering, transportation safety engineering and water resources engineering.

The doctoral program aims to educate highly qualified researchers who will enhance fundamental knowledge and produce technological innovations through original research and development. Our location and relationships with companies and government agencies in the Washington, D.C., area allow for collaborative research opportunities that greatly increase our graduates' job prospects.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with an MS degree must take a minimum of 30 credits, of which at least 18 must be from graduate courses, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 54 credits, of which at least 42 must be graduate course credits, and at least 12 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Other requirements

- Qualifying examination—Administered twice a year, the examination covers subject matters at both the master's and doctoral levels. Students should prepare for comprehensive questioning on all subject matters regardless of any particular course included in the actual doctoral coursework load.

Student should contact the department for additional information and requirements

Visit the program website (<https://www.cee.seas.gwu.edu/doctor-philosophy-program/>) for additional program information.

DOCTOR OF PHILOSOPHY IN THE FIELD OF COMPUTER ENGINEERING

PhD students in the computer engineering program choose from among the following areas of focus: MEMS, electronics, and photonics (microelectronics and VLSI systems). The

program is designed to prepare the student for a career of creative scholarship by providing focused knowledge in the student's specialty area and guidance for research.

More information is available on the departmental website (<https://www.ece.seas.gwu.edu/doctor-philosophy-computer-engineering/>).

REQUIREMENTS

Credit Requirements

The following requirements must be fulfilled:

1. The general requirements stated in this Bulletin under School of Engineering and Applied Science Regulations, Doctoral Programs (p. 686).
2. Students with a master of science degree must take a minimum of 30 credits, of which at least 18 credits must be credits in courses available for graduate credit, and at least 12 credits must be in dissertation research. Students with a bachelor of science degree must take a minimum of 54 credits, of which at least 36 credits must be in courses available for graduate credit, and at least 12 credits must be in dissertation research. The courses to be taken by the student must be approved by the student's faculty advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study may exceed the minimum number of credits. No specific courses are required; the student and faculty advisor design the curriculum to meet the student's needs and goals.

Preliminary Examination *(revised October 23, 2020)*

The Department of Electrical and Computer Engineering requires doctoral students to pass a preliminary examination. Doctoral students who received their master of science degree prior to admission to the doctoral program must attempt their preliminary exam before completing 27 program credits or before completing three semesters after matriculation into the program, whichever is later. Direct entry PhD students, i.e., those with a bachelor of science degree, must attempt their preliminary examination before completing 36 program credits or before completing four semesters after matriculation into the program, whichever is later. The examination, which is offered every spring and fall semester, is guided by, but not limited to, the core material in the electrical and computer engineering master's programs. Specific details regarding the examination are available on the department's website. Normally, a student is allowed two attempts to pass the preliminary examination. The student selects a research advisor, also called dissertation director, by the end of the semester in which the student passes the preliminary examination.

Doctoral Qualifying Examination

After passing the preliminary examination, in consultation with the research advisor, a student prepares for the doctoral

qualifying examination (also known as proposal defense). The doctoral qualifying examination is the principal means of determining whether a student qualifies as a candidate for the doctoral degree and progress to the next stage of the program. For the doctoral qualifying examination, a written proposal of the doctoral dissertation research is presented to a committee which also conducts an oral examination of the student. Details on the structure of the proposal and the composition of the committee can be found on the departmental website (<https://www.ece.seas.gwu.edu/graduate-resources/>).

Publication Requirements

Every doctoral student is required to have a paper based on the student's dissertation research published or accepted in a scientific journal before the student's doctoral final examination.

Doctoral Final Examination

Once the dissertation has been completed, the student schedules the doctoral final examination (also known as dissertation defense) in consultation with the research advisor. The doctoral final examination Form must be filed and approved by the department chair at least three weeks prior to the doctoral final examination date. Approval is granted only when all required materials have been submitted to the department. The required materials include a completed form, a copy of the journal article or final acceptance letter, resumes of any outside examination committee members, and electronic and printed copies of the dissertation. Details on the structure of the dissertation and the composition of the examination committee can be found on the departmental website (<https://www.ece.seas.gwu.edu/graduate-resources/>).

The doctoral final examination is oral and open to the public. The candidate must demonstrate mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University specially to participate in the examination. The research advisor usually serves as advocate for the candidate. The committee will assess the quality and originality of the candidate's contribution to knowledge as well as the student's mastery of the scholarship and research techniques of the field. Upon decision to pass the student, the committee recommends the candidate for the degree of doctor of philosophy. The decision to pass may be provisional based on committee recommendations for changes to the dissertation in terms of additional work, writing, or clarifications.

Seminar and Colloquium Requirements

- Seminar requirement—Students must present one departmental seminar, excluding the dissertation defense, prior to graduation.
- Colloquium requirement—Students are required to attend five colloquia during their time in the program. Each attended colloquium is verified by a faculty member in

attendance. Upon the attendance of five colloquia, the student must submit to the department the colloquium attendance form signed by the faculty advisor prior to applying for graduation.

Graduation and Scholarship Requirements

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships. See School of Engineering and Applied Science Regulations, Graduation and Scholarship Requirements (p. 686).

Students should contact the department for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF COMPUTER SCIENCE

PhD students in the computer science program choose from among numerous focus areas, including: algorithms and theory; computer architecture, networks, parallel and distributed computing; computer security and information assurance; database and information retrieval systems; machine intelligence and cognition; multimedia, animation, graphics and user interface; and software engineering and systems.

Our doctoral students conduct cutting-edge research with world-class faculty, have access to collaborative opportunities unique to the Washington, D.C., area and benefit from the superb cultural and intellectual experience that the campus and program provide.

More information is available on the department website (<https://www.cs.seas.gwu.edu/phd-computer-science/>).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with an MS degree—A minimum of 30 credits, at least 18 of which must be in courses taken for graduate credit and at least 12 credits in dissertation research. Courses must be approved by the student's advisor.

Students with a BS degree—A minimum of 54 credits, at least 18 of which must be in courses taken for graduate credit and at least 12 credits in dissertation research. Courses must be approved by the advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits. No specific courses are required; the student and advisor design the curriculum to meet the student's needs and goals.

Preliminary Examination

Failure to pass the preliminary examination by the end of the fourth semester will lead to dismissal from the PhD program.

Students must demonstrate competency in two areas, one course per area:

- Algorithms and Theory: CSci 6212 Design and Analysis of Algorithms; CSci 6311 Theory of Computation
- Software and Systems: CSci 6221 Advanced Software Paradigms; CSci 6431 Computer Networks; CSci 6461 Computer Architectures

Students may demonstrate competency in a course in one of two ways:

- By completing the course with a minimum grade of A-.
- By taking only the written, in-class examinations in the course. With this option, students must pass all exams given during a semester, earning a minimum grade of A- in each.

Students who prove, via their official transcript that they earned the requisite grades as part of their master's degree may apply that result to the preliminary exam requirement.

Students must fill out and submit to the Department of Computer Science a Preliminary Examination Form (<https://www.cs.seas.gwu.edu/forms/>) after completing the requirements for the preliminary exam.

Publication Requirements

Students must have at least one peer-reviewed conference or journal paper accepted for publication at the time of the dissertation defense.

As a guideline, students are expected to have at least two or three conference or journal papers accepted for publication by the time of their dissertation defense, and the material from those papers should be the core of the dissertation.

Dissertation

Forming a dissertation committee:

- The dissertation committee must consist of at least three members including the major advisor (additional advisor(s) and co-advisors are optional and additional to the three members).
- The committee must have a presiding chair who must be a regular full-time faculty member in the Department of Computer Science. The committee chair may not be the student's research advisor or co-advisor.
- At least one member of the committee must be an external reviewer. The external reviewer can be any person who holds a Doctoral degree, and may not be a faculty member in the Computer Science department, but may be a researcher or faculty member from another GW department or from outside the University.

- The other members of the committee, not including advisor(s) and co-advisors, shall be regular full-time faculty of the Department of Computer Science or a doctorate-bearing researcher or faculty member from another GW department or from outside of the University..
- The dissertation committee must be approved by the chair of the Department of Computer Science.
- The committee membership is normally the same for the dissertation proposal exam and the dissertation defense. However, the membership may change with the approval of the advisor and department chair.

Dissertation proposal defense:

- The defense may not take place before the student has passed the preliminary examination.
- The student's advisor must approve the scheduling of the dissertation proposal defense.
- The student submits a written proposal, in the style of a dissertation, to the members of the dissertation committee. The proposal should contain preliminary results.
- The dissertation committee evaluates the proposal and conduct an oral examination of the student. The committee conveys its recommendation of pass/fail to the Department of Computer Science.

Dissertation defense:

- The dissertation defense may not be scheduled before the student has passed the dissertation proposal defense.
- The student's advisor must approve the scheduling of the dissertation defense.
- The student submits a written dissertation to the members of the dissertation committee, normally two or more weeks in advance of the defense. The writing should follow the dissertation writing guidelines (https://www.cs.seas.gwu.edu/sites/g/files/zaxdzs1421/f/downloads/New_DoctoralHandbook2016-2017.pdf).
- The committee evaluates the dissertation and conducts an oral examination of the student. The committee conveys its recommendation of pass/fail to the Department of Computer Science.

Colloquium Expectation

All full-time PhD students are expected to regularly attend department colloquiums.

Graduation and Scholarship Requirements

Students are responsible for knowing the University's requirements for graduation and scholarships. Consult the University Regulations (p.) section of this Bulletin. Students should consult the department for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ELECTRICAL ENGINEERING

PhD students in the electrical engineering program choose focus areas from the following: applied electromagnetics; communications and networks; electrical power and energy; electronic, photonics, and MEMS (VLSI systems and microelectronics); signal and image processing; systems and controls. Our location in Washington, D.C – home to one of the nation's largest concentrations of high-technology enterprises – gives our students and faculty access to new advances in technology through government agencies, private industry and defense centers.

GW's doctoral program is designed to prepare students for careers of creative scholarship by providing focused knowledge in the students' chosen area of specialty and guidance for research.

More information is available on the departmental website (<https://www.ece.seas.gwu.edu/doctor-philosophy-electrical-engineering/>).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Students with a master of science (MS) degree must take a minimum of 30 credits, of which at least 18 credits must be in courses available for graduate credit, and at least 12 credits must be in dissertation research.

Students with a bachelor of science (BS) degree must take a minimum of 54 credits, of which at least 36 must be in courses available for graduate credit, and at least 12 must be in dissertation research. These courses must be approved by the student's faculty advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study may exceed the minimum number of credits. No specific courses are required; the student and faculty advisor design the curriculum to meet the student's needs and goals.

Preliminary Examination *(revised October 23, 2020)*

The Department of Electrical and Computer Engineering requires doctoral students to pass a preliminary examination. Doctoral students who received their master of science degree prior to admission to the doctoral program must attempt their preliminary exam before completing 27 program credits or before completing three semesters after matriculation into the program, whichever is later. Direct entry PhD students, i.e., those with a bachelor of science degree, must attempt their

preliminary examination before completing 36 program credits or before completing four semesters after matriculation into the program, whichever is later. The examination, which is offered every spring and fall semester, is guided by, but not limited to, the core material in the electrical and computer engineering master's programs. Specific details regarding the examination are available on the department's website. Normally, a student is allowed two attempts to pass the preliminary examination. The student selects a research advisor also called dissertation director, by the end of the semester in which the student passes the preliminary examination.

Doctoral Qualifying Examination

After passing the preliminary examination, in consultation with the research advisor, a student prepares for the doctoral qualifying examination (also known as proposal defense). The doctoral qualifying examination is the principal means of determining whether a student qualifies as a candidate for the doctoral degree and progress to the next stage of the program. For the doctoral qualifying examination, a written proposal of the doctoral dissertation research is presented to a committee which also conducts an oral examination of the student. Details on the structure of the proposal and the composition of the committee can be found on the departmental website (<https://www.ece.seas.gwu.edu/graduate-resources/>).

Publication Requirements

Every doctoral student is required to have a paper based on the student's dissertation research published or accepted in a scientific journal before the student's doctoral final examination.

Doctoral Final Examination

Once the dissertation has been completed, the student schedules the doctoral final examination (also known as dissertation defense) in consultation with the research advisor. A doctoral final examination form must be filed and approved by the department chair at least three weeks prior to the examination date. Approval is granted only when all required materials have been submitted to the department. The required materials include a completed form, a copy of the journal article or final acceptance letter, resumes of any outside examination committee members, and electronic and printed copies of the dissertation. Details on the structure of the dissertation and the composition of the examination committee can be found on the departmental website (<https://www.ece.seas.gwu.edu/graduate-resources/>).

The doctoral final examination is oral and open to the public. The candidate must demonstrate mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University specially to participate in the examination. The research advisor usually serves as advocate for the candidate. The committee assesses the quality and originality of the candidate's contribution to knowledge as

well as the student's mastery of the scholarship and research techniques of the field. Upon decision to pass, the committee recommends the candidate for the degree of doctor of philosophy. The decision to pass may be provisional based on committee recommendations for changes to the dissertation in terms of additional work, writing, or clarifications.

Seminar and Colloquium Requirements

- Seminar requirement—Students must present one departmental seminar, excluding the dissertation defense, prior to graduation.
- Colloquium requirement—Students are required to attend five colloquia during their time in the program. Each attended colloquium is verified by a faculty member in attendance. Upon the attendance of five colloquia, the student must submit to the department the Colloquium Attendance Form signed by the faculty advisor prior to applying for graduation.

Graduation and Scholarship Requirements

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships. See School of Engineering and Applied Science Regulations, Graduation and Scholarship Requirements (p. 686).

Contact the Department of Electrical and Computer Engineering for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ENGINEERING MANAGEMENT

Designed for the technical manager who needs a broad education to keep an organization operating efficiently and working ahead of its competitors, GW's engineering management program provides graduate education in the most current management techniques for technological and scientific organizations.

Students can pursue their degrees in one of the following focus areas: crisis, emergency, and risk management; economics, finance, and cost engineering; engineering and technology management; environmental and energy management; and knowledge and information management.

The doctoral program, tailored for each student, is designed to provide the ability to perform substantive research in an area of the student's choice. Students benefit from working closely with faculty whose applications research has been successfully used by major organizations.

More information is available on the program website (<https://www.emse.seas.gwu.edu/doctor-philosophy/>).

REQUIREMENTS

Credit Requirements

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (<http://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext>)

Students with an MS degree must take a minimum of 54 credits, of which at least 30 must be credits from courses available for graduate credit, and at least 24 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 78 credits, consisting of 54 credits of graduate coursework and at least 24 credits of dissertation research. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was earned, the program of study exceeds the minimum number of credits.

No specific courses are required beyond the preparatory courses. The student and advisor design the curriculum to meet the student's needs and goals.

Code	Title	Credits
Preparatory courses		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
APSC 3115	Engineering Analysis III	
Other requirements		
Qualifying examinations		
Proposal defense		
Final examination		
Post-graduate survey		

Preliminary/Qualifying Exams

The Qualifying Examination is the principal means of determining whether a student qualifies as a candidate for the doctoral degree and progress to the second stage of the program. Its purpose is to ascertain that the student's background and intellectual development are adequate to support doctoral research in the central field. The DQE will be offered in January (both parts) and September (only data analysis). Before taking the examination, students must have completed the core courses and 27 credits (nine courses) of their required coursework and have the DegreeMap

finalized. Students must also submit a Doctoral Qualifying Exam Checklist to the doctoral coordinator.

The Qualifying Examination consists of two parts: a two-part written examination and a focus area exam.

Written Exam (Part I)

This exam consists of a two-hour, in-class exam covering EMSE 6765 and an eight-hour, take-home exam covering EMSE 8000 and EMSE 8001. Both exams are offered during the last week in January. The EMSE 6765-based exam is also offered during the last week in January. Students should apply to take this exam before the end of the preceding semester.

Focus Area Exam (Part II)

The Focus Area Exam is both a written and oral exam. Students must take this exam by the end of the semester following the successful completion of DQE part I (i.e., student will nominally complete Part I in January, and must take Part II in the third week of May). Students should register for EMSE 8999 for the semester in which they are taking the exam.

Students have three options for the basis for their oral defense:

- A conference or journal paper, on which they are the lead author. If it is a conference paper, the full paper must have been peer-reviewed.
- A seminal journal paper in their focus area. Their advisor and examining committee must approve the paper.
- A 10-page literature review on a topic in their focus area. They have two weeks to complete the review.

In all cases, students are required to defend the work in front of a committee. The committee must consist of three faculty members, at least two of which are full-time in EMSE. Oral exams are approximately one hour long.

At the discretion of the committee a student who fails any part of the qualifying examination may be given a second opportunity to attempt qualification for candidacy. Usually, only the failed portion of the examination must be retaken. Students who fail to qualify for candidacy in a doctoral program of the School are considered to have failed on a school-wide basis and will not be admitted to further doctoral study within the School.

After successful completion of the DQE, the candidate's advisor will present the academic record of the candidate and request the formation of a research committee. The Department votes on (provisional) admission to candidacy and the research committee. The research committee must be formed before the proposal defense (described below) and must consist of the student's advisor and two other faculty members, at least one of which must be full-time. Once the student is admitted to candidacy for the degree, he/she begins specialized study and research under the supervision of their research committee. At this point the research committee remains fixed unless a

change is formally requested and approved by the department chair and advisor.

Publication Requirements

Students are given 18 months from completion of DQE Part II to be accepted into a pre-approved conference for presentation on a topic relevant to their research. This presentation must be co-authored by their adviser. Failure to do so will result in termination of their candidacy in the doctoral program.

Dissertation

- Proposal defense: After acceptance to a conference, students are required to present a written dissertation proposal to their research committee and to successfully defend the proposal in an oral defense. This proposal should consist of, at a minimum, an introductory chapter, a review of the literature chapter, a methodology chapter, and a chapter on potential results. The Request for Proposal Defense form must be filed and approved two weeks prior to the defense. The Form 5 Doctor of Science Dissertation form is present at the proposal defense and, after a successful defense, is signed by all committee members. After the defense, the advisor in collaboration with the student submits, in writing, a copy (signed by student and advisor) of all suggestions, clarifications, and corrections to the proposal along with the signed Form 5 to the doctoral coordinator within four weeks of the defense. Failure to do so will void the defense. The doctoral coordinator forwards the Form 5 to the department chair for signature. Students are given a maximum of two attempts and a maximum time limit of two years past the semester in which they pass their DQEs to successfully defend their proposal. Failure to do so will result in termination of their candidacy in the doctoral program.
- Final examination/doctoral defense: Once the dissertation has been completed and accepted by the faculty advisor and research committee, students may file a Request for Final Examination form with the Doctoral Coordinator. This form must be filed and approved by the department chair at least two weeks prior to the final examination date. Approval is granted only when all required materials have been presented to the doctoral coordinator. The required materials include a completely filed Request for Final Examination Form, a copy of the journal article with reviews, resumes of outside evaluators and electronic and written copies of the dissertation. The final examination is oral and open to the public. The candidate must demonstrate mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University especially to participate in the examination. The director of research usually serves as advocate for the candidate. Students should consult department regulations concerning the formation of the committee. The committee votes on the quality and originality of the candidate's

contribution to knowledge as well as their mastery of the scholarship and research techniques of the field. Upon a majority vote for pass, the committee recommends the candidate for the degree of Doctor of Philosophy. The vote to pass may be provisional based on committee recommendations for changes to the dissertation in terms of additional analysis, writing or clarifications.

Seminar and Colloquia Requirements

- As described in the Publication Requirements section above, students are required to present in a pre-approved conference on a topic relevant to their research. In addition, students are also encouraged to present and participate in departmental research seminars.

Graduation and Scholarship Requirements

Students are responsible for knowing the university's minimum GPA requirement for graduation and scholarships.

Please visit the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_phd) section on the GW Bulletin to read the requirements.

Students should contact the department for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF MECHANICAL AND AEROSPACE ENGINEERING

GW's mechanical and aerospace engineering program boasts areas of excellence in nanotechnology, biomimetics, biomedical engineering, and energy, in addition to its strengths in the discipline's traditional fields. PhD students can pursue the following focus areas: aerospace engineering; design of mechanical engineering systems; fluid mechanics, thermal sciences and energy; robotics, mechatronics, and controls; solid mechanics and materials science; and structures and dynamics. The PhD program is designed to provide students with the training to perform original research.

More information is available on the departmental website (<https://www.mae.seas.gwu.edu/>).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering and Applied Science, Doctoral Program Regulations (http://bulletin.gwu.edu/engineering-applied-science/#Doctor_of_Philosophy).

Direct-to-PhD students should complete a minimum of 36 credits of coursework and 18 credits of research. Students who enter the program with an MS degree should complete a minimum of 12 credits of coursework and 18 credits of research. The student and advisor design the curriculum to

meet the student's needs and goals and can choose from the following areas of focus: aerospace engineering; design of mechanical engineering systems; fluid mechanics, thermal sciences, and energy; industrial engineering; solid mechanics and materials science; structures and dynamics; robotics, mechatronics, and controls.

Academic Procedures for MAE Doctoral Students

There are three distinct phases in the program of doctoral study in mechanical and aerospace engineering (MAE): 1) the period of preparation for the qualifying examination; 2) the qualifying examination; and, 3) the period after admission to candidacy for the PhD degree during which the student performs research leading to the doctoral dissertation. After admission to doctoral study, students in MAE are subject to specific procedures as outlined below in each of these program phases.

A. Period of preparation for the qualifying examination:

As early as possible after their admission students should identify the faculty member who will serve as their coursework and research advisor. For research assistants, the faculty member providing the financial support is also the advisor. At the beginning of each semester, the doctoral student meets with the MAE faculty advisor to evaluate the progress towards taking the qualifying examination. Coursework consists of core courses and electives that are specific to the major area of research. The qualifying examination is given twice each year, once during the first two weeks of the fall semester and once during the first two weeks of the spring semester. All students should take the examination as early as possible after they complete at least 6 credits of core courses and 6 credits of electives and maintain a minimum GPA of 3.4. Students are recommended to take the examination no later than the beginning of their third semester. In case a student does not fulfill the above requirements, they should develop a plan of action with the academic advisor, which needs to be approved by the department chair. The student should be advised of any additional coursework to be undertaken, or any additional preparation.

B. The doctoral qualifying examination:

All PhD students are required to take the doctoral qualifying examination (DQE) held in the first two weeks of each semester. They must submit the DQE notification form provided by the department by the end of the preceding semester. The examination is distributed electronically. A written proposal and an oral presentation of the chosen problem are required. The goals of the examination include the following:

1. To determine the student's aptitude and ability to do original and independent research at the doctoral level;
2. To assess the student's ability to review previous work from the literature; and,

3. To determine the student's ability to understand and apply fundamental concepts in their technical area.

Participation and subject areas—In consultation with their advisor (or faculty sponsor) the graduate student should notify the Graduate Curriculum Committee that they are taking the DQE before the end of the preceding semester by filling the DQE Notification form. The student also selects a major subject area that reflect their background and dissertation fields. The date/time of the examination will be announced by the end of the preceding semester.

Examination committee selection—The committee comprises the student's advisor (or faculty sponsor), an examination committee chair, and a third member. Co-advisors may participate as silent observers during the first attempt. The members of this committee are selected by the graduate curriculum committee in consultation with the student's advisor (or faculty sponsor). At least two out of three members of the committee should be regular faculty of the MAE department.

Topic selection—Ten calendar days before the date of the qualifying examination, each student will be assigned a research topic and one to two references related to one or more of the subject areas selected by the student. The topic is selected by the chair of the examination committee in consultation with both the student's advisor (or faculty sponsor) and the third committee member. The topic may be relevant to the student's future doctoral work but is different for each student. The topic cannot be directly related to or be part of the student's ongoing doctoral work.

Written proposal—The objective of the written proposal is to communicate how a specific research problem may be investigated. The proposal is not to exceed five pages using an 11pt Arial font, 1-inch margins, and 1.0 line spacing. The five-page limitation covers the proposal body text, as well as any figures and tables. The title page and cited references are the only sections that do not count toward the 5-page limitation. A typical written proposal has the following structure (the proposal format has been adapted from the required standard NSF proposal format):

Title page—The first page should include your name, title of your proposal, and signed academic integrity pledge (one page).

Motivation and objectives—Explain the importance of the problem, review the state of the art, and discuss critical barrier to progress in the field that the proposed project addresses. Outline the objectives of the proposed work.

Technical approach—This is the core of the proposal, where you describe the overall methodology and analyses to be used to accomplish the objectives of the project. Include how the data will be collected, analyzed.

Cited references—Cite sources for background information and technical plan (does not count towards the 5-page limit).

Oral examination—The student prepares a brief PowerPoint presentation describing their proposed approach. The examination begins with a 20-minute presentation by the student, which will be the starting point for the oral examination discussion. The presentation may lead to questions (based on the chosen subject areas and sometimes unrelated to the assigned topic and of a broader nature) related to the goals of the exam. The duration of the examination is two hours.

Exam outcome—Immediately after the end of the oral examination the committee deliberates and reach a decision on the examination outcome and convey it by email to the Graduate Curriculum Committee. All students are notified in writing of the outcome of the examination by the chair of the Graduate Curriculum Committee, one week after all exams have been completed. The notification may include conditions that the student must fulfill prior to attaining candidacy or suggestions on certain skills or areas that may need strengthening. Passing the examination requires a unanimous decision from all three committee members. Students who fail the examination in their first attempt may, upon recommendation of the examination committee and review by the Graduate Curriculum Committee, take it again later in the semester.

C. Period of Dissertation Research

After successful completion of the qualifying examination the student is admitted as a candidate for the PhD degree program and begins specialized research under the supervision of their thesis advisor. Research direction may be shared by a full-time faculty member and an outstanding external scientist or engineer, but the final responsibility for the academic aspects of the dissertation work lies with the MAE faculty thesis advisor.

Dissertation Research Proposal—During the research phase, each doctoral candidate is required to give a research proposal presentation to the Dissertation Committee. The student's research progress is assessed by the committee and appropriate suggestions for continuing research directions are solicited from those in attendance. Scheduling of the research proposal presentation is done at a minimum of one year before the final PhD defense by the student's director of research in consultation with the MAE chairman. Under no circumstances is a doctoral thesis defense allowed to proceed prior to one year after the research proposal presentation. The committee helps the student to define the research topic, and ultimately approves the research proposal. The dissertation advisor should propose the membership of the dissertation research committee, which must be approved by the department chair. Final approval rests with the Dean's office. At least three individuals should serve on the committee; the research advisor is the dissertation director (also called the advocate) and two others. Two of the committee members must be full-time faculty. Students are required to present the written dissertation proposal to the committee (two of the members must be full-time faculty) and to successfully defend the proposal in an oral defense after performing the

bulk of their dissertation research. The request for proposal defense form must be filed and approved two weeks prior to the defense. The Form 5 dissertation form is presented at the proposal defense and, after a successful defense, is signed by all committee members. After the proposal defense, the student submits the revised proposal, complying with all suggestions, clarifications, and corrections, as required by the dissertation committee, along with the signed Form 5 to the director of doctoral research, i.e. thesis advisor and to the departmental advanced degree program coordinator for the PhD program. They forward the Form 5 to the department chair for signature.

Dissertation Defense: The research advisor may decide that the research achieved by the doctoral student is sufficient to satisfy the requirement of the degree. They propose an examining committee for the purpose of administering the final dissertation examination (dissertation defense). The committee of examiners must consist of a minimum of five members, at least three of whom are normally full-time faculty members with scholarly specialties within the area of concentration; at least one member will normally be from an academic specialty outside the area of concentration. It is required that an external examiner be invited. The research advisor serves on the examining committee both as advocate and as a non-voting committee member. The committee elects its own chairman, who should not be the research advisor, or if different, the student's faculty advisor, as its first order of business. The dissertation examining committee must be approved by the department chairperson prior to the date of the defense. Each member of the examination committee, no later than 3 weeks prior to the defense, should receive a copy of the dissertation. At the same time, the candidate must provide a 350-word abstract and other information to the department office for the purpose of preparing an announcement of the defense.

The dissertation defense is an oral examination, which is open to the public. When the dissertation is accepted as complete, it should be submitted electronically no later than the date specified by the Office of the Registrar.

Seminar and Colloquia Requirements—Prior to graduation, doctoral students must complete the Department of Mechanical and Aerospace Engineering MAE seminar attendance requirement, whereby the student must attend at least 80 percent of the MAE seminars offered during any two semesters of the student's enrollment. For a seminar to count toward the requirement, the student must be present for the duration of the seminar. To track attendance, the student must obtain a certification signature on the MAE Seminar Attendance Form from an MAE faculty member present at the seminar and submit the completed form to the MAE departmental office at the end of the semester. The student may attempt to fulfill this requirement in as many semesters as needed. This requirement is applicable to doctoral students who matriculate during the 2016-2017 academic year or later.

Graduation and scholarship requirements—Students are responsible for knowing the University's minimum GPA requirement for graduation and scholarships available in the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_phd) section of this Bulletin. Students should contact the department for additional information and requirements.

DOCTOR OF PHILOSOPHY IN THE FIELD OF SYSTEMS ENGINEERING

The systems engineering program provides broad knowledge of the "systems approach" for designing and managing large-scale engineering systems throughout the life cycle, with faculty and students exploring case studies and methodologies from NASA, the U.S. Department of Defense and U.S. corporations.

Graduate students can pursue their degrees in one of two focus areas: operations research and management science or systems engineering and integration.

The doctoral program is individually tailored for each student. It is designed to provide students with the ability to perform substantive research in their areas of choice. Students benefit from working closely with faculty members whose applications research has been successfully used by major organizations.

GW's graduate-level systems engineering programs are offered at the University's campus in Arlington, Va. They are also offered on site at U.S. corporate offices and facilities.

For additional on-campus program information, visit the on-campus program website (<https://www.emse.seas.gwu.edu/doctor-philosophy/>).

For additional online program information, visit the online program website (<https://seasonline.gwu.edu/doctoral-degrees/doctor-of-philosophy/>).

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under School of Engineering, Doctoral Program Regulations (<http://bulletin.gwu.edu/engineering-applied-science/#seasregulationstext>)

Students with an MS degree must take a minimum of 54 credits, of which at least 30 must be credits from courses available for graduate credit, and at least 24 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor. Students with a BS degree must take a minimum of 78 credits, including 54 credits of graduate coursework and at least 24 credits of dissertation research. The courses to be taken by the student must be approved by the student's advisor. In some cases, particularly when the student undertakes a doctoral program in a field other than that in which the earlier degree was

earned, the program of study exceeds the minimum number of credits. Students in the online PhD in systems engineering program must have an MS degree. Online PhD students must take a minimum of 54 credits, of which at least 24 must be from courses available for graduate credit, and at least 30 must be dissertation research credits. The courses to be taken by the student must be approved by the student's advisor.

Curriculum

No specific courses are required beyond the preparatory courses. The student and advisor design the curriculum to meet the student's needs and goals.

Code	Title	Credits
Preparatory courses		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
APSC 3115	Engineering Analysis III	

Preliminary/qualifying examinations

The qualifying examination is the principal means of determining whether a student qualifies as a candidate for the doctoral degree and progress to the second stage of the program. Its purpose is to ascertain that the student's background and intellectual development are adequate to support doctoral research in the central field. The DQE will be offered in January (both parts) and September (only data analysis). Before taking the examination, students must have completed the core courses and 27 credits (nine courses) of their required coursework and have the DegreeMap finalized. Students must also submit a doctoral qualifying examination checklist to the doctoral coordinator.

The qualifying examination consists of two parts: a two-part written examination and a focus area exam.

Written examination (Part I)

This examination consists of a two-hour, in-class examination covering EMSE 6765 and an eight-hour, take-home exam covering EMSE 8000 and EMSE 8001. Both examinations are offered during the last week in January. The EMSE 6765-based exam is also offered during the last week in January. Students should apply to take this examination before the end of the preceding semester.

Focus area exam (Part II)

The focus area examination is both written and oral. Students must take this examination by the end of the semester following the successful completion of DQE part I (i.e., student nominally completes Part I in January, and must take Part II in the third week of May). Students should register for EMSE 8999 for the semester in which they are taking the exam.

Students have three options for the basis for their oral defense:

- A conference or journal paper, on which they are the lead author. If it is a conference paper, the full paper must have been peer-reviewed.
- A seminal journal paper in their focus area. Their advisor and examining committee must approve the paper.
- A ten-page literature review on a topic in their focus area. They have two weeks to complete the review.

In all cases, students are required to defend the work in front of a committee. The committee must consist of three faculty members, at least two of which are full-time in EMSE. Oral exams are approximately one hour long.

At the discretion of the committee a student who fails any part of the qualifying examination may be given a second opportunity to attempt qualification for candidacy. Usually, only the failed portion of the examination must be retaken. Students who fail to qualify for candidacy in a doctoral program of the School are considered to have failed on a school-wide basis and will not be admitted to further doctoral study within the School.

After successful completion of the DQE, the candidate's advisor presents the academic record of the candidate and request the formation of a research committee. The Department votes on (provisional) admission to candidacy and the research committee. The research committee must be formed before the proposal defense (described below) and must consist of the student's advisor and two other faculty members, at least one of whom must be full-time. Once the student is admitted to candidacy for the degree, they begin specialized study and research under the supervision of their research committee. At this point the research committee remains fixed unless a change is formally requested and approved by the department chair and advisor.

Publication Requirements

Students are given 18 months from completion of DQE Part II to be accepted into a pre-approved conference for presentation on a topic relevant to their research. This presentation must be co-authored by their adviser. Failure to do so will result in termination of their candidacy in the doctoral program.

Dissertation

Proposal defense—After acceptance to a conference, students are required to present a written dissertation proposal to their research committee and to successfully defend the proposal in an oral defense. This proposal should consist of, at a minimum, an introductory chapter, a review of the literature chapter, a methodology chapter, and a chapter on potential results. The Request for Proposal Defense form must be filed and approved two weeks prior to the defense. The Form 5 Doctor of Science Dissertation form is present at the proposal defense and, after a successful defense, is signed by all committee members. After the defense, the advisor in collaboration with the student submits, in writing, a copy (signed by student and adviser) of

all suggestions, clarifications, and corrections to the proposal along with the signed Form 5 to the doctoral coordinator within four weeks of the defense. Failure to do so will void the defense. The doctoral coordinator forwards the Form 5 to the department chair for signature. Students are given a maximum of two attempts and a maximum time limit of two years past the semester in which they pass their DQEs to successfully defend their proposal. Failure to do so will result in termination of their candidacy in the doctoral program.

Final examination/doctoral defense—Once the dissertation has been completed and accepted by the faculty advisor and research committee, students may file a Request for final examination form with the doctoral coordinator. This form must be filed and approved by the department chair at least two weeks prior to the final examination date. Approval is granted only when all required materials have been presented to the doctoral coordinator. The required materials include a completely filed Request for Final Examination Form, a copy of the journal article with reviews, resumes of outside evaluators and electronic and written copies of the dissertation. The final examination is oral and open to the public. The candidate must demonstrate mastery of the special field of study and of the materials and techniques used in the research. The committee of examiners may include qualified experts brought to the University specially to participate in the examination. The director of research usually serves as advocate for the candidate. Students should consult department regulations concerning the formation of the committee. The committee votes on the quality and originality of the candidate’s contribution to knowledge as well as their mastery of the scholarship and research techniques of the field. Upon a majority vote for pass, the committee recommends the candidate for the degree of doctor of philosophy. The vote to pass may be provisional based on committee recommendations for changes to the dissertation in terms of additional analysis, writing or clarifications.

Seminar and colloquia requirements
As described in the “Publication Requirements” section above, students are required to present in a pre-approved conference on a topic relevant to their research. In addition, students are also encouraged to present and participate in departmental research seminars.

Graduation and scholarship requirements
Students are responsible for knowing the university’s minimum GPA requirement for graduation and scholarships. Visit the Graduation and Scholarship Requirements (http://bulletin.gwu.edu/engineering-applied-science/#graduation_requirements_phd) section in this Bulletin to read the requirements. Students should contact the department for additional information and requirements.

CERTIFICATE PROGRAMS

GATEWAY TO COMPUTER SCIENCE GRADUATE CERTIFICATE

Offered online

The gateway to computer science graduate certificate program prepares students from any background to enter the field of computer science and information technology. The program is available to students with a bachelor’s degree in any major. Students who complete the program will gain knowledge and skills that enable them to apply computer science to their current careers and will prepare them for direct entry into the master’s in applied computer science program.

More information is available on the department website (<https://www.cs.seas.gwu.edu/>).

REQUIREMENTS

This program begins in fall 2021.

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
CSCI 6001	Introduction to Computer Programming and Software Development	
CSCI 6002	Introduction to Data Structures and Their Applications	
CSCI 6003	Introduction to Software Design and Engineering	
CSCI 6004	Introduction to Web Development	

GRADUATE CERTIFICATE IN COMPUTER-INTEGRATED DESIGN IN MECHANICAL AND AEROSPACE ENGINEERING

The computer-integrated design certificate program has been created to provide working engineers with a coordinated four-course sequence that emphasizes hands-on experience with current professional design methodologies, and software.

Analysis and design techniques utilizing industry-standard computer codes are beginning to be addressed in some of today’s undergraduate engineering programs, but many working engineers lack sufficient training in this area and are required to gain their expertise while on the job. The computer-integrated design certificate program has been created to provide such engineers with a coordinated four-

course sequence that emphasizes hands-on experience with current professional design methodologies, and software.

This certificate program offers an alternative to a master of science degree (MS) program for professionals who wish to expand their education beyond the bachelor's degree but might not have the time to commit to a full graduate degree program. The graduate certificate in computer-integrated design serves as a path towards the MS degree (since the MS program accepts all certificate courses) in mechanical and aerospace engineering at The George Washington University.

The program comprises four courses (12 credit hours) – three courses focus on numerical design and analysis tools, and the fourth course is the capstone course in which students apply these tools to individual projects in aircraft, mechanical, or spacecraft design. Each of the classes meets in the evening once per week.

Visit the program website (<https://www.mae.seas.gwu.edu/computer-integrated-design-graduate-certificate/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
MAE 6220	Applied Computational Fluid Dynamics	
MAE 6243	Advanced Mechanical Engineering Design	
MAE 6246	Electromechanical Control Systems	
MAE 6287	Applied Finite Element Methods	

GRADUATE CERTIFICATE IN COMPUTER SECURITY AND INFORMATION ASSURANCE

The graduate certificate program in computer security and information assurance provides a strong technical education in the security of computer systems and networks, as well as training in related policy issues.

The objective of the certificate program in computer security and information assurance is to provide a coordinated four-course sequence that emphasizes concepts in computer security, augmented with current industry standard techniques and challenges. It provides an alternative to the full MS program for practicing computer scientists and other information technology personnel who wish to extend their education beyond the B.S. level, and to those who wish to

acquire up-to-date knowledge in the burgeoning field of computer and network security.

Students will learn the essentials of computer and network security through two required courses, and will also have the opportunity to explore in further depth topics of specific interest through two electives. Electives are offered in topics such as information policy, wireless security, and cryptography, as well on advanced research topics in the various specialized areas of security.

GW has been recognized as a Center of Academic Excellence in Education-Research and by the National Security Agency (NSA) and the Department of Homeland Security (DHS).

Visit the program website (<https://www.cs.seas.gwu.edu/graduate-certificate-computer-security-and-information-assurance/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses chosen from the list below.

Code	Title	Credits
Required		
CSCI 6531	Computer Security	
CSCI 6541	Network Security	
Elective		
Two of the following:		
CSCI 6331	Cryptography	
CSCI 6532	Information Policy	
CSCI 6542	Computer Network Defense	
CSCI 6547	Wireless and Mobile Security	
CSCI 6548	E-Commerce Security	
CSCI 8331	Advanced Cryptography	
CSCI 8531	Advanced Topics in Security	

GRADUATE CERTIFICATE IN EMERGENCY MANAGEMENT AND PUBLIC HEALTH

Offered through the Department of Engineering Management and Systems Engineering, the graduate certificate in Emergency Management and Public Health provides the skills needed to define emergencies and disasters as well as develop

incident management plans for responding to and managing environmental and public health emergencies.

In addition to coursework within the department, students may take courses at GW's Milken Institute School of Public Health. All courses are held in-person on GW's main campus in the Foggy Bottom neighborhood of Washington, D.C. Courses are typically held in the late afternoon or early evening to accommodate working professionals.

Visit the program website (<https://www.emse.seas.gwu.edu/graduate-certificates/#emph>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
EMSE 6305	Crisis and Emergency Management	
EMSE 6325	Medical and Public Health Emergency Management	
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
Electives		
Two of the following:		
EMSE 6240	Environmental Hazard Management	
EMSE 6300	Homeland Security: The National Challenge	
EMSE 6310	Information Technology in Crisis and Emergency Management	
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	
EMSE 6320	International Disaster Management	
EMSE 6330	Management of Terrorism Preparedness and Response	
EMSE 6335		
EMSE 6345	Disaster Recovery and Organizational Continuity	
EMSE 6350	Hazard Mitigation in Disaster Management	

EMSE 6820 Program and Project Management

EMSE 6992 Special Topics (as approved by academic advisor)

Appropriate electives from other departments may be permitted with the advisor's approval.

GRADUATE CERTIFICATE IN ENERGY ENGINEERING AND MANAGEMENT

Students in the graduate certificate program in energy engineering and management learn about alternative energy generation and energy resources management, and open up new opportunities in a rapidly growing job sector as energy auditors, energy analysts, energy project managers and related positions. Students explore the latest information in energy efficient building design, microgrid, renewable energy development and advanced materials research while learning the economics of energy, the art of managing energy projects, and analytical methods of analyzing the viability and feasibility of energy projects.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
EMSE 6260	Energy Management	
EMSE 6285	Analytical Tools for Energy Management	
MAE 6262	Energy Systems Analysis	
MAE 6263	Energy and Sustainability	

GRADUATE CERTIFICATE IN ENGINEERING AND TECHNOLOGY MANAGEMENT

This graduate certificate in engineering and technology management provides an understanding of management theory and practice as applied to the management of engineering, science and technology. The program emphasizes study of general management problems as well as the use of specific knowledge and methods to solve problems and explore opportunities in engineering, science and technology.

Visit the program website (<https://graduate.seas.gwu.edu/engineering-and-technology-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6410	Survey of Finance and Engineering Economics	
EMSE 6820	Program and Project Management	

GRADUATE CERTIFICATE IN ENVIRONMENTAL ENGINEERING

The certificate program in environmental engineering is particularly appropriate for individuals interested in the areas of hazardous waste remediation and water/wastewater treatment.

Upon completion of the certificate program in environmental engineering, students will be able to design, analyze, and evaluate systems for hazardous waste remediation and water/wastewater treatment. Students will learn basic concepts of water, air, and terrestrial environments and interrelationships among them, as well as the basic concepts of environment and health, water and wastewater systems, and legal and regulatory controls. Students will also learn to apply principles of environmental chemistry and microbiology and to perform assessments of environmental quality and impacts. Students will be able to apply their understanding of commonly used processes for water and wastewater treatment, such as sedimentation, coagulation, filtration, disinfection, gas transfer, activated sludge, trickling filters, oxidation ponds, sorption, and sludge stabilization and disposal. Finally, students will learn to perform engineering design in at least one of the following areas: hazardous waste remediation, advanced technologies in environmental engineering, and environmental impact assessment.

To obtain the certificate in environmental engineering, students must complete a total of four courses including three required courses and one elective course.

Visit the program website (<https://www.cee.seas.gwu.edu/environmental-engineering-graduate-certificate-program/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in one selected track, including 9 credits in required courses and a 3-credit elective course.

Hazardous Waste Remediation

Code	Title	Credits
Required		
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6509	Introduction to Hazardous Wastes	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	

Advanced Technologies in Environmental Engineering

Code	Title	Credits
Required		
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6800	Special Topics (Environmental Application and Implications of Nanotechnology)	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	

Engineering Design and Impact Assessment

Code	Title	Credits
Required		
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	
CE 6505	Environmental Impact Assessment	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6502	Advanced Sanitary Engineering Design	
CE 6503	Principles of Environmental Engineering	
CE 6504	Water and Wastewater Treatment Processes	

GRADUATE CERTIFICATE IN ENVIRONMENTAL AND ENERGY SYSTEMS MANAGEMENT

Offered through the Department of Engineering Management and Systems Engineering, the graduate certificate in environmental and energy systems management is designed to help students understand and implement environmental and energy management standards, such as ISO 14000 and 50000 series, within organizations worldwide.

The program is especially suited for working professionals in need of specialized knowledge of the standards, techniques and testing of environmental and energy systems.

All courses are held in-person on GW's main campus in the Foggy Bottom neighborhood of Washington, D.C. Courses are typically held in the late afternoon or early evening to accommodate working professionals.

Visit the program website (<https://graduate.seas.gwu.edu/environmental-and-energy-systems-management/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EMSE 6220	Environmental Management	

EMSE 6245 Analytical Tools for Environmental Management

EMSE 6260 Energy Management

EMSE 6285 Analytical Tools for Energy Management

EMSE 6992 Special Topics (Beyond Compliance: Next Generation Environmental Self-governance)

EMSE 6992 Special Topics (Global Connections: Standards in Technology, Business & Public Policy)

GRADUATE CERTIFICATE IN GEOENVIRONMENTAL ENGINEERING

The certificate program in geoenvironmental engineering is designed to provide the necessary background for civil engineers to practice in the field of geoenvironmental engineering. The program will offer an in-depth understanding of the issues that a geoenvironmental engineer may encounter in practice.

Upon completion of the certificate program in geoenvironmental engineering, students will be able to design, analyze, and evaluate systems in geoenvironmental engineering. Students will learn to understand soil mineralogy, clay–water–electrolyte systems, soil composition, fabric, structure, volume change behavior, permeability, coupled phenomena, and in-situ evaluation of soil behavior. Students will also learn about hazardous waste regulations, including RCRA and Superfund. Students will be able to analyze sites for transport and fate of hazardous substances, including elements of environmental toxicology, risk assessment, and hazard ranking, as well as monitoring, data collection, and evaluation. Finally, students will learn to design engineered processes for waste minimization, and containment systems for waste disposal and remediation.

To obtain the certificate in geoenvironmental engineering, students must complete a total of four courses, including three required courses and one elective course.

Visit the program website (<https://www.cee.seas.gwu.edu/geoenvironmental-engineering-graduate-certificate-program/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 9 credits in required courses and one 3-credit elective course.

Code	Title	Credits
Required		
CE 6401	Fundamentals of Soil Behavior	
CE 6509	Introduction to Hazardous Wastes	
CE 6800	Special Topics (Containment Systems for Waste Disposal and Remediation Systems for Subsurface Contamination)	
Elective		
One of the following:		
CE 6501	Environmental Chemistry	
CE 6504	Water and Wastewater Treatment Processes	
CE 6507	Advanced Treatment Processes	
CE 6605	Ground Water and Seepage	
CE 6610	Pollution Transport Systems	

GRADUATE CERTIFICATE IN HIGH-PERFORMANCE COMPUTING

The certificate in high-performance computing offers an alternative to a master of science degree program for professionals who wish to align their background with the rapid changes in computing technologies and to expand their education beyond the Bachelor's degree but might not have the time to commit to a full graduate degree program. With processor chips now having multi-cores and turning into multiprocessors, all computing is turning into high-performance computing. This program addresses the professional preparedness needs arising from these current transformative developments and draws upon our advanced research engagements and our cutting-edge facilities in high-performance computing.

The objective of this program is to provide a mechanism for interdisciplinary computational engineers and scientists, as well as for computer engineers and scientists, to acquire up-to-date knowledge in the advances of computer systems. The certificate in high-performance computing program addresses the rapid growth and applications of multicore processors, parallel computers, hardware accelerators, and networked computing as a tool for engineering and scientific modeling. It is carefully tailored to provide students with the necessary knowledge in the basic aspects of high performance computing, including programming, performance, architectures, systems, and applications.

Visit the program website (<https://www.ece.seas.gwu.edu/graduate-certificate-high-performance-computing/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits, including 6 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
ECE 6105	Introduction to High-Performance Computing	
At least one of the following:		
ECE 6125	Parallel Computer Architecture	
ECE 6130	Big Data and Cloud Computing	
Electives		
Six additional credits from the following:		
CE 6210	Introduction to Finite Element Analysis	
CE 6705	Nonlinear Finite Element Modeling and Simulation	
CE 8330	Advanced Finite Element Analysis	
CSCI 3571	Introduction to Bioinformatics	
CSCI 4572	Computational Biology	
CSCI 6421	Distributed and Cluster Computing	
ECE 6005	Computer Architecture and Design	
ECE 6045	Special Topics	
ECE 6050	Research	
ECE 6120	Advanced Microarchitecture	
ECE 6140	Embedded Systems	
ECE 6213	Design of VLSI Circuits	
ECE 6214	High-Level VLSI Design Methodology	
ECE 6735	Numerical Electromagnetics	
ECE 6800	Computational Techniques in Electrical Engineering	
MAE 6225	Computational Fluid Dynamics	
MAE 6291	Special Topics in Mechanical Engineering	

PHYS 6130	Computational Physics I
PHYS 6230	Computational Physics II
PHYS 6330	Computational Physics III
PHYS 8110	Selected Topics in Theoretical Nuclear Physics

GRADUATE CERTIFICATE IN HOMELAND SECURITY, EMERGENCY PREPAREDNESS, AND RESPONSE

Offered through the Department of Engineering Management and Systems Engineering and supported by GW's Institute for Crisis, Disaster, and Risk Management (ICDRM), the graduate certificate program in homeland security emergency preparedness and response provides an interdisciplinary education for those engaged in or seeking careers in homeland security, crisis, disaster and/or emergency management in the public, private and not-for-profit sectors.

All courses are held in-person on GW's main campus in Washington, D.C. Courses are typically held in the late afternoon or early evening to accommodate working professionals.

Visit the program website (<https://graduate.seas.gwu.edu/homeland-security-emergency-preparedness-and-response/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 3 credits in required courses and 15 credits in elective courses.

Code	Title	Credits
Required		
EMSE 6300	Homeland Security: The National Challenge	
Electives		
Five of the following:		
EMSE 6240	Environmental Hazard Management	
EMSE 6305	Crisis and Emergency Management	
EMSE 6310	Information Technology in Crisis and Emergency Management	
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	

EMSE 6320	International Disaster Management
EMSE 6325	Medical and Public Health Emergency Management
EMSE 6330	Management of Terrorism Preparedness and Response
EMSE 6335	
EMSE 6345	Disaster Recovery and Organizational Continuity
EMSE 6350	Hazard Mitigation in Disaster Management
EMSE 6820	Program and Project Management
EMSE 6992	Special Topics (as approved by academic advisor)

Appropriate electives from other departments may be permitted with advisor approval

GRADUATE CERTIFICATE IN STRUCTURAL ENGINEERING

The graduate certificate in structural engineering program is appropriate for those who wish to gain specialized knowledge in one of the following tracks: earthquake engineering design of bridges and buildings, extreme event design of structures to resist the effects of accidental explosions and vehicular collision, concrete bridge design using the LRFD approach, or building design using the LRFD approach.

Students who successfully complete the certificate program may opt to continue towards a master's degree in civil and environmental engineering department. All courses completed by the student in the graduate certificate program with a grade of B or better can be transferred to the master's degree program.

Visit the program website (<https://www.cee.seas.gwu.edu/structural-engineering-graduate-certificate-program/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses in one selected track.

Earthquake Engineering Design

Code	Title	Credits
Required		
CE 6202	Methods of Structural Analysis	

CE 6342	Structural Design to Resist Natural Hazards
CE 6404	Geotechnical Earthquake Engineering
CE 6800	Special Topics (Advanced Earthquake Engineering Topics)

Concrete Bridge Design

Code	Title	Credits
Required		
CE 6301	Design of Reinforced Concrete Structures	
CE 6302	Prestressed Concrete Structures	
CE 6310	Advanced Reinforced Concrete Structures	
CE 6800	Special Topics (Advanced Bridge Design Topics)	

Extreme Event Design of Structures

Code	Title	Credits
Required		
CE 6202	Methods of Structural Analysis	
CE 6342	Structural Design to Resist Natural Hazards	
CE 8330	Advanced Finite Element Analysis	
CE 6800	Special Topics ((Advanced Blast Resistant Topics)	

Building Design

Code	Title	Credits
Required		
CE 6310	Advanced Reinforced Concrete Structures	
CE 6342	Structural Design to Resist Natural Hazards	
CE 6320	Design of Metal Structures	
CE 6800	Special Topics (Advanced Building Design Topics)	

GRADUATE CERTIFICATE IN SYSTEMS ENGINEERING

Systems management combines the study of systems engineering with that of engineering management. Students in the program complement their technical knowledge with managerial skill and learn how to lead the process of change in technically-oriented organizations. The program also helps managers to apply the power of systems engineering to administering their enterprise. The combined study of systems and management affords engineers an understanding of managerial roles, and equips managers to formulate, analyze, and execute decisions in engineering, technical and other scientific organizations. If successfully completed, students may apply the 12 credits earned in this certificate program toward the 36-credit master of science in the field of systems engineering degree.

Visit the Department Engineering Management and Systems Engineering (<https://www.emse.seas.gwu.edu/graduate-certificates/>) website for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
EMSE 6001	The Management of Technical Organizations	
EMSE 6020	Decision Making with Uncertainty	
EMSE 6540	Management of Information and Systems Security	
EMSE 6801	Systems Engineering I	
EMSE 6805	Systems Engineering II	
EMSE 6820	Program and Project Management	

GRADUATE CERTIFICATE IN SYSTEMS MANAGEMENT

Systems management combines the study of systems engineering with that of engineering management. Students in the program complement their technical knowledge with managerial skill and learn how to lead the process of change in technically-oriented organizations. The program also helps managers to apply the power of systems engineering to administering their enterprise. The combined study of systems and management affords engineers an understanding of managerial roles, and equips managers to formulate, analyze, and execute decisions in engineering, technical and other

scientific organizations. If successfully completed, students may apply the 12 credits earned in this certificate program toward the 36-credit master of science in the field of systems engineering (p. 805) degree.

Visit the Department of Engineering Management and Systems Engineering website (<https://www.emse.seas.gwu.edu/graduate-certificates/#se>) for additional program information.

REQUIREMENTS

Visit the program website (<https://graduate.seas.gwu.edu/graduate-certificate-systems-engineering/>) for additional information.

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
Courses must be taken in the following sequence:		
EMSE 6801	Systems Engineering I	
EMSE 6810	Systems Analysis and Management	
EMSE 6815	Requirements Engineering	
EMSE 6817	Model-Based Systems Engineering	

GRADUATE CERTIFICATE IN TRANSPORTATION ENGINEERING

The certificate program in transportation engineering is particularly appropriate for those who wish to gain specialized knowledge in one of the following tracks: Intelligent Transportation Systems & Congestion Mitigation or Transportation Safety.

Upon completion of the certificate program in transportation engineering, students will be able to design, analyze, and evaluate systems in transportation engineering.

For the intelligent transportation systems and congestion mitigation track, students will be able to apply commands, controls and communications in modern multimodal transportation; infrastructure/highway and vehicle automation, advanced traffic management, vehicle control and safety systems; information, data, and sensory requirements; practical applications and projects. Students will learn to apply roadway traffic capacity and network performance measures; steady and unsteady traffic flow phenomena; traffic control signalization theory and practical implementation; monitoring techniques, instruments, and data processing for highway safety; and traffic related highway safety design concepts.

For the transportation safety track, students will be able to explain the dynamic performance of an automotive vehicle

using engineering principles and analytical methods. Students will also learn about vehicle standards and crash test analysis, perform crash investigation and analysis, and apply dynamic nonlinear finite element methods with contact algorithms for modeling crash phenomena.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 9 credits in required courses and 6 credits in elective courses in one selected track.

Intelligent Transportation Systems and Congestion Mitigation Track

Code	Title	Credits
Required		
Three of the following:		
CE 6707	Systems Dynamics Modeling and Control	
CE 6721	Traffic Engineering and Highway Safety	
CE 6722	Intelligent Transportation Systems	
CE 6800	Special Topics (Advanced Theory in Traffic Flow)	
CE 6800	Special Topics (Advanced Demand Modeling)	
Electives		
Two of the following:		
CE 6101	Numerical Methods in Engineering	
CE 6102	Application of Probability Methods in Civil Engineering	
CE 6210	Introduction to Finite Element Analysis	
CE 6701	Analytical Mechanics	
CE 8330	Advanced Finite Element Analysis	
CE 8380	Advanced Biomechanics	

Transportation Safety Track

Code	Title	Credits
Required		
Three of the following:		
CE 6350	Introduction to Biomechanics	
CE 6702	Vehicle Dynamics	

CE 6703

CE 6704

CE 6705 Nonlinear Finite Element Modeling and Simulation

CE 6707 Systems Dynamics Modeling and Control

CE 6721 Traffic Engineering and Highway Safety

CE 6722 Intelligent Transportation Systems

Electives

Two of the following:

CE 6101 Numerical Methods in Engineering

CE 6102 Application of Probability Methods in Civil Engineering

CE 6210 Introduction to Finite Element Analysis

CE 6701 Analytical Mechanics

CE 8330 Advanced Finite Element Analysis

CE 8380 Advanced Biomechanics

ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS

Dean I. Feldman (Interim)

Associate Deans P. Rollberg, L. Stephenson

Assistant Deans G. Cornwell, T. Greiff, J. Walker

The Elliott School of International Affairs offers undergraduate and graduate programs to prepare individuals to understand and work in an increasingly globalized world. The historical roots of the Elliott School extend back to the establishment of the School of Comparative Jurisprudence and Diplomacy in 1898. In 1966, the School separated from the School of Government, Business, and International Affairs to become an independent unit, the School of Public and International Affairs. In 1987, the name was changed to the School of International Affairs, and in 1988 the School was renamed in honor of Evelyn E. and Lloyd H. Elliott. Lloyd Elliott served as president of George Washington University from 1965 to 1988.

The Elliott School offers the bachelor of arts degree with majors in international affairs, Asian studies, Latin American and hemispheric studies, and Middle East studies; bachelor of science degree with a major in international affairs; the master of arts degree in the fields of international affairs, Asian studies, European and Eurasian studies, global communication, international development studies, international economic policy, international science and technology policy, Latin American and hemispheric studies, Middle East studies, and security policy studies; master of international policy and practice degree for mid-career professionals; and master of international studies degree for students enrolled in master's degree programs at international universities with which the Elliott School has a special partnership.

These programs provide advanced academic and professional training in international affairs as preparation for employment in public, private, and nonprofit sectors. Focusing on major historical and contemporary issues in international affairs, the programs are both interdisciplinary and multidisciplinary, combining courses offered through the School with courses offered by other schools and departments of the University.

REGULATIONS

Undergraduate Degree Requirements Graduation

To earn a bachelor's degree, students must complete 120 credits, meet the University General Education Requirement (p. 42), major requirements, and have a minimum cumulative grade-point average of 2.0. Courses in lifestyle, sport, and physical activity do not count toward the degree.

Scholarship Performance in the Major

All courses indicated as requirements for the major, including courses taken to fulfill the third-year language proficiency requirement, must be completed with a minimum grade of C-. If a student receives a grade of D+, D, or D- in any of these courses, the credit will count toward the degree, but the student must either repeat the course or, with approval of the academic advisor, substitute another course; in either case, the student must earn a minimum grade of C-. If the student must repeat the course, credit for the repetition does not count toward the degree, and grades for both the initial course and the repeated course are used to compute the GPA. If the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>) allows another course to be substituted, the initial course is considered to be an elective. Students are expected to consult the Elliott School Office of Undergraduate Academic Advising allows another course to be substituted, the initial course is considered to be an elective. Students are expected to consult the Elliott School Office of Undergraduate Academic Advising in all matters affecting the program of study, such as changes, substitutions, withdrawals, or transfer of credit from other institutions.

Incompletes

Conditions under which the symbol I (Incomplete) may be assigned in a course are described under University Regulations (p. 27).

Pass/No Pass Option

A student who has a cumulative grade-point average of 2.5 or above may, with the approval of the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>), take one course per semester and receive a grade of Pass (P) or No Pass (NP), which is recorded on the student's transcript, but is not reflected in the cumulative grade average. A student must sign up for this option at the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>) within the first eight weeks of classes. Under no circumstances may a student change from P/NP status to graded status, or vice versa, after the end of the eighth week of the semester. Foreign language courses and required courses in the student's degree program (except those in which the grade of P or NP is normally assigned) may not be taken on a P/NP basis. First-year students may not elect to take a course on a P/NP basis. A transfer student may not elect to take a course on a P/NP basis until the second semester of enrollment in the University. No more than six courses in which the grade of P or NP is assigned will apply toward the degree, including courses in which the grade of P or NP is normally given.

Study Abroad

Students are encouraged to study abroad. Those wishing to study abroad must consult their academic advisor and the University's Office for Study Abroad (<http://studyabroad.gwu.edu/>). Students must secure prior approval

from the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>) for any plan of study abroad in order for the credit to apply toward the student's degree requirements. Students must apply to a program from the University's list of approved study abroad programs (<https://studyabroad.gwu.edu/>).

Internships

Internships offer students the opportunity to make practical use of the knowledge they acquire in the classroom. Elliott School undergraduates students who have completed at least 24 credits in-residence, have a minimum cumulative grade-point average of 2.5, and have no more than one incomplete on their transcript, are eligible to arrange internships for credit or zero-credit, for a maximum total of 6 credits toward the degree. Academic work in the field of the internship is required. A zero-credit internship, which requires no additional academic work outside of the internship itself, is also available. Internships are available in the private, nonprofit, and public sectors. Students must register for internships (even if for zero-credit) through the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>) but are responsible for locating their own internships.

Double Majors

Students who complete the requirements of two majors in the Elliott School (such as international affairs and Asian studies) may graduate with a double major. Consult the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>) to officially declare both majors on the appropriate form.

Students in the Elliott School may declare a second major offered by Columbian College of Arts and Sciences, School of Engineering and Applied Science, Milken Institute School of Public Health, or School of Business (finance major only). Permission for the second major must be obtained from the appropriate administrative office of the other school.

Students in Columbian College of Arts and Sciences, School of Engineering and Applied Science, Milken Institute School of Public Health, and the School of Business may declare a second major in the Elliott School. Students wishing to pursue these options must request approval through the Elliott School Office of Undergraduate Academic Advising (<http://elliott.gwu.edu/undergraduate-advising/>). Students must complete all degree requirements for their major in their home school in order to graduate with a second major from the other school.

In all cases, double majors do not result in two degrees. See Double Majors and Double Degrees in the University Regulations (p. 27).

Special Honors

Students who complete a senior thesis or research seminar with a minimum grade of A-, earn a cumulative GPA of 3.7, and

complete 60 credits in residence at GW are awarded Special Honors.

Graduate Degree Requirements

Graduate Scholarship Requirements

Information on grades and computing the grade-point average can be found under University Regulations (<http://bulletin.gwu.edu/university-regulations/>). Courses taken to satisfy degree requirements cannot be taken on a Credit/No Credit (CR/NC) basis except for approved Law School courses. Graduate students are required to maintain a minimum cumulative GPA of 3.0.

Academic Probation

A graduate student whose GPA falls below 3.0, or who receives a grade of *F* in a course after having completed 9 credits, is placed on academic probation. While on academic probation a student:

- must earn a minimum semester GPA of 3.0 in the semester following that in which their cumulative GPA falls below 3.0 or the grade of *F* was earned;
- cannot receive an Incomplete (*I*) in any course;
- cannot receive a grade of *F* in any course; and,
- must meet with their academic advisor to discuss their progress.

A student's program may be restricted by the program director and/or academic dean if deemed necessary.

Academic Suspension

A student who fails to meet the conditions outlined above is subject to suspension. During the period of suspension, the student will not be permitted to enroll in any courses. A student who has remained on suspension from the University for a period of at least one semester may request reinstatement. The request for reinstatement must provide a clear explanation of the factors that prevented the student's success and outline a plan for successful completion of the program.

Academic Dismissal

A student is subject to dismissal under the following circumstances:

- They are reinstated after a period of suspension and fail to raise their cumulative GPA to a minimum of 3.0 by the end of the semester in which they are reinstated;
- They are subject to probation for a second time at any point during the academic program; or,
- Their cumulative GPA falls below 3.0 and they do not have enough required credits remaining in the program with which to raise their GPA to 3.0 or above. In such circumstances, the student may be permitted to take up to 6 credits of graduate-level coursework beyond those required for graduation to achieve the GPA requirement.

The academic dean in consultation with the program director will determine whether the student is dismissed. This decision is final and cannot be appealed.

Readmission

A graduate student who has not been continuously enrolled or on an approved leave of absence must file an application for readmission the semester before planning to return to school.

General Requirements for Master of Arts Degree Programs

Programs leading to the master of arts degree require a minimum of 40 credits of graduate coursework, which includes a capstone project. By the end of the first semester in residence, candidates for the degree are required to submit to the Office of Graduate Student Services for final approval a plan of study that includes concentrations, supporting coursework, and any other required information as endorsed by the program director. Degrees are awarded after the student has completed the required coursework, an acceptable capstone project, and satisfied the foreign language proficiency requirement (if relevant).

Students with sufficient academic backgrounds may waive a core course with approval of the program director and academic dean. A course waiver does not reduce the number of credits required for the degree. Under special circumstances, upper-level undergraduate courses taken while enrolled as a graduate student at the Elliott School may be counted toward the master's degree; registration for graduate credit must be approved at the beginning of the course by the program director, the instructor, and the Office of Graduate Student Services. The student who takes an undergraduate course for graduate credit is expected, by arrangement with the instructor, to do work at the graduate level in addition to the regular work of the course. Normally, no more than 9 credits of approved undergraduate coursework may be taken for credit toward a graduate degree.

All master's degree candidates must complete degree requirements within five years of matriculation in the program. Students who are temporarily unable to continue their studies may request a leave of absence not to exceed one year. Extensions beyond the five-year period may be granted in exceptional circumstances, but the student is required to register for a leave of absence each semester.

Students are encouraged, and in some cases required, to take the professional skills-based courses (IAFF 6502 Professional Skills I and IAFF 6503 Professional Skills II). The Elliott School allows a maximum of 4 credits to be taken in these courses, but program-specific limits may vary.

No more than 6 graduate credits may be transferred from accredited institutions or from non-degree status. Transfer credits may be accepted only under limited conditions, including length of time since the courses in question were completed, grades earned, and relevance to the student's

program. The sole exception to the transfer credit policy is made for MA students who attend one of the Elliott School's International Exchange Partner schools. Such students may transfer a maximum of 10 graduate credits, provided no prior transfer credit has been accepted. No student may transfer more than a total of 10 credits from all sources combined. Credit from foreign language courses is not eligible for transfer. Credit from a previously earned degree may not be counted toward the master's degree.

Capstone/Thesis Option

Every student must successfully complete a capstone near the conclusion of the master's program. For the capstone, the student must have completed 18 credits prior to the start of the capstone course work. If there is a lapse of time between completion of other coursework and the capstone, the student must be continuously enrolled during this period. The student will have one opportunity to retake a capstone if they fail the course. If the student fails a second time, their degree will not be conferred. Details concerning the capstone course vary across programs; students should consult their program guidelines for details.

For most programs, exceptional students may write a thesis, in addition to the capstone, if they qualify by having a minimum cumulative grade-point average 3.5 for a minimum of 18 credits of coursework in their program. Students also must develop a formal thesis proposal approved by their prospective thesis advisor, who must be a member of the full-time faculty, and the program director.

The thesis subject should be selected as early as possible to permit effective integration with the student's coursework. A student is not permitted to register for thesis courses (IAFF 6998 Thesis and IAFF 6999 Thesis) until the thesis subject has been formally submitted to the Office of Graduate Student Services. The subject must be approved by the thesis advisor, a second member of the faculty who serves as a reader, and the student's program director. The thesis in its final form must have the approval of the thesis director and one other reader. Thesis proposals must be submitted electronically by May 1 of the year preceding anticipated submission of the thesis in a fall-spring sequence. For a spring-fall sequence, thesis proposals must be submitted electronically by November 1 of the year preceding anticipated submission of the thesis. All theses must meet the formatting and other requirements set forth at GW's Electronic Theses and Dissertations Submission website (<http://library.gwu.edu/etds/>).

Payment of tuition for thesis research entitles the candidate, during the period of registration, to the advice and direction of the thesis director and the other reader. In case a thesis is unfinished, the student must maintain continuous enrollment and is allowed one calendar year to complete it. If the preparation of the thesis extends beyond the additional calendar year, the student must register for the entire 6 credits of thesis again and pay tuition as for a repeated course.

Foreign Language Requirements

In most degree programs, a candidate for the master of arts must demonstrate reading and speaking proficiency in a modern foreign language. All students in regional programs (including those who are not native speakers of English) must demonstrate proficiency in a language appropriate to the study of the specific region. Students should consult their program guidelines for specific requirements, including academic credit and options for demonstrating language proficiency.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Arts with a major in Asian studies (p. 841)
- Bachelor of Arts with a major in international affairs (p. 853)
- Bachelor of Arts with a major in Latin American and hemispheric studies (p. 895)
- Bachelor of Arts with a major in Middle East studies (p. 907)
- Bachelor of Science with a major in international affairs (p. 919)

Minor

- Minor in international affairs (p. 938)

Combined program

- Dual Bachelor of Science with a major in international affairs and Master of Science in the field of information systems technology (p. 938)
- Dual Bachelor of Science with a major in international affairs and Master in Management (p. 938)
- Dual Bachelor of Science with a major in international affairs and Master of Science in the field of business analytics (p. 938)

GRADUATE

Master's programs

- Master of Arts in the field of Asian studies (p. 943)
- Master of Arts in the field of European and Eurasian studies (p. 952)
- Master of Arts in the field of global communication (p. 960)
- Master of Arts in the field of international affairs (p. 970)
- Master of Arts in the field of international development studies (p. 986)
- Master of Arts in the field of international economic policy (p. 999)
- Master of Arts in the field of international economic policy, STEM Track (p. 1000)
- Master of Arts in the field of international science and technology policy (p. 1001)

- Master of Arts in the field of international trade and investment policy (p. 1004)
- Master of Arts in the field of Latin American and hemispheric studies (p. 1006)
- Master of Arts in the field of Middle East studies (p. 1012)
- Master of Arts in the field of security policy studies (p. 1027)
- Master of International Policy and Practice (p. 1032)
- Master of International Policy and Practice - Online (p. 1033)
- Master of International Studies (p. 1034)

Combined programs

- Dual Master of Arts in any Elliott School graduate program and Master of Public Health (p. 1036)
- Joint Master of Arts and Juris Doctor (p. 1036)
- Joint Master of Arts in Elliott School programs and Master of Business Administration (p. 1037)

CERTIFICATES

Graduate certificate programs

The Elliott School of International Affairs offers a series of graduate certificates covering topics of specialized interest. The certificate programs are open to all graduate students presently enrolled in the Elliott School, Columbian College of Arts and Sciences, Graduate School of Education and Human Development, School of Business, and Milken Institute School of Public Health. The programs also are open to graduate students from other universities, individuals who already have earned a graduate degree, and individuals with a bachelor's degree and a minimum of eight years of relevant professional work experience. Applicants who have less than eight years of work experience are eligible to apply but must submit the same application materials required of other MA degree programs. Transfer credit from non-GW institutions is not accepted into any graduate certificate program. No more than 6 credits of graduate coursework taken in any degree or non-degree status within the University, including the Elliott School, may be included in any graduate certificate program. Additional information is available in the Elliott School Graduate Admissions office (<http://elliott.gwu.edu/graduate-admissions/>).

- Graduate certificate in global gender policy (p. 1037)
- Graduate certificate in international science and technology policy (p. 1038)
- Graduate certificate in nuclear policy (p. 1039)

FACULTY

University Professors M. Barnett, A. Etzioni, M. Finnemore

Professors H. Agnew, G. Brazinsky, J. Brinkerhoff, M. Brown, N. Brown, M. Chen, B. Dickson, I. Feldman, J. Foster, C. Glaser,

H. Hale, H. Harrison, J. Hershberg, G. Kaminsky, M. Lynch, B. Miller, M. Moore, J. Pelzman, W. Reich, D. Shambaugh, J. Shambaugh, R. Thornton, N. Vonortas, P. Williams, S. Wolchik

Associate Professors P. Alonso-Gortari, C. Arrington, M. Atia, M. Deloffre, A. Downes, B. Hopkins, R. Jedwab, S. Kaplan, J. Kim, M. King, E. Kramon, S. McHale, M. Mochizuki, H. Mylonas, S. Robinson, A. Sotomayor, E. Teitelbaum, D. Yang

Assistant Professors F. Cunningham, M. Kansanga, N. Kelsey, R. Lopez Monti, I. Malone, D. Pardo Pedraza, L. Rafanelli, E. Schluessel, L. Sorurbakhsh, Y. Zhao

Professors of Practice C. Fink, E. Gnehm, C. Kojm, S. Pace, R. Sutter

Associate Professors of Practice J. Cooke, S. Graham, S. Roberts

Assistant Professors of Practice S. Ledermann

Specialized Faculty R. Lal, N. Lazarus

Research Professors S. Aaronson, M. Creedon, P. Ehrenfreund, M. Einhorn, M. Laruelle, M. Levinger, D. Ollapally, R. Orttung, S. Peyrouse, T. Rabgey, D. Shaw, L. Yarr

Associate Research Professors Y. Kim, E. Lagadec, S. Zhemukhov

Assistant Research Professors V. Ialenti, Y. Lee, S. Marshall

Visiting Professors D. Abente-Brun, I. Kaplan, E. Wane

Emeritus Professors C. Allen, H. Askari, M. East, D. Gow, D. Grier, C. Herber, P. Hill, W. Johnson, Y. Kim, Y. Kim-Renaud, P. Klaren, R. Krulfeld, D. Lee, J. Logsdon, G. Ludlow, E. McCord, D. Moore, H. Nau, J. Post, P. Reddaway, B. Reich, R. Rycroft, B. Sapin, R. Spector, J. Thibault, H. Wolman, R. Yin

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IAFF 1001. First-Year Experience. 1 Credit.

First-Year Experience assists students in developing their personal, academic, and career goals. Restricted to students in the Elliott School.

IAFF 1005. Introduction to International Affairs. 3 Credits.

Introduction to the field of international affairs; the challenge of promoting cooperation and order in a world in which competition, conflict, and disorder are common; interstate relations, intrastate conflicts, regional problems, and old and new global challenges. Credit cannot be earned for this course and PSC 1003.

IAFF 1099. Variable Topics. 1-36 Credits.

IAFF 2040. Basic Topics in International Affairs. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Primarily for Elliott School freshmen and sophomores.

IAFF 2090. Latin America: Problems and Promise. 3 Credits.

An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America.

IAFF 2091. East Asia-Past and Present. 3 Credits.

An interdisciplinary course offering a comprehensive and integrated introduction to the civilizations and present problems of East Asia.

IAFF 2092. Russia and Eastern Europe: An Introduction. 3 Credits.

A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media.

IAFF 2093. Africa: Problems and Prospects. 3 Credits.

Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa.

IAFF 2094. Europe: International and Domestic Interactions. 3 Credits.

A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisites: IAFF 1005 and PSC 1001.

IAFF 2095. The Middle East in International Affairs. 3 Credits.

Multidisciplinary survey of social, cultural, political, historical, and religious issues in the Middle East with a concentration on the modern period.

IAFF 2101. International Affairs Research Methods. 3 Credits.

Overview of the variety of research methods, both qualitative and quantitative, used in international affairs research; theoretical groundings and approaches to research methods; the research process.

IAFF 2190. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

IAFF 2190W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

IAFF 2444. International Law. 3 Credits.

Overview of public international law. How public international law is established, implemented, interpreted, changed, and enforced; the legal structure underpinning international society; and the relationship between domestic and international law. Credit cannot be earned for this course and PSC 2444.

IAFF 3171. U.S. Foreign Policy Summer Program. 3-4 Credits.

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues. The program has special admission criteria.

IAFF 3172. Conflict and Conflict Resolution. 3 Credits.

Introduction to the field of conflict analysis and resolution. Analysis of conflicts and their resolutions; major theories and driving causes of conflict; barriers to and mechanisms for resolving conflict; and applications to real-world conflicts.

IAFF 3177. Political Economy of Latin America. 3 Credits.

The politics of economic policymaking in Latin America. Successes and failures with policymaking ideas, political reasons for adopting different development models, and political and economic obstacles to prosperity. Restricted to juniors and seniors. Prerequisites: ECON 1011 and ECON 1012; or PSC 2439.

IAFF 3179. Special Topics in Science and Technology Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3180. Special Topics in Security Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3180W. Special Topics in Security Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3181. Special Topics in Conflict Resolution. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3182. Special Topics in Foreign Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3183. Special Topics in Development Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3184. Special Topics in Trade and International Economic Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3185. Special Topics in European and Eurasian Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3186. Special Topics in Asian Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3186W. Special Topics in Asian Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

IAFF 3187. Special Topics in Latin American and Hemispheric Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3188. Special Topics in Middle East Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3189. Special Topics in African Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3190. Special Topics in International Affairs. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3190W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

IAFF 3191W. Latin American Populism in Global Context. 3 Credits.

Theoretical frameworks for thinking about classical and contemporary examples of Latin American populism in the twentieth and twenty-first centuries; examining these theories and interpretations as they pertain to the origins, process, and outcomes of selected cases. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to . Recommended background: Latin America, upper-level political science/ international affairs coursework, and writing experience.

IAFF 3192. ESIA Dean's Scholars Workshop. 1 Credit.

For Elliott School students who have applied and been accepted to the ESIA Dean's Scholars Program. Students fine-tune their research questions, conduct the bulk of their research, draft abstracts, and outline their papers. Visit the Elliott School website for more information.

IAFF 3193W. ESIA Dean's Scholars Seminar. 3 Credits.

For Elliott School students who have applied and been accepted to the ESIA Dean's Scholars Program. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Visit the Elliott School website for more information.

IAFF 3194W. Latin America's Violent Peace. 3 Credits.

The complex governability challenges facing Latin America; discussion of the historical evolution of conflict and contestation in Latin America through inquiry into patterns in state building, political violence, armed forces, insurgencies, and criminal gangs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Recommended background: Latin America, upper-level political science/international affairs coursework, and writing experience.

IAFF 3195. Internship. 3 Credits.

Internships in public, private, and nonprofit organizations concerned with international affairs. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for up to 6 credits with permission.

IAFF 3198. Independent Study and Research. 1-3 Credits.

For juniors and seniors with a minimum grade-point average of 3.0. Students must find a sponsoring faculty member and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for credit with permission of the dean.

IAFF 3210W. Migration, Gender, and International Development. 3 Credits.

The relationship between migration and international development as an established feature of social and economic life. Gender as a framework for analyzing elements of the migration-development nexus. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

IAFF 3501. International Development Theory, Policy, and Practice. 3 Credits.

Historical overview of theoretical approaches, policies, and practices associated with international development. Possible thematic foci include state-directed development approaches, environmentalist-influenced green development, or similar topics. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W.

IAFF 3513. Human Rights and Ethics. 3 Credits.

Theoretical and empirical basis of human rights from a multi-disciplinary perspective. How rights have been conceptualized, envisioned, imagined, promoted, and asserted by philosophers, political scientists, anthropologists, and other scholars. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W. Credit cannot be earned for this course and ANTH 3513.

IAFF 4191. Research Seminar. 3 Credits.

Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. Restricted to juniors and seniors in the Elliott School.

IAFF 4191W. Research Seminar. 3 Credits.

Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors in the Elliott School.

IAFF 4199. Senior Thesis. 3 Credits.

Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. Restricted to seniors in the Elliott School.

IAFF 5099. Variable Topics. 1-99 Credits.**IAFF 6101. International Affairs Cornerstone. 3 Credits.**

Political, economic, and social theories of international relations and their applications to practice.

IAFF 6102. Global Gender Policy. 3 Credits.

An interdisciplinary and comparative approach to examination of policies targeted at achieving gender equality and of the costs of policies that are not gender-specific. Topics include poverty reduction, environmental sustainability, social justice, global and personal security, and prevention of and responses to extreme calamities and crises. How global gender policies are rationalized, adopted, implemented, and assessed. Focus on "what works" and why it works; gaps that remain in achieving global gender equality.

IAFF 6106. Nuclear Weapons. 3 Credits.

The technology and politics associated with nuclear weapons. Strategy and deterrence, force planning and operations, and the prospect of nuclear terrorism.

IAFF 6107. The Science of Nuclear Materials. 3 Credits.

Fundamental principles of nuclear materials, including the origins of radiation, manufacture and detection of nuclear materials, nuclear weapons and power issues, and medical uses and environmental issues related to nuclear materials.

IAFF 6108. International Development Policy. 3 Credits.

The changing scope and nature of international development and the challenges currently facing development agencies; how the mixed results of investment in development has brought methods and concepts into question and how agencies are responding to this challenge.

IAFF 6118. Special Topics in International Affairs. 3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6121. International Development Studies Cornerstone. 3 Credits.

Introduction to the concepts and methods of international development. Prerequisite: students in the MA in international development studies program.

IAFF 6122. Development Policy and Practice. 3 Credits.

An overview of economic development in developing countries; key challenges of economic growth, poverty alleviation, and development.

IAFF 6136. Gender and Development. 3 Credits.

Theoretical approaches to gender and development and debates over how to promote gender equity and rights across the gender spectrum. Key issues in gender and development and the range of actors who are involved in promoting gender equality. General patterns, lessons with broader applications, and challenges and differences within and between societies.

IAFF 6137. Development Studies Pre-Capstone Workshop. 1 Credit.

Students work in teams to find a suitable client and negotiate a project, with detailed terms of reference and a work plan to be carried out in the spring semester. Restricted to students in the MA in international development studies program.

IAFF 6138. Special Topics in International Development Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6139. International Development Studies Capstone. 3 Credits.

A project-oriented development course abroad, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in international development studies program.

IAFF 6141. International Science and Technology Policy Cornerstone. 3 Credits.

Introduction to the study of international science and technology policy; focus on policy issues that arise from interactions between scientific and technological developments and government activity.

IAFF 6142. Technology Creation/Diffusion. 3 Credits.

Examination of the relationship between invention (inception), innovation (first application), and dissemination (diffusion) of technological knowledge; focus on the technological environment prevailing in the major developed market economies.

IAFF 6143. Science and Technology Policy Analysis. 3 Credits.

The use of science by policy decision makers; the affects of policy on science and technology; issues of risk, uncertainty, regulation, democratization, and politics in science and technology policy.

IAFF 6145. U.S. Space Policy. 3 Credits.

Origins, evolution, current status, and future prospects of U.S. space policies and programs. U.S. civilian, military, and national security space programs and space activities of the U.S. private sector.

IAFF 6146. Space Law. 3 Credits.

The underlying principles of international space law, with emphasis on issues of particular concern as the uses of space increase for exploration, commerce, and security.

IAFF 6148. Space and National Security. 3 Credits.

Historic and current factors and emerging trends shaping the development and implementation of U.S. national security space policy and strategy, including the global security environment, domestic politics, and technology.

IAFF 6151. Environmental Policy. 3 Credits.

Examination of public policies designed to protect the human and physical environment; focus on the ways science and technology can simultaneously create new environmental problems and contribute to their mitigation and prevention.

IAFF 6153. Science, Technology, and National Security. 3 Credits.

The contributions of science and technology to U.S. security in military, intelligence, and homeland security activities.

IAFF 6157. International Science and Technology Policy Capstone Workshop. 1 Credit.

First course in a two-semester sequence. Second-year students in the MA in international science and technology policy program work in groups on a project addressing a policy problem or issue in international affairs. Restricted to students in the international science and technology policy program.

IAFF 6158. Special Topics in International Science and Technology Policy. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6159. ISTP Capstone Project. 3 Credits.

A seminar designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to MA candidates in science and technology policy.

IAFF 6160. Defense Policy and Program Analysis. 3 Credits.

Examination of how national security policy is formulated and translated into a defense budget, program priorities, and force structure. Focus on nuclear forces.

IAFF 6161. International Security. 3 Credits.

Survey of the field of international security studies; overview of key concepts, theories, and approaches; inter-state, intra-state, and transnational security problems and the interrelated nature of these categories; analysis of security topics such as great-power relations, arms racing and arms control, crisis management, civil wars, terrorism, and gender, combined with a review of regional developments; non-military issues that have major security implications, including poverty, health, population movements, energy consumption, and climate change; the role of international organizations in promoting international security, and prospects for the future. Restricted to students in the MA in security policy studies program.

IAFF 6162. Security Policy Analysis. 3 Credits.

Key components of security policy and the decision making behind them. Restricted to students in the MA in security policy studies program.

IAFF 6163. Transnational Security. 3 Credits.

Overview of security concerns that transcend state borders, including terrorism, drug trafficking, organized crime, weapons proliferation, migration, and environmental degradation.

IAFF 6164. Environmental Security. 3 Credits.

The relationship between conflict, environmental degradation, and natural resources, including how the environment, climate change, and natural resources influence national security. Theoretical security concepts and use of multidisciplinary academic literature to consider how environmental security can be integrated into future U.S. defense and foreign policy strategies and decisions.

IAFF 6165. Fundamentals of Intelligence. 3 Credits.

The institutional structure of the intelligence community; the intelligence production cycle, including tasking, collection, analysis, covert action, and counterintelligence; and relations between the intelligence and policy communities.

IAFF 6167. Defense Policy and Program Analysis II. 3 Credits.

Analysis of the development of national security policy and analytic techniques to derive a defense program and force structure from it. Special attention to general-purpose forces.

IAFF 6169. Homeland Security. 3 Credits.

The central missions of a homeland security agency: domestic security, emergency preparedness, technology policy, timely intelligence, counterintelligence, and preemptive actions. How the U.S. has dealt historically with internal security matters; contemporary approaches to security problems.

IAFF 6171. Introduction to Conflict Resolution. 3 Credits.

Interstate disputes, contemporary civil wars, complex political emergencies, and other forms of organized violence.

IAFF 6173. Security and Development. 3 Credits.

Consideration of the relationship between security and development reflecting the growing interest from the security field in issues that have traditionally been the purview of development, and vice versa.

IAFF 6186. Special Topics in Security Policy Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6189. Security Policy Studies Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Prerequisite: students in the MA in security policy studies program.

IAFF 6191. Financial Accounting. 3 Credits.

Basic concepts and methods used in financial reporting to understand content, context, and related processes. Income statement, balance sheet, and statement of cash flows. Detailed accounting procedures, calculations, and choices. Same As: ACCY 6101, MBAD 6211.

IAFF 6193. Finance. 3 Credits.

Financial management examined through financial analyses, fund sources, investing, capital planning/budgeting, dividend policy, and working capital management. Money and capital markets, primary and secondary markets, and cash and futures markets. Prerequisites: MBAD 6211, MBAD 6224 and MBAD 6242; or MBAD 6211, MBAD 6221, MBAD 6222 and MBAD 6242; or DNSC 6202, MBAD 6211 and MBAD 6242. Same As: MBAD 6235.

IAFF 6198. Special Topics in International Economic Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more information.

IAFF 6199. International Trade and Investment Policy Capstone. 1 Credit.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in international trade and investment policy program.

IAFF 6208. Special Topics in Global Communication. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6209. Global Communication Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in global communication program.

IAFF 6211. Master of International Policy and Practice Leadership Practicum. 3 Credits.

Major issues in international affairs confronting policymakers in the United States and around the world; the evolving nature of international leadership; how diverse actors exercise power in the international realm. Restricted to MIPP degree candidates.

IAFF 6212. Strategy and Leadership. 3 Credits.

The evolving nature of international leadership in the twenty-first century; lateral leadership for managing expert, networked teams to address complex problems requiring adaptation and learning; strategic thinking and team leadership skills. Restricted to students in the MIPP program.

IAFF 6213. Leadership Capstone. 3 Credits.

Practical application of lateral leadership skills to researching and designing an individual leadership project addressing a critical issue in the student's professional field; qualitative research methods, program design and evaluation, coalition building, proposal writing, and oral presentation skills. Restricted to students in the MIPP program. Prerequisites: IAFF 6212.

IAFF 6216. Economic Tools for Global Policy. 3 Credits.

Analysis of economic issues and concrete policy problems related to globalization, trade, and technology.

IAFF 6222. Special Topics in International Policy and Practice. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See school for more details.

IAFF 6302. Taiwan: Internal Development and Foreign Policy. 3 Credits.

The social, political, and economic development in Taiwan since World War II; Taiwan's foreign affairs.

IAFF 6305. U.S.-South Asia Relations. 3 Credits.

The nature of challenges and opportunities facing the South Asia region and the U.S. policy response. The rise of India as a global actor; relations between India and Pakistan; political transformation in the countries of the region, including Nepal and Sri Lanka.

IAFF 6308. International Relations of South Asia. 3 Credits.

The foreign policy choices of South Asian countries and the domestic and international linkages that drive these decisions; the different patterns of state-society relationships and identity formations which determine a country's external alliances and partnerships; the changing nature of the Asian balance of power and roles of key Asian actors.

IAFF 6318. Special Topics in Asian Studies. 3 Credits.

Topics announced in Schedule of Classes.

IAFF 6321. European and Eurasian Studies Cornerstone. 3 Credits.

Survey of current research on Europe and Eurasia. Research paper required. Restricted to students in the MA in European and Eurasian studies program or with permission of the instructor.

IAFF 6338. Special Topics in European and Eurasian Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6339. European and Eurasian Studies Capstone. 3 Credits.

Survey of current research on Europe and Eurasia. Research paper required. Restricted to students in the MA in European and Eurasian studies program or with permission of the instructor.

IAFF 6341. Latin American and Hemispheric Studies Cornerstone. 3 Credits.

Multidisciplinary foundation course for the Latin American and hemispheric studies program.

IAFF 6342. Drug Trafficking in the Americas. 3 Credits.

A historical, comparative, and contemporary picture of drug trafficking in the Americas and the anti-narcotics policies to combat this trade.

IAFF 6357. Latin American and Hemispheric Studies Pre-Capstone Workshop. 2 Credits.

First in a two-course sequence with IAFF 6359. Planning and preparation to undertake field-based research related to a specific problem or issue of interest to a sponsoring organization. Restricted to students in the MA in Latin American and hemispheric studies program.

IAFF 6358. Special Topics in Latin American and Hemispheric Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6359. Latin American and Hemispheric Studies Capstone. 2 Credits.

Second in a two-course sequence with IAFF 6357. A project-oriented course, designed to apply the skills and synthesize the knowledge that students have acquired in their graduate study. Restricted to students in the MA in Latin American and hemispheric studies program.

IAFF 6361. Middle East Studies Cornerstone. 3 Credits.

Multidisciplinary foundation course for the Middle East studies program. Introduction to key issues.

IAFF 6362. Regional Security in Middle East. 3 Credits.

The nature, elements, and future of security in the Middle East region. Various analytical frameworks are examined to consider the interplay of national interests, ideology, and regionalism. Issues in regional security.

IAFF 6363. Political Economy of the Middle East. 3 Credits.

Current political economy of the Middle East, including an overview of Islamic economic concepts and political organizations.

IAFF 6364. Religion and Society in the Modern Middle East. 3 Credits.

Comparative overview, both historical and current, of religious and social trends in the Middle East.

IAFF 6377. Middle East Studies Program Capstone Workshop. 1 Credit.

First in a two-course sequence with IAFF 6379. Second-year students in the MA in the Middle East studies program work in groups on a project addressing a policy problem or issue in international affairs. Restricted to students in the MA in Middle East studies program.

IAFF 6378. Special Topics in Middle East Studies. 3 Credits.

Topics announced in the Schedule of Classes. Credit cannot be earned for this course and IBUS 4900, IBUS 6290.

IAFF 6379. Middle East Studies Capstone. 3 Credits.

Second in a two-course sequence with IAFF 6377. A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in Middle East studies program.

IAFF 6381. African Studies Cornerstone. 3 Credits.

Introduction to the broad historical and contemporary forces that have shaped and continue to affect Africa. Key concepts, theories, and analytic approaches that help deepen understanding of the region. Important challenges, as well as opportunities and innovations, shaping the region's future.

IAFF 6385. Special Topics in African Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See the Schedule of Classes for more information.

IAFF 6501. Quantitative Analysis for International Affairs Practitioners. 3 Credits.

Overview of quantitative measurement, data summary, statistical inference, and elementary modeling such as linear regression.

IAFF 6502. Professional Skills I. 1 Credit.

Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6503. Professional Skills II. 1 Credit.

Continuation of IAFF 6502. Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6504. Intermediate Conversation. 1 Credit.

Short courses designed to develop professional language skills for international affairs students. Specific languages announced in the Schedule of Classes.

IAFF 6505. Elliott School Seminars. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See Schedule of Classes for more details.

IAFF 6515. Graduate Internship in International Affairs. 0 Credits.

Internship and research paper involving experience at an international organization or with international issues. Restricted to MA candidates in the Elliott School.

IAFF 6516. Independent Study and Research. 1-3 Credits.

Restricted to MA candidates in the Elliott School. Prerequisites: Written permission of the instructor.

IAFF 6517. Independent Study and Research. 1-3 Credits.

IAFF 6521. U.S. Foreign Policy Summer Program. 3-4 Credits.

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues.

IAFF 6898. Capstone Workshop. 2 Credits.

First part of two-semester sequence that addresses a concrete policy problem or issue in international affairs. In small teams, students refine the policy question of the capstone project, develop a research strategy, select appropriate research methods, and begin research. Continued in IAFF 6899.

IAFF 6899. Capstone Course. 2 Credits.

Second part of a two-semester sequence. Completion of the capstone sequence by conduct of the group's research, completion of the capstone report, and oral presentation of research findings and recommendations. Prerequisite: IAFF 6898.

IAFF 6998. Thesis. 3 Credits.

Restricted to MA candidates in the Elliott School who have selected the thesis option.

IAFF 6999. Thesis. 3 Credits.

Open to Elliott School MA candidates who have selected the thesis option.

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Arts with a major in Asian studies (p. 841)
- Bachelor of Arts with a major in international affairs (p. 853)
- Bachelor of Arts with a major in Latin American and hemispheric studies (p. 895)
- Bachelor of Arts with a major in Middle East studies (p. 907)
- Bachelor of Science with a major in international affairs (p. 919)

Minor

- Minor in international affairs (p. 938)

Combined program

- Dual Bachelor of Science with a major in international affairs and Master of Science in the field of information systems technology (p. 938)
- Dual Bachelor of Science with a major in international affairs and Master in Management (p. 938)

- Dual Bachelor of Science with a major in international affairs and Master of Science in the field of business analytics (p. 938)

BACHELOR OF ARTS WITH A MAJOR IN ASIAN STUDIES

GENERAL REQUIREMENTS

General requirements

Elliott School bachelor's degrees engage students with global issues through multidisciplinary and interdisciplinary approaches. Students begin their studies in the first year with foundational courses in political science, economics, history, and anthropology or geography. They supplement these courses with others in the traditional liberal arts categories of writing, natural or physical science, mathematics or statistics, and the humanities/creative arts, plus two writing in the disciplines courses. Foreign language study also is emphasized early in each program to enable students to satisfy the third-year language proficiency requirement of the bachelor's degree in a timely manner.

Introduction to the major

Code	Title	Credits
Prerequisite core (19 credits)		
Required		
The following courses must be taken in the first year. With the exception of IAFF 1001 (fall), ECON 1011 (fall) and ECON 1012 (spring), courses can be taken in fall or spring. IAFF 1001 is not required for internal or external transfer students.		
IAFF 1001	First-Year Experience	
IAFF 1005	Introduction to International Affairs	
ECON 1011	Principles of Economics I	
ECON 1012	Principles of Economics II	
HIST 1011	World History, 1500-Present	
PSC 1001	Introduction to Comparative Politics	
One of the following (not required in the first year):		
ANTH 1002	Sociocultural Anthropology	
ANTH 1004	Language in Culture and Society	
GEOG 1001	Introduction to Human Geography	

With advisor approval, a student may select another introductory social science course if s/he can demonstrate why it is relevant to the student's academic pursuits. An example of a course that might be accepted is GEOG 1003.

Supporting courses in the liberal arts

Code	Title	Credits
Writing (credits vary)		
Writing requirements are established by the University Writing Program. Students must complete UW 1020 in their first year before enrolling in a Writing in the Discipline (WID) course for WID credit. The two required WID courses should be taken in the student's major, minor, or a related field, and must be completed in separate semesters to receive WID credit. WID courses are designated in this Bulletin with a "W" appended to the course number, e.g., HIST 2340W.		
Required		
UW 1020	University Writing	
Two WID courses		
Mathematics or statistics (3 credits)		
MATH courses numbered 1051 and above require a placement test. Credit for only one of the following MATH courses may be applied toward a degree: MATH 1221, MATH 1231, or MATH 1252. Credit for only one of the following STAT courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127. STAT courses may not be double-counted between the Mathematics requirement and the Research Methods requirement (see "Major Requirements.")		
One of the following:		
MATH 1007	Mathematics and Politics	
MATH 1008	History of Mathematics	
MATH 1009	Mathematical Ideas I	
MATH 1010	Mathematical Ideas II	
MATH 1051	Finite Mathematics for the Social and Management Sciences	
MATH 1221	Calculus with Precalculus II	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 1252	Calculus for the Social and Management Sciences	
MATH 2233	Multivariable Calculus	

STAT 1051	Introduction to Business and Economic Statistics	PHYS 1007	Music and Physics
STAT 1053	Introduction to Statistics in Social Science	PHYS 1011	General Physics I
STAT 1111	Business and Economic Statistics I	PHYS 1012	General Physics II
STAT 1127	Statistics for the Biological Sciences	PHYS 1021	University Physics I
Science (3 to 4 credits), lab required		PHYS 1022	University Physics II
One of the following:		PHYS 1025	University Physics I with Biological Applications
ANTH 1001	Biological Anthropology	PHYS 1026	University Physics II with Biological Applications
ANTH 3412	Hominin Evolution	Humanities/creative arts (9 credits)*	
ASTR 1001	Stars, Planets, and Life in the Universe	This requirement can be satisfied by completing 9 credits in humanities courses, or 6 credits in humanities courses and 3 credits in creative arts courses.	
ASTR 1002	Origins of the Cosmos	Humanities—two or three of the following:	
BISC 1005	The Biology of Nutrition and Health	Any Art History (AH) course except AH 4199.	
BISC 1006	The Ecology and Evolution of Organisms	AMST 1160	Race, Gender, and Law
BISC 1007	Food, Nutrition, and Service	AMST 1200	The Sixties in America
BISC 1008	Understanding Organisms through Service Learning	AMST 2010	Early American Cultural History
BISC 1111	Introductory Biology: Cells and Molecules	or HIST 2010	Early American Cultural History
BISC 1112	Introductory Biology: The Biology of Organisms	AMST 2011	Modern American Cultural History
CHEM 1003	Contemporary Science for Nonscience Majors	or HIST 2011	Modern American Cultural History
CHEM 1004	Contemporary Science for Nonscience Majors	AMST 2020	Washington, DC: History, Culture, and Politics
CHEM 1111	General Chemistry I	or AMST 2020W	Washington, DC: History, Culture, and Politics
CHEM 1112	General Chemistry II	or HIST 2020	Washington, DC: History, Culture, and Politics
GEOG 1002	Introduction to Physical Geography	or HIST 2020W	Washington, DC: History, Culture, and Politics
GEOL 1001	Physical Geology	AMST 2120W	Freedom in American Thought and Popular Culture
GEOL 1002	Historical Geology	or PSC 2120W	Freedom in American Thought and Popular Culture
GEOL 1005	Environmental Geology	AMST 2210	The African American Experience
HONR 1033	Honors Seminar: Scientific Reasoning and Discovery	AMST 2320	U.S. Media and Cultural History
HONR 1034	Honors Seminar: Scientific Reasoning and Discovery	or HIST 2320	U.S. Media and Cultural History
PHYS 1003	Physics for Future Presidents	AMST 2350	U.S. Religion and Politics
		or HIST 2350	U.S. Religion and Politics

AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
or WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
AMST 2410	Twentieth Century U.S. Immigration
or HIST 2410	Twentieth Century U.S. Immigration
AMST 2430	Capitalism and Culture
AMST 2440	The American City
or AMST 2440W	The American City
or HIST 2440	The American City
or HIST 2440W	The American City
AMST 2520	American Architecture I
AMST 2521	American Architecture II
AMST 2600	U.S. Popular Music and Culture
AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
or HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2630	Discovering the Mind
AMST 2710	The United States in the World
or HIST 2710	The United States in the World
AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
or HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States

or ANTH 2750 Latinos in the United States

or ANTH 2750W Latinos in the United States

AMST 3352 U.S. Women's History to 1865

or AMST 3352W U.S. Women's History to 1865

or HIST 3352 U.S. Women's History to 1865

or HIST 3352W U.S. Women's History to 1865

or WGSS 3352 U.S. Women's History to 1865

or WGSS 3352W U.S. Women's History to 1865

AMST 3600 Popular Music and Politics

ANTH 2750 Latinos in the United States

or ANTH 2750W Latinos in the United States

or AMST 2750W Latinos in the United States

ARAB 3105 Special Topics (Arabic Literature: Arabia to America) -- or IAFF 3188 (Arabic Literature: Arabia to America)

ARAB 3105 Special Topics (Readings: Contemporary Arabic Literature)

CAH 1090 Art History I: Art Now, Contemporary Perspectives in the Visual Arts

Any non-language Classical Studies (CLAS) course.

EALL 3811 Confucian Literature in East Asia

or REL 2811 Confucian Literature in East Asia

EALL 3814 Religion and Philosophy in East Asia

or EALL 3814W Religion and Philosophy in East Asia

or REL 2814 Religion and Philosophy in East Asia

ENGL 1050 Introduction to Literary Studies

ENGL 1300 The Bible as Literature

ENGL 1315 Literature and the Financial Imagination

ENGL 1320 Literature of the Americas

or ENGL 1320W Literature of the Americas

ENGL 1330 Myths of Britain

or ENGL 1330W Myths of Britain

ENGL 1340 Essential Shakespeare

or ENGL 1340W Essential Shakespeare

ENGL 1351	Shakespeare Seminar
ENGL 1360	Fantasy and Speculative Fiction
ENGL 1365	Literature and the Environment
ENGL 2100	Introduction to Asian American Studies through Literature
ENGL 2410	Introduction to English Literature I
or ENGL 2410W	Introduction to English Literature I
ENGL 2411	Introduction to English Literature II
or ENGL 2411	Introduction to English Literature II
ENGL 2510	Introduction to American Literature I
or ENGL 2510W	Introduction to American Literature I
ENGL 2511	Introduction to American Literature II
or ENGL 2511W	Introduction to American Literature II
ENGL 2610	Introduction to Black Literature of America I
or ENGL 2610W	Introduction to Black Literature of America I
ENGL 2611	Introduction to Black Literature of America II
or ENGL 2611W	Introduction to Black Literature of America II
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 2712	Bollywood Cinema
ENGL 3400	Topics in Literature and Finance
ENGL 3446	Shakespearean London
ENGL 3621	American Poetry II
ENGL 3730	Topics in Global Postcolonial Literature and Film
or ENGL 3730W	Topics in Global Postcolonial Literature and Film
ENGL 3910	Disability Studies

ENGL 3918	Literature and Medicine
Any Film Studies (FILM) course.	
HEBR 3101	Modern Hebrew Literary Classics in Translation
HEBR 3102	Israeli Society and Culture: Literary Perspectives
HEBR 3103	Israeli Cinema (in English)
HEBR 3104W	Gender and Sexuality in Israel
HEBR 3301	Modern Hebrew Fiction
or HEBR 3301W	Modern Hebrew Fiction
HEBR 4001	Advanced Hebrew Literature I
or HEBR 4001W	Advanced Hebrew Literature I
HEBR 4002	Advanced Hebrew Literature II
HIST 1020	Approaches to Women's History
HIST 1110	Foundations of Europe to 1715
HIST 1120	Europe in the World Since 1715
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 1310	Introduction to American History from the Pre-Columbian Era to 1877
HIST 1311	Introduction to American History since 1877
HIST 2010	Early American Cultural History
or AMST 2010	Early American Cultural History
HIST 2011	Modern American Cultural History
or AMST 2011	Modern American Cultural History
HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
or AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2060	Modern Jewish History

or JSTD 2060	Modern Jewish History
HIST 2113	The Roman World to 337 A.D.
HIST 2124	Nineteenth-Century Europe
HIST 2125	Twentieth-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1789
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History
or AMST 2320	U.S. Media and Cultural History
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics
or AMST 2350	U.S. Religion and Politics
HIST 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
HIST 2410	Twentieth Century U.S. Immigration
or AMST 2410	Twentieth Century U.S. Immigration
HIST 2440	The American City
or HIST 2440W	The American City
or AMST 2440	The American City
or AMST 2440W	The American City
HIST 2520	Africans in the Making of the Atlantic World
HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
or AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America

HIST 2630	History of Korea
HIST 2710	The United States in the World
or AMST 2710	The United States in the World
HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
or AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
HIST 2811	The Formation of Islam to 1500
HIST 2850	Modernization in Russia, Turkey, and Iran
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
HIST 3353	U.S. Women's History II
HIST 3360	African American History to 1865
or AMST 3360	African American History to 1865
HIST 3361	African American History Since 1865
or AMST 3361	African American History Since 1865
HIST 3611	History of Modern China
HIST 3811	The Emergence of the Modern Middle East
HONR 1016	Honors Seminar: Origins and Evolution of Modern Thought
HONR 2053	Arts and Humanities Seminar
or HONR 2053W	Arts and Humanities Seminar
HONR 2054	Arts and Humanities Seminar
or HONR 2054W	Arts and Humanities Seminar
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)

IAFF 3188	Special Topics in Middle East Studies (Arabic Literature: Arabia to America) -- or ARAB 3105 (Arabic Literature: Arabia to America)
IAFF 3189	Special Topics in African Studies (African Literature and Politics)
IAFF 3189	Special Topics in African Studies (Hip Hop and Social Change in Africa)
IAFF 3189	Special Topics in African Studies (West African Film and Literature)
IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
JSTD 2060	Modern Jewish History
or HIST 2060	Modern Jewish History
LATN 2002	Poetry of Empire
LATN 3001	Major Latin Authors I
LATN 3002	Major Latin Authors II
MUS 1103	Music in the Western World
MUS 1104	Topics in Music
MUS 1105	Introduction to Musical Thought and Practice
MUS 1107	Music of the World
MUS 1108	History of Jazz
MUS 2101	Harmony
MUS 2105	Introduction to Ethnomusicology
MUS 2106	Music History III: Twentieth-Century Art Traditions
MUS 2122	Music in the U.S.
MUS 2123	Musical Cultures of Black Americans
MUS 2174	Introduction to Jazz Harmony
MUS 2661	Electronic and Computer Music I
MUS 2662	Electronic and Computer Music II *
MUS 3126	Music History I: Antiquity through Early Baroque
MUS 3127	Music History II: The Tonal Era
MUS 3139	Form and Analysis

MUS 3174	Topics in Music Theory and Composition
MUS 3175	Topics in Music History and Literature
Any Philosophy (PHIL) course except PHIL 2045 and PHIL 3121.	
PSC 2105	Major Issues of Western Political Thought I
PSC 2120W	Freedom in American Thought and Popular Culture
or AMST 2120W	Freedom in American Thought and Popular Culture
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
Any Religion (REL) course.	
SLAV 2310	The Russian Media Since Communism
SPAN 3100	Texts and Contexts of the Spanish-Speaking World
TRDA 1015	Understanding the Dance
TRDA 1020	Women and the Creative Process
TRDA 1025	Understanding the Theatre
TRDA 2185	Trends in Performance
TRDA 2191	Dance History
TRDA 2240	Play Analysis
TRDA 3245	History of the Theatre I
TRDA 3246	History of the Theatre II
UNIV 1006	Questions of Culture
WLP 1020	Writing, Literature, and Society
WGSS 1020	Approaches to Women's History
WGSS 2225	Philosophy of Race And Gender
or PHIL 2125	Philosophy of Race and Gender
WGSS 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship

or AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
WGSS 3353	U.S. Women's History II
WGSS 3981	Women in Western Religion
or REL 2981	Women in Western Religion

Literature and film classes in the Departments of Classical and Near Eastern Languages and Civilizations; East Asian Languages and Literatures; English; and Romance, German, Slavic Languages and Literatures also fulfill this requirement.

Creative Arts—a maximum of 3 credits from the following:

Any Corcoran Studio Arts (CSA) course.

ENGL 1210	Introduction to Creative Writing
ENGL 2460	Fiction Writing
ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3390	Topics in Creative Writing

Non-ensemble performance study (MUS) courses, including:

MUS 1101	Elements of Music Theory
MUS 1102	Comprehensive Musicianship I
MUS 1106	Introduction to Musical Performance and Experience
MUS 2102	Comprehensive Musicianship II
MUS 2134	Composition
MUS 2173	Comprehensive Musicianship for Jazz
MUS 4184	Advanced Composition

Performance Study Courses (TRDA), including:

TRDA 1035	Theatre Production
TRDA 1151	Beginning/Intermediate Ballet

TRDA 1152	Beginning Modern/Postmodern Dance
TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance
TRDA 1170 & TRDA 1171	Intermediate Modern/Postmodern Dance I and Intermediate Modern/Postmodern Dance II
TRDA 1214	Beginning Acting
TRDA 1330	Basics of Production Design
TRDA 2160	Intermediate Ballet
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II
TRDA 2179	Contact Improvisation
TRDA 2180	Movement Improvisation/Performance
TRDA 2192	Repertory/Performance
TRDA 2193 & TRDA 2194	Dance Styles I and Dance Styles II
TRDA 2215	Intermediate Acting
TRDA 2250	Dramatic Writing
TRDA 2339	Theatre Practicum
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II
TRDA 3182 & TRDA 3183	Dance Composition I and Dance Composition II
TRDA 3186	Embodied Kinesis for Dance
TRDA 3222	Topics in Advanced Acting
TRDA 3240	Introduction to Dramaturgy
TRDA 3250	Intermediate Dramatic Writing
TRDA 3331	Introduction to Lighting
TRDA 3332	Theatrical Makeup Design
TRDA 3333	Stage Management
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming

TRDA 4184	Choreography and Performance
TRDA 4275	Directing for the Theatre
TRDA 4338	Scene Painting
*Some MUS and TRDA courses may be repeated for credit. Consult course descriptions in this Bulletin for additional information. All courses must be taken for a letter grade to fulfill this requirement. Courses taken Pass/No Pass are not accepted.	
**Note that MUS 2661 is a prerequisite to MUS 2662.	

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements (p. 830).

A minimum grade of C- must be earned in all major requirement courses, to include the last course used to prove third-year proficiency in a modern regional language .

Major Requirements

Code	Title	Credits
Foundation (3 credits)		
IAFF 2091	East Asia-Past and Present	
Foreign Language (credits vary)		
Students must demonstrate third-year proficiency in a modern foreign languages (Chinese, Japanese, or Korean) by examination or coursework. Additional information regarding the Elliott School foreign language examinations is available from the academic advisor.		
Chinese		
One of the following options for beginning Chinese:		
Option one:		
CHIN 1001 & CHIN 1002	Beginning Chinese I and Beginning Chinese II	
Option two:		
CHIN 1011	Intensive Beginning Chinese	
And the following courses:		
CHIN 2003	Intermediate Chinese I	
CHIN 2004	Intermediate Chinese II	
CHIN 3105	Intermediate Chinese III	

CHIN 3106	Intermediate Chinese IV
Japanese	
One of the following options for beginning Japanese:	
Option one:	
JAPN 1001 & JAPN 1002	Beginning Japanese I and Beginning Japanese II
Option two:	
JAPN 1005	Intensive Beginning Japanese
And the following courses:	
JAPN 2003	Intermediate Japanese I
JAPN 2004	Intermediate Japanese II
JAPN 3105	Intermediate Japanese III
JAPN 3106	Intermediate Japanese IV
Korean	
KOR 1001	Beginning Korean I
KOR 1002	Beginning Korean II
KOR 2003	Intermediate Korean I
KOR 2004	Intermediate Korean II
KOR 3105	Intermediate Korean III
KOR 3106	Intermediate Korean IV

Regional Foundations (3 credits)

One course from the following in any region other than Asia.

Code	Title	Credits
Africa		
ANTH 3708	Anthropology of Africa	
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)	
GEOG 3164	The Geography of Africa	
HIST 3501	Topics: Africa (African History Since 1880)	
HIST 3530	Women in Africa	
HIST 3540	West Africa to Independence	
IAFF 2093	Africa: Problems and Prospects	

IAFF 2190W	Special Topics (North Africa and the World)*
IAFF 2190W	Special Topics (Rising Africa and the World)
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)
IAFF 3189	Special Topics in African Studies (International Relations in Africa)
IAFF 3189	Special Topics in African Studies (New African Security Frontier)
IAFF 3189	Special Topics in African Studies (Religion in Africa)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)
IAFF 3190	Special Topics in International Affairs (Africa: Declassified)
IAFF 3190	Special Topics in International Affairs (China and Africa)
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2482	African International Politics
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)
PSC 3192W	Proseminar: Political Science (Government and Politics of Africa)
Asia (Students in the BA in Asian studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Asia.)	
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3791	Topics in Regional Anthropology (Anthropology of South Asia)
ECON 2198	Special Topics in Economics - Regional (East Asian Economies)

GEOG 3165	Geography of South Asia
HIST 3640	History of Southeast Asia
HIST 3650	Modern South Asia, 1750-Present
IAFF 2091	East Asia-Past and Present
IAFF 3186	Special Topics in Asian Studies (Asian Order and Community Building)
IAFF 3186	Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3186	Special Topics in Asian Studies (East Asian Security)
IAFF 3186	Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation: Asia)
IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 2369	Comparative Politics of South Asia
PSC 2373	Comparative Politics of Southeast Asia
PSC 2475	International Relations of East Asia
PSC 3192W	Proseminar: Political Science (Politics and Protest in East Asia)
PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)
Europe and Eurasia	
ECON 2199	Special Topics in Economics (Economics of the EU)
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 2125	Twentieth-Century Europe
HIST 3126	European Integration: A History

HIST 3178	The Making of the Modern Balkans
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2094	Europe: International and Domestic Interactions
IAFF 3185	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union and Russia)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 4191W	Research Seminar (Europe)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
Latin America (Students in the BA in Latin American and hemispheric studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Latin America.)	
ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America
HIST 3701	Topics in Latin American History (Latin America and the World Since 1820)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise
IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)

IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3194W	Latin America's Violent Peace
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America
Middle East (Students in the BA in Middle East studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than the Middle East.)	
ANTH 3707	Anthropology of the Middle East
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History (Gender and the Middle East)
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
IAFF 2095	The Middle East in International Affairs
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Challenges and Change in the Middle East)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3188	Special Topics in Middle East Studies (Militaries and Politics in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Persian Gulf)
IAFF 4191	Research Seminar (Political Islam)
PSC 2377	Comparative Politics of the Middle East

PSC 2478 International Relations of the Middle East

*IAFF 2190W (North Africa and the World) is not approved as a Regional Foundations course for students in the Middle East Studies program due to the degree of overlap between issues in North Africa and the Middle East.

Code	Title	Credits
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Research Methods (3 credits)

One course pertaining to qualitative or quantitative social science research methods from the following:

ANTH 3531	Methods in Sociocultural Anthropology
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ECON 2123	Introduction to Econometrics
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GEOG 2104	Introduction to Cartography and GIS
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IAFF 2101	International Affairs Research Methods
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IAFF 2190	Special Topics (Political Risk Analysis)
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IAFF 3190	Special Topics in International Affairs (Qualitative Research Methods)
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PSC 2101	Scope and Methods of Political Science
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PSC 2102	Visualizing and Modeling Politics
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PSYC 2101	Research Methods in Psychology
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PUBH 3131	Epidemiology: Measuring Health and Disease
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PUBH 3199	Topics in Public Health (Qualitative Research Methods)
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SOC 2101	Social Research Methods
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SOC 2111	Field Research
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STAT 1051	Introduction to Business and Economic Statistics *
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STAT 1053	Introduction to Statistics in Social Science *
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STAT 1111	Business and Economic Statistics I *
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STAT 1127	Statistics for the Biological Sciences
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STAT 2112	Business and Economic Statistics II
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STAT 2183	Intermediate Statistics Lab/Packages
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or STAT 2183W	Intermediate Statistical Laboratory: Statistical Computing Packages
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*Credit for only one of the following courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127.

STAT courses may not be double-counted between the Math requirement and the research methods requirement.

Code	Title	Credits
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In the categories below, additional Asia-related courses may be approved by the Program Director.

Asian Literature (3 credits)

One course from the following:

CHIN 3111	Chinese Literature in Translation I
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CHIN 3112	Chinese Literature in Translation II
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JAPN 3111	Japanese Literature in Translation I
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JAPN 3112	Japanese Literature in Translation II
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KOR 3111	Korean Literature in Translation
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KOR 3112	Korean Literature in Translation
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Multi-disciplinary Core (18 credits)

The following lists are not exhaustive, and new courses may be added at any time.

History and Culture—Three courses (9 credits) from the following:

AH 2190	East Asian Art
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AH 2191	South Asian Art
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AH 2192	Art of Southeast Asia
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ANTH 3703	Cultures of the Pacific
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ANTH 3704	Cultures of Southeast Asia
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ANTH 3705	Anthropology of East Asia
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ANTH 3709	Japanese Culture Through Film
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or JAPN 3162	Japanese Culture Through Film
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CHIN 3136W	Chinese Women in Myth, Literature, and Film (same as WGSS 3136 and WGSS 3136W)
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CHIN 3162	Chinese Culture Through Film
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EALL 3831W	Introduction to Daoism
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or REL 3831W	Introduction to Daoism
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ENGL 3965	Topics in Asian American Cultural Studies	REL 2562	Mythologies of India
FA 1075	East Asian Calligraphy	REL 2601	Buddhism
HIST 2305W	Majors' Introductory Seminar: United States (The Cold War in Asia)	REL 2811	Confucian Literature in East Asia
HIST 3001	Special Topics (Modern Southeast Asian History)	REL 2814	Religion and Philosophy in East Asia
HIST 3001	Special Topics (The Cold War in Asia)	REL 3405	Shi'ite Islam
HIST 3001	Special Topics (The Korean War)	REL 3481	Women in Islam
HIST 3001	Special Topics (Vietnam: Colonialism, War, Revolution)	REL 3614	Buddhist Philosophy
HIST 3001	Special Topics (World War II in Asia)	REL 3831W	Introduction to Daoism
HIST 3001	Special Topics (WWII in Asia: History and Legacy)	or EALL 3831W	Introduction to Daoism
HIST 3001	Special Topics (WWII in East Asia and the Pacific)	REL 3832	Myth, Ritual, and Popular Religion in China
HIST 3035	The United States and the Wars in Indochina, 1945-1975	REL 3989	The Goddess in India and Beyond
HIST 3610	China to 1800	REL 3990	Selected Topics in Religion (Mahabharata and Pali Buddhism)
HIST 3611	History of Modern China	REL 3990	Selected Topics in Religion (Shamanism in Theory)
HIST 3614W	Writing Modern Chinese History	WGSS 3136	Chinese Women in Myth, Literature, and Film (same as CHIN 3136W)
HIST 3615	History of Chinese Communism	or WGSS 3136W	Chinese Women in Myth, Literature, and Film
HIST 3621	History of Modern Japan	Political Science and Geography—Two courses (6 credits) from the following:	
HIST 3640	History of Southeast Asia	GEOG 3165	Geography of South Asia
HIST 3650	Modern South Asia, 1750-Present	IAFF 2190W	Special Topics (U.S.-Asia: Critical Issues)
IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation Asia)	IAFF 3182	Special Topics in Foreign Policy (China's Rise and Implications)
IAFF 3186	Special Topics in Asian Studies (topic: North Korean Society and Culture. Same as KOR 4190)	IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
JAPN 3162	Japanese Culture Through Film	IAFF 3186	Special Topics in Asian Studies (Politics and Conflict South Asia)
or ANTH 3709	Japanese Culture Through Film	IAFF 3186	Special Topics in Asian Studies (Taiwan: Current Challenges and Future Directions)
KOR 3162	Korean Culture through Film	IAFF 3186	Special Topics in Asian Studies (U.S.-China Relations)
KOR 4190	North Korean Society and Culture (Same as IAFF 3186: North Korean Society and Culture)	IAFF 3190	Special Topics in International Affairs (China and Africa)
REL 2401	Islam	PSC 2368	Politics in the Two Koreas
REL 2501	Hinduism	PSC 2369	Comparative Politics of South Asia

PSC 2370	Comparative Politics of China and Northeast Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2373	Comparative Politics of Southeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2475	International Relations of East Asia
PSC 3192W	Proseminar: Political Science (Chinese Foreign Policy)
PSC 3192W	Proseminar: Political Science (Post-Conflict Vietnam)
Economics and Development—One course (3 credits) from the following:	
ECON 2151	Economic Development
or ECON 2151W	Economic Development
ECON 2169	Introduction to the Economy of China
ECON 2170	Introduction to the Economy of Japan
ECON 2198	Special Topics in Economics - Regional (East Asian Economies)
IAFF 3186	Special Topics in Asian Studies (Development Issues in SE Asia)

Related Coursework (9 credits)

Three courses related to Asia from any discipline, including International Affairs (IAFF), selected with the approval of the program director.

Study Abroad

Students are encouraged to study in Asia through one of GW's formal partnerships with a regional university or an approved self-designed study abroad program.

BACHELOR OF ARTS WITH A MAJOR IN INTERNATIONAL AFFAIRS

GENERAL REQUIREMENTS

General requirements

Elliott School bachelor's degrees engage students with global issues through multidisciplinary and interdisciplinary approaches. Students begin their studies in the first year with foundational courses in political science, economics, history, and anthropology or geography. They supplement these courses with others in the traditional liberal arts categories of writing, natural or physical science, mathematics or statistics,

and the humanities/creative arts, plus two writing in the disciplines courses. Foreign language study also is emphasized early in each program to enable students to satisfy the third-year language proficiency requirement of the bachelor's degree in a timely manner.

Introduction to the major

Code	Title	Credits
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Prerequisite core (19 credits)

Required

The following courses must be taken in the first year. With the exception of IAFF 1001 (fall), ECON 1011 (fall) and ECON 1012 (spring), courses can be taken in fall or spring. IAFF 1001 is not required for internal or external transfer students.

IAFF 1001	First-Year Experience
IAFF 1005	Introduction to International Affairs
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
HIST 1011	World History, 1500-Present
PSC 1001	Introduction to Comparative Politics

One of the following (not required in the first year):

ANTH 1002	Sociocultural Anthropology
ANTH 1004	Language in Culture and Society
GEOG 1001	Introduction to Human Geography

With advisor approval, a student may select another introductory social science course if s/he can demonstrate why it is relevant to the student's academic pursuits. An example of a course that might be accepted is GEOG 1003.

Supporting courses in the liberal arts

Code	Title	Credits
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Writing (credits vary)

Writing requirements are established by the University Writing Program. Students must complete UW 1020 in their first year before enrolling in a Writing in the Discipline (WID) course for WID credit. The two required WID courses should be taken in the student's major, minor, or a related field, and must be completed in separate semesters to receive WID credit. WID courses are designated in this Bulletin with a "W" appended to the course number, e.g., HIST 2340W.

Required

UW 1020	University Writing
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Two WID courses

Mathematics or statistics (3 credits)

MATH courses numbered 1051 and above require a placement test. Credit for only one of the following MATH courses may be applied toward a degree: MATH 1221, MATH 1231, or MATH 1252. Credit for only one of the following STAT courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127. STAT courses may not be double-counted between the Mathematics requirement and the Research Methods requirement (see "Major Requirements.")

One of the following:

MATH 1007 Mathematics and Politics

MATH 1008 History of Mathematics

MATH 1009 Mathematical Ideas I

MATH 1010 Mathematical Ideas II

MATH 1051 Finite Mathematics for the Social and Management Sciences

MATH 1221 Calculus with Precalculus II

MATH 1231 Single-Variable Calculus I

MATH 1232 Single-Variable Calculus II

MATH 1252 Calculus for the Social and Management Sciences

MATH 2233 Multivariable Calculus

STAT 1051 Introduction to Business and Economic Statistics

STAT 1053 Introduction to Statistics in Social Science

STAT 1111 Business and Economic Statistics I

STAT 1127 Statistics for the Biological Sciences

Science (3 to 4 credits), lab required

One of the following:

ANTH 1001 Biological Anthropology

ANTH 3412 Hominin Evolution

ASTR 1001 Stars, Planets, and Life in the Universe

ASTR 1002 Origins of the Cosmos

BISC 1005 The Biology of Nutrition and Health

BISC 1006 The Ecology and Evolution of Organisms

BISC 1007 Food, Nutrition, and Service

BISC 1008 Understanding Organisms through Service Learning

BISC 1111 Introductory Biology: Cells and Molecules

BISC 1112 Introductory Biology: The Biology of Organisms

CHEM 1003 Contemporary Science for Nonscience Majors

CHEM 1004 Contemporary Science for Nonscience Majors

CHEM 1111 General Chemistry I

CHEM 1112 General Chemistry II

GEOG 1002 Introduction to Physical Geography

GEOL 1001 Physical Geology

GEOL 1002 Historical Geology

GEOL 1005 Environmental Geology

HONR 1033 Honors Seminar: Scientific Reasoning and Discovery

HONR 1034 Honors Seminar: Scientific Reasoning and Discovery

PHYS 1003 Physics for Future Presidents

PHYS 1007 Music and Physics

PHYS 1011 General Physics I

PHYS 1012 General Physics II

PHYS 1021 University Physics I

PHYS 1022 University Physics II

PHYS 1025 University Physics I with Biological Applications

PHYS 1026 University Physics II with Biological Applications

Humanities/creative arts (9 credits)*

This requirement can be satisfied by completing 9 credits in humanities courses, or 6 credits in humanities courses and 3 credits in creative arts courses.

Humanities—two or three of the following:

Any Art History (AH) course except AH 4199.	
AMST 1160	Race, Gender, and Law
AMST 1200	The Sixties in America
AMST 2010	Early American Cultural History
or HIST 2010	Early American Cultural History
AMST 2011	Modern American Cultural History
or HIST 2011	Modern American Cultural History
AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
or HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
AMST 2120W	Freedom in American Thought and Popular Culture
or PSC 2120W	Freedom in American Thought and Popular Culture
AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History
or HIST 2320	U.S. Media and Cultural History
AMST 2350	U.S. Religion and Politics
or HIST 2350	U.S. Religion and Politics
AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
or WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
AMST 2410	Twentieth Century U.S. Immigration
or HIST 2410	Twentieth Century U.S. Immigration
AMST 2430	Capitalism and Culture
AMST 2440	The American City
or AMST 2440W	The American City
or HIST 2440	The American City

or HIST 2440W	The American City
AMST 2520	American Architecture I
AMST 2521	American Architecture II
AMST 2600	U.S. Popular Music and Culture
AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
or HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2630	Discovering the Mind
AMST 2710	The United States in the World
or HIST 2710	The United States in the World
AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
or HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States
or ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
AMST 3600	Popular Music and Politics
ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
or AMST 2750W	Latinos in the United States

ARAB 3105	Special Topics (Arabic Literature: Arabia to America) -- or IAFF 3188 (Arabic Literature: Arabia to America)	or ENGL 2511W	Introduction to American Literature II
ARAB 3105	Special Topics (Readings: Contemporary Arabic Literature)	ENGL 2610	Introduction to Black Literature of America I
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	or ENGL 2610W	Introduction to Black Literature of America I
Any non-language Classical Studies (CLAS) course.		ENGL 2611	Introduction to Black Literature of America II
EALL 3811	Confucian Literature in East Asia	or ENGL 2611W	Introduction to Black Literature of America II
or REL 2811	Confucian Literature in East Asia	ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
EALL 3814	Religion and Philosophy in East Asia	or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or EALL 3814W	Religion and Philosophy in East Asia	ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or REL 2814	Religion and Philosophy in East Asia	or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 1050	Introduction to Literary Studies	ENGL 2712	Bollywood Cinema
ENGL 1300	The Bible as Literature	ENGL 3400	Topics in Literature and Finance
ENGL 1315	Literature and the Financial Imagination	ENGL 3446	Shakespearean London
ENGL 1320	Literature of the Americas	ENGL 3621	American Poetry II
or ENGL 1320W	Literature of the Americas	ENGL 3730	Topics in Global Postcolonial Literature and Film
ENGL 1330	Myths of Britain	or ENGL 3730W	Topics in Global Postcolonial Literature and Film
or ENGL 1330W	Myths of Britain	ENGL 3910	Disability Studies
ENGL 1340	Essential Shakespeare	ENGL 3918	Literature and Medicine
or ENGL 1340W	Essential Shakespeare	Any Film Studies (FILM) course.	
ENGL 1351	Shakespeare Seminar	HEBR 3101	Modern Hebrew Literary Classics in Translation
ENGL 1360	Fantasy and Speculative Fiction	HEBR 3102	Israeli Society and Culture: Literary Perspectives
ENGL 1365	Literature and the Environment	HEBR 3103	Israeli Cinema (in English)
ENGL 2100	Introduction to Asian American Studies through Literature	HEBR 3104W	Gender and Sexuality in Israel
ENGL 2410	Introduction to English Literature I	HEBR 3301	Modern Hebrew Fiction
or ENGL 2410W	Introduction to English Literature I	or HEBR 3301W	Modern Hebrew Fiction
ENGL 2411	Introduction to English Literature II	HEBR 4001	Advanced Hebrew Literature I
or ENGL 2411	Introduction to English Literature II	or HEBR 4001W	Advanced Hebrew Literature I
ENGL 2510	Introduction to American Literature I	HEBR 4002	Advanced Hebrew Literature II
or ENGL 2510W	Introduction to American Literature I		
ENGL 2511	Introduction to American Literature II		

HIST 1020	Approaches to Women's History
HIST 1110	Foundations of Europe to 1715
HIST 1120	Europe in the World Since 1715
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 1310	Introduction to American History from the Pre-Columbian Era to 1877
HIST 1311	Introduction to American History since 1877
HIST 2010	Early American Cultural History
or AMST 2010	Early American Cultural History
HIST 2011	Modern American Cultural History
or AMST 2011	Modern American Cultural History
HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
or AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2060	Modern Jewish History
or JSTD 2060	Modern Jewish History
HIST 2113	The Roman World to 337 A.D.
HIST 2124	Nineteenth-Century Europe
HIST 2125	Twentieth-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1789
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History
or AMST 2320	U.S. Media and Cultural History
HIST 2321	U.S. History, 1890-1945

HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics
or AMST 2350	U.S. Religion and Politics
HIST 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
HIST 2410	Twentieth Century U.S. Immigration
or AMST 2410	Twentieth Century U.S. Immigration
HIST 2440	The American City
or HIST 2440W	The American City
or AMST 2440	The American City
or AMST 2440W	The American City
HIST 2520	Africans in the Making of the Atlantic World
HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
or AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
HIST 2630	History of Korea
HIST 2710	The United States in the World
or AMST 2710	The United States in the World
HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
or AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
HIST 2811	The Formation of Islam to 1500
HIST 2850	Modernization in Russia, Turkey, and Iran
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865

or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
HIST 3353	U.S. Women's History II
HIST 3360	African American History to 1865
or AMST 3360	African American History to 1865
HIST 3361	African American History Since 1865
or AMST 3361	African American History Since 1865
HIST 3611	History of Modern China
HIST 3811	The Emergence of the Modern Middle East
HONR 1016	Honors Seminar: Origins and Evolution of Modern Thought
HONR 2053	Arts and Humanities Seminar
or HONR 2053W	Arts and Humanities Seminar
HONR 2054	Arts and Humanities Seminar
or HONR 2054W	Arts and Humanities Seminar
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)
IAFF 3188	Special Topics in Middle East Studies (Arabic Literature: Arabia to America) -- or ARAB 3105 (Arabic Literature: Arabia to America)
IAFF 3189	Special Topics in African Studies (African Literature and Politics)
IAFF 3189	Special Topics in African Studies (Hip Hop and Social Change in Africa)
IAFF 3189	Special Topics in African Studies (West African Film and Literature)
IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
JSTD 2060	Modern Jewish History
or HIST 2060	Modern Jewish History
LATN 2002	Poetry of Empire
LATN 3001	Major Latin Authors I
LATN 3002	Major Latin Authors II

MUS 1103	Music in the Western World
MUS 1104	Topics in Music
MUS 1105	Introduction to Musical Thought and Practice
MUS 1107	Music of the World
MUS 1108	History of Jazz
MUS 2101	Harmony
MUS 2105	Introduction to Ethnomusicology
MUS 2106	Music History III: Twentieth-Century Art Traditions
MUS 2122	Music in the U.S.
MUS 2123	Musical Cultures of Black Americans
MUS 2174	Introduction to Jazz Harmony
MUS 2661	Electronic and Computer Music I
MUS 2662	Electronic and Computer Music II *
MUS 3126	Music History I: Antiquity through Early Baroque
MUS 3127	Music History II: The Tonal Era
MUS 3139	Form and Analysis
MUS 3174	Topics in Music Theory and Composition
MUS 3175	Topics in Music History and Literature
Any Philosophy (PHIL) course except PHIL 2045 and PHIL 3121.	
PSC 2105	Major Issues of Western Political Thought I
PSC 2120W	Freedom in American Thought and Popular Culture
or AMST 2120W	Freedom in American Thought and Popular Culture
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
Any Religion (REL) course.	
SLAV 2310	The Russian Media Since Communism
SPAN 3100	Texts and Contexts of the Spanish-Speaking World
TRDA 1015	Understanding the Dance

TRDA 1020	Women and the Creative Process
TRDA 1025	Understanding the Theatre
TRDA 2185	Trends in Performance
TRDA 2191	Dance History
TRDA 2240	Play Analysis
TRDA 3245	History of the Theatre I
TRDA 3246	History of the Theatre II
UNIV 1006	Questions of Culture
WLP 1020	Writing, Literature, and Society
WGSS 1020	Approaches to Women's History
WGSS 2225	Philosophy of Race And Gender
or PHIL 2125	Philosophy of Race and Gender
WGSS 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
or AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
WGSS 3353	U.S. Women's History II
WGSS 3981	Women in Western Religion
or REL 2981	Women in Western Religion

Literature and film classes in the Departments of Classical and Near Eastern Languages and Civilizations; East Asian Languages and Literatures; English; and Romance, German, Slavic Languages and Literatures also fulfill this requirement.

Creative Arts—a maximum of 3 credits from the following:

Any Corcoran Studio Arts (CSA) course.

ENGL 1210	Introduction to Creative Writing
ENGL 2460	Fiction Writing
ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3390	Topics in Creative Writing
Non-ensemble performance study (MUS) courses, including:	
MUS 1101	Elements of Music Theory
MUS 1102	Comprehensive Musicianship I
MUS 1106	Introduction to Musical Performance and Experience
MUS 2102	Comprehensive Musicianship II
MUS 2134	Composition
MUS 2173	Comprehensive Musicianship for Jazz
MUS 4184	Advanced Composition
Performance Study Courses (TRDA), including:	
TRDA 1035	Theatre Production
TRDA 1151	Beginning/Intermediate Ballet
TRDA 1152	Beginning Modern/Postmodern Dance
TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance
TRDA 1170 & TRDA 1171	Intermediate Modern/Postmodern Dance I and Intermediate Modern/Postmodern Dance II
TRDA 1214	Beginning Acting
TRDA 1330	Basics of Production Design
TRDA 2160	Intermediate Ballet
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II
TRDA 2179	Contact Improvisation
TRDA 2180	Movement Improvisation/Performance
TRDA 2192	Repertory/Performance
TRDA 2193 & TRDA 2194	Dance Styles I and Dance Styles II

TRDA 2215	Intermediate Acting
TRDA 2250	Dramatic Writing
TRDA 2339	Theatre Practicum
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II
TRDA 3182 & TRDA 3183	Dance Composition I and Dance Composition II
TRDA 3186	Embodied Kinesis for Dance
TRDA 3222	Topics in Advanced Acting
TRDA 3240	Introduction to Dramaturgy
TRDA 3250	Intermediate Dramatic Writing
TRDA 3331	Introduction to Lighting
TRDA 3332	Theatrical Makeup Design
TRDA 3333	Stage Management
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming
TRDA 4184	Choreography and Performance
TRDA 4275	Directing for the Theatre
TRDA 4338	Scene Painting

*Some MUS and TRDA courses may be repeated for credit. Consult course descriptions in this Bulletin for additional information. All courses must be taken for a letter grade to fulfill this requirement. Courses taken Pass/No Pass are not accepted.

**Note that MUS 2661 is a prerequisite to MUS 2662.

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Programs (p. 830).

Advanced Fundamentals

Advanced fundamentals build on the introduction to the major (p. 853) and continue the student's education in the basic skills of international affairs. Fundamentals focus on central disciplines, such as economics, history, and political science, and relevant disciplines, such as anthropology and geography. In addition, students gain a broader understanding of at least two regions of the world outside of the United States.

A minimum grade of C- must be earned in all international affairs major courses. This includes advanced fundamentals, regional foundations, concentrations, and foreign language (the last course used to prove third-year proficiency.)

With the exception of WID courses, courses may not be double-counted between any international affairs requirements.

Advanced fundamental courses are divided into the following areas. Course options for each are listed below.

Research methods (3 credits)

International economics (3 or 6 credits)

Historical analysis: U.S. foreign policy (3 credits)

International and comparative politics (3 credits)

Anthropology or geography (3 credits)

Code	Title	Credits
Research Methods (3 credits)		
One course pertaining to qualitative or quantitative social science research methods from the following:		
ANTH 3531	Methods in Sociocultural Anthropology	
ECON 2123	Introduction to Econometrics	
GEOG 2104	Introduction to Cartography and GIS	
IAFF 2101	International Affairs Research Methods	
IAFF 2190	Special Topics (Political Risk Analysis)	
IAFF 3190	Special Topics in International Affairs (Qualitative Research Methods)	
PSC 2101	Scope and Methods of Political Science	
PSC 2102	Visualizing and Modeling Politics	
PSYC 2101	Research Methods in Psychology	
PUBH 3131	Epidemiology: Measuring Health and Disease	
PUBH 3199	Topics in Public Health (Qualitative Research Methods)	
SOC 2101	Social Research Methods	
SOC 2111	Field Research	
STAT 1051	Introduction to Business and Economic Statistics *	
STAT 1053	Introduction to Statistics in Social Science *	
STAT 1111	Business and Economic Statistics I *	

STAT 1127	Statistics for the Biological Sciences
STAT 2112	Business and Economic Statistics II
STAT 2183	Intermediate Statistics Lab/Packages
or STAT 2183W	Intermediate Statistical Laboratory: Statistical Computing Packages
*Credit for only one of the following courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127.	
STAT courses may not be double-counted between the Math requirement and the research methods requirement.	

International Economics (3 or 6 credits)

One or two of the following courses pertaining to the theory of international economics:

Code	Title	Credits
One or two courses pertaining to the theory of international economics, selected from one of the following three options:		
Option one (3 credits):		
ECON 2180	Survey of International Economics	
Option two (6 credits):		
ECON 2181 & ECON 2182	International Trade Theory and Policy and International Macroeconomic Theory and Policy	
Option three (6 credits):		
ECON 2182 & ECON 3181	International Macroeconomic Theory and Policy and International Trade Theory	
*Students pursuing the international economics concentration must select either option two or option three.		
The following courses are required as prerequisites for ECON 3181: ECON 2101 or ECON 2103; and MATH 1221 or MATH 1231 or MATH 1252.		
Credit cannot be earned for both ECON 2181 and ECON 3181.		

Historical Analysis: U.S. Foreign Policy (3 credits)

One of the following courses pertaining to the history of the U.S. approach to contemporary international affairs:

Code	Title	Credits
HIST 2340	U.S. Diplomatic History	
HIST 3035	The United States and the Wars in Indochina, 1945-1975	
HIST 3332	History of American Foreign Policy Since World War II (I)	
HIST 3333	History of American Foreign Policy Since World War II (II)	
IAFF 3180W	Special Topics in Security Policy (U.S. Grand Strategy)	

International and Comparative Politics (3 credits)

One of the following courses pertaining to international political issues and theories from either an international relations or comparative politics perspective:

Code	Title	Credits
IAFF 2040	Basic Topics in International Affairs (topic: Ethics in International Affairs. Same as PSC 2990: Ethics in International Affairs)	
IAFF 2444	International Law	
or PSC 2444	Public International Law	
IAFF 3180W	Special Topics in Security Policy (International Politics and Security Policy)	
IAFF 3190	Special Topics in International Affairs (Issues in Contemporary Diplomacy and National Security)	
IAFF 3190	Special Topics in International Affairs (Global Governance)	
IAFF 4191W	Research Seminar (International Politics and Security Policy)	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2339	Comparative Political Economy	
PSC 2439	International Political Economy	
PSC 2440	Theories of International Politics	

PSC 2442	International Organizations
PSC 2444	Public International Law
or IAFF 2444	International Law
PSC 2446	U.S. Foreign Policy
PSC 2449	International Security Politics
PSC 2990	Selected Topics (topic: Ethics in International Affairs. Same as IAFF 2040: Ethics in International Affairs)
PSC 2991	Special Topics in Political Thought (Global Justice)
PSC 2994	Special Topics in International Relations (U.S. Foreign Policy)

Anthropology or Geography (3 credits)

One of the following courses in anthropology or geography relevant to international affairs. Many of these courses have lower-level prerequisites as detailed in course descriptions in this Bulletin.

Code	Title	Credits
One course from the following:		
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives	
ANTH 2506	Religion, Myth, and Magic	
ANTH 3501	Anthropology of Development	
or IAFF 3501	International Development Theory, Policy, and Practice	
ANTH 3502	Cultural Ecology	
ANTH 3503	Psychological Anthropology	
ANTH 3504	Illness, Healing, and Culture	
ANTH 3506	Politics, Ethnicity, and Nationalism	
ANTH 3507	Kinship, Family, and Community	
ANTH 3508	Art and Culture	
ANTH 3513	Anthropology of Human Rights	
or IAFF 3513	Human Rights and Ethics	
ANTH 3601	Language, Culture, and Cognition	

ANTH 3691 Special Topics in Linguistic Anthropology (topic: Anthropology of Religion. Same as REL 3990: Anthropology of Religion)

IAFF 3501	International Development Theory, Policy, and Practice
or ANTH 3501	Anthropology of Development
IAFF 3513	Human Rights and Ethics
or ANTH 3513	Anthropology of Human Rights
GEOG 2120	World Regional Geography
GEOG 2125	Transportation Systems and Networks
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2137	Environmental Hazards
GEOG 2141	Cities in the Developing World
GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
GEOG 3145	Cultural Geography
GEOG 3146	Political Geography
GEOG 3810	Planning Cities
REL 3990	Selected Topics in Religion (topic: Anthropology of Religion. Same as ANTH 3691: Anthropology of Religion)

Regional Foundations

Students take two courses from the following to gain an understanding of two regions of the world outside of the United States. These courses must be taken in two different regions.

Code	Title	Credits
Africa		
ANTH 3708	Anthropology of Africa	

ECON 2198	Special Topics in Economics - Regional (Economics of Africa)
GEOG 3164	The Geography of Africa
HIST 3501	Topics: Africa (African History Since 1880)
HIST 3530	Women in Africa
HIST 3540	West Africa to Independence
IAFF 2093	Africa: Problems and Prospects
IAFF 2190W	Special Topics (North Africa and the World) *
IAFF 2190W	Special Topics (Rising Africa and the World)
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)
IAFF 3189	Special Topics in African Studies (International Relations in Africa)
IAFF 3189	Special Topics in African Studies (New African Security Frontier)
IAFF 3189	Special Topics in African Studies (Religion in Africa)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)
IAFF 3190	Special Topics in International Affairs (Africa: Declassified)
IAFF 3190	Special Topics in International Affairs (China and Africa)
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2482	African International Politics
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)
PSC 3192W	Proseminar: Political Science (Government and Politics of Africa)

Asia (Students in the BA in Asian studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Asia.)

ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3791	Topics in Regional Anthropology (Anthropology of South Asia)
ECON 2198	Special Topics in Economics - Regional (East Asian Economies)
GEOG 3165	Geography of South Asia
HIST 3640	History of Southeast Asia
HIST 3650	Modern South Asia, 1750-Present
IAFF 2091	East Asia-Past and Present
IAFF 3186	Special Topics in Asian Studies (Asian Order and Community Building)
IAFF 3186	Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3186	Special Topics in Asian Studies (East Asian Security)
IAFF 3186	Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation: Asia)
IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 2369	Comparative Politics of South Asia
PSC 2373	Comparative Politics of Southeast Asia
PSC 2475	International Relations of East Asia
PSC 3192W	Proseminar: Political Science (Politics and Protest in East Asia)

PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)
Europe and Eurasia	
ECON 2199	Special Topics in Economics (Economics of the EU)
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 2125	Twentieth-Century Europe
HIST 3126	European Integration: A History
HIST 3178	The Making of the Modern Balkans
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2094	Europe: International and Domestic Interactions
IAFF 3185	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union and Russia)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 4191W	Research Seminar (Europe)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
Latin America (Students in the BA in Latin American and hemispheric studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Latin America.)	
ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America

HIST 3701	Topics in Latin American History (Latin America and the World Since 1820)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise
IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3194W	Latin America's Violent Peace
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America
Middle East (Students in the BA in Middle East studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than the Middle East.)	
ANTH 3707	Anthropology of the Middle East
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History (Gender and the Middle East)
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
IAFF 2095	The Middle East in International Affairs
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Challenges and Change in the Middle East)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3188	Special Topics in Middle East Studies (Military and Politics in the Middle East)

IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Persian Gulf)
IAFF 4191	Research Seminar (Political Islam)
PSC 2377	Comparative Politics of the Middle East
PSC 2478	International Relations of the Middle East

*IAFF 2190W (North Africa and the World) is not approved as a Regional Foundations course for students in the Middle East Studies program due to the degree of overlap between issues in North Africa and the Middle East.

Concentration

All students in the BA in international affairs program must complete either a functional or regional concentration, which are listed below.

To fulfill the concentration requirement, students complete five courses (15 credits) related to their chosen functional or regional theme. These courses must be taken in at least two different academic departments. Students must declare a concentration no later than the end of the second semester of their sophomore year by completing the Concentration Declaration Form (<https://form.jotform.us/ESIA/concentration-declaration/>). With the exception of WID courses, courses may not be double-counted between any international affairs requirements. A minimum grade of C- must be earned in all concentration courses.

Functional concentrations

- Comparative Political, Economic, and Social Systems (p. 871)
- Conflict Resolution (p. 873)
- Contemporary Cultures and Societies (p. 876)
- Global Public Health (p. 879)
- International Development (p. 880)
- International Economics (p. 883)
- International Environmental Studies (p. 885)
- International Politics (p. 886)
- Security Policy (p. 892)

Regional concentrations

- Africa (p. 868)
- Asia (p. 869)
- Europe and Eurasia (p. 878)

- Latin America (p. 890)
- Middle East (p. 891)

Foreign language requirement

Students must demonstrate third-year proficiency in a modern foreign language by examination or coursework. Additional information regarding the Elliott School foreign language examinations is available from the academic advisor. This requirement is waived automatically for students who were required to take the TOEFL or IELTS examination as part of GW's admissions process.

Code	Title	Credits
Arabic		
Option one:		
ARAB 1001	Beginning Arabic I	
ARAB 1002	Beginning Arabic II	
ARAB 2001	Intermediate Arabic I	
ARAB 2002	Intermediate Arabic II	
ARAB 3001	Advanced Arabic	
and one course from the following:		
ARAB 3301	Modern Arabic Literature	
ARAB 3302	Media Arabic	
ARAB 3311	Business Arabic	
or		
Option two:		
ARAB 1201	Intensive Elementary Arabic I	
ARAB 1202	Intensive Elementary Arabic II	
ARAB 2201	Intensive Intermediate Arabic	
ARAB 3201	Intensive Advanced Arabic: Mass Media	
Code	Title	Credits
Chinese		
CHIN 1001	Beginning Chinese I	
CHIN 1002	Beginning Chinese II	
CHIN 2003	Intermediate Chinese I	
CHIN 2004	Intermediate Chinese II	

CHIN 3105	Intermediate Chinese III	
CHIN 3106	Intermediate Chinese IV	
Code	Title	Credits
French		
FREN 1001	Basic French I	
FREN 1002	Basic French II	
FREN 1003	Intermediate French I	
FREN 1004	Intermediate French II	
FREN 2005	Language, Culture, and Society I	
FREN 2006	Language, Culture, and Society II	
Code	Title	Credits
German		
Option one:		
GER 1001	First-Year German I	
GER 1002	First-Year German II	
GER 1003	Second-Year German I	
GER 1004	Second-Year German II	
and one of the following sequences:		
GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
GER 2101 & GER 2102	Readings in Contemporary German I and Readings in Contemporary German II	
or		
Option two:		
GER 1005	Intensive Beginning German I	
GER 1006	Intensive Beginning German II	
and one of the following sequences:		
GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
GER 2101 & GER 2102	Readings in Contemporary German I and Readings in Contemporary German II	

Code	Title	Credits
Hebrew		
HEBR 1001	Beginning Hebrew I	
HEBR 1002	Beginning Hebrew II	
HEBR 2001	Intermediate Hebrew I	
HEBR 2002	Intermediate Hebrew II	
HEBR 3001	Hebrew Conversation and Writing	
and one course from the following:		
HEBR 3301	Modern Hebrew Fiction	
HEBR 3302	The Israeli Media	
Code	Title	Credits
Italian		
ITAL 1001	Basic Italian I	
ITAL 1002	Basic Italian II	
ITAL 1003	Intermediate Italian I	
ITAL 1004	Intermediate Italian II	
ITAL 2005	Language, Culture, and Society I	
ITAL 2006	Language, Culture, and Society II	
Code	Title	Credits
Japanese		
JAPN 1001	Beginning Japanese I	
JAPN 1002	Beginning Japanese II	
JAPN 2003	Intermediate Japanese I	
JAPN 2004	Intermediate Japanese II	
JAPN 3105	Intermediate Japanese III	
JAPN 3106	Intermediate Japanese IV	
Code	Title	Credits
Korean		
KOR 1001	Beginning Korean I	
KOR 1002	Beginning Korean II	
KOR 2003	Intermediate Korean I	

KOR 2004	Intermediate Korean II
KOR 3105	Intermediate Korean III
KOR 3106	Intermediate Korean IV

Code	Title	Credits
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Persian

PERS 1001	Beginning Persian I
PERS 1002	Beginning Persian II
PERS 2001	Intermediate Persian I
PERS 2002	Intermediate Persian II
PERS 3001	Advanced Persian
PERS 3002	Media Persian

Code	Title	Credits
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Portuguese

Portuguese courses offerings are dependent on faculty availability.

Option one:

PORT 1001	Basic Portuguese I
PORT 1002	Basic Portuguese II
PORT 1003	Intermediate Portuguese I
PORT 1004	Intermediate Portuguese II
PORT 2005	Composition and Conversation
PORT 2006	Applied Portuguese Grammar

or

Option two:

PORT 1012	Intensive Basic Portuguese
PORT 1003	Intermediate Portuguese I
PORT 1004	Intermediate Portuguese II
PORT 2005	Composition and Conversation
PORT 2006	Applied Portuguese Grammar

Code	Title	Credits
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Russian

Option one:

SLAV 1001	First-Year Russian I
SLAV 1002	First-Year Russian II
SLAV 1003	Second-Year Russian I
SLAV 1004	Second-Year Russian II

and one of the following sequences:

SLAV 2005 & SLAV 2006	Intermediate Russian I and Intermediate Russian I
SLAV 1013 & SLAV 1014	Russian for Heritage Speakers I and Russian for Heritage Speakers II
SLAV 2015 & SLAV 2016	Readings in the Russian Press I and Readings in the Russian Press II

or

Option two:

SLAV 1012	Intensive Basic Russian I
SLAV 1034	Intensive Basic Russian II

and one of the following sequences:

SLAV 2005 & SLAV 2006	Intermediate Russian I and Intermediate Russian I
SLAV 1013 & SLAV 1014	Russian for Heritage Speakers I and Russian for Heritage Speakers II
SLAV 2015 & SLAV 2016	Readings in the Russian Press I and Readings in the Russian Press II

Code	Title	Credits
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Spanish

Option one:

SPAN 1011	Intensive Beginning Spanish: the Spanish-speaking world
or SPAN 1012	Intensive Elementary Spanish: the Spanish-speaking world
SPAN 1013	Intermediate Spanish I: the Spanish-speaking world
SPAN 1014	Intermediate Spanish II: the Spanish-speaking world

SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
or	
Option two:	
SPAN 1012	Intensive Elementary Spanish: the Spanish-speaking world
SPAN 1034	Intensive Intermediate Spanish
SPAN 2056	Intensive Advanced Spanish
or	
Option three:	
SPAN 1013	Intermediate Spanish I: the Spanish-speaking world
SPAN 1014	Intermediate Spanish II: the Spanish-speaking world
SPAN 2026	Advanced Spanish for Heritage Learners *
or	
Option four:	
SPAN 1034	Intensive Intermediate Spanish
or SPAN 1134	Intensive Intermediate Spanish for Heritage Learners
SPAN 2026	Advanced Spanish for Heritage Learners *
or	
Option five:	
SPAN 1013	Intermediate Spanish I: the Spanish-speaking world
SPAN 1014	Intermediate Spanish II: the Spanish-speaking world
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
or SPAN 2026	Advanced Spanish for Heritage Learners
*Spanish language options three and four require an interview prior to enrolling in SPAN 2026. Students should contact the Department of Romance, German, and Slavic Languages and Literatures for additional information about these options.	

CONCENTRATIONS

Concentrations

All students in the BA in international affairs program must complete either a functional or regional concentration, which are listed below. Students in the BS in international affairs program may complete one of these concentrations or they may take 15 credits in courses that count toward a second major in a STEM-related discipline.

To fulfill the concentration requirement, students complete five courses (15 credits) relating to their chosen functional or regional theme. These courses must be taken in at least two different academic departments. Students must declare a concentration no later than the end of the second semester of their sophomore year by completing the Concentration Declaration Form (<https://form.jotform.us/ESIA/concentration-declaration/>). With the exception of WID courses, courses may not be double-counted between any international affairs requirements. A minimum grade of C- must be earned in all concentration courses.

Functional concentrations

- Comparative Political, Economic, and Social Systems (p. 871)
- Conflict Resolution (p. 873)
- Contemporary Cultures and Societies (p. 876)
- Global Public Health (p. 879)
- International Development (p. 880)
- International Economics (p. 883)
- International Environmental Studies (p. 885)
- International Politics (p. 886)
- Security Policy (p. 892)

Regional concentrations

- Africa (p. 868)
- Asia (p. 869)
- Europe and Eurasia (p. 878)
- Latin America (p. 890)
- Middle East (p. 891)

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, AFRICA CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed here, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
Five courses from the following. At least two courses must be from Group A and at least two courses must be from Group B.		
Group A:		
ANTH 3708	Anthropology of Africa	
ANTH 3801	African Roots from Australopithecus to Zimbabwe	
ECON 2151	Economic Development	
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)	
GEOG 3154	Geography of the Middle East and North Africa	
GEOG 3164	The Geography of Africa	
IAFF 2093	Africa: Problems and Prospects	
IAFF 2190W	Special Topics (North Africa and the World)	
IAFF 2190W	Special Topics (U.S. Foreign Policy in Africa)	
IAFF 3183	Special Topics in Development Policy (Gender, Peace, and Security in Africa)	
IAFF 3189	Special Topics in African Studies	
IAFF 3190	Special Topics in International Affairs (China and Africa)	
IAFF 3190	Special Topics in International Affairs (Ethnic and Religious Conflict in Africa)	
PSC 2337	Development Politics	
PSC 2381	Comparative Politics of Sub-Saharan Africa	
PSC 2482	African International Politics	
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)	
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)	
PSC 3192W	Proseminar: Political Science (Government and Politics of Africa)	

Group B:

HIST 2520	Africans in the Making of the Atlantic World
HIST 3001W	Special Topics (Comparative Colonialism in Africa)
HIST 3001W	Special Topics (Comparative Colonialism-Asia and Africa)
HIST 3301W	Topics: U.S. History (African Americans and Africa)
HIST 3501	Topics: Africa
HIST 3510	African History to 1880
HIST 3530	Women in Africa
HIST 3540	West Africa to Independence
IAFF 3189	Special Topics in African Studies (African Literature and Politics) *
IAFF 3189	Special Topics in African Studies (Hip Hop & Social Change in Africa) *
IAFF 3189	Special Topics in African Studies (Religion in Africa) *
IAFF 3189	Special Topics in African Studies (West African Literature and Politics) *
Any undergraduate literature or film course numbered 2000 or above with this regional focus.	

*Only these specific topics offered under IAFF 3189 are approved for Group B. All other IAFF 3189 topic offerings are approved for the Africa concentration Group A.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, ASIA CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
Five courses from the following. At least two courses must be from Group A and at least two courses must be from Group B.		
Group A:		
ANTH 3703	Cultures of the Pacific	
ANTH 3704	Cultures of Southeast Asia	
ANTH 3705	Anthropology of East Asia	
ECON 2151	Economic Development	
ECON 2169	Introduction to the Economy of China	
ECON 2170	Introduction to the Economy of Japan	
GEOG 3165	Geography of South Asia	
IAFF 2091	East Asia-Past and Present	
IAFF 2190W	Special Topics (War Crimes Trials in Asia)	
IAFF 3182	Special Topics in Foreign Policy (China's Rise and Implications)	
IAFF 3186	Special Topics in Asian Studies	
IAFF 3190	Special Topics in International Affairs (China and Africa)	
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)	
PSC 2368	Politics in the Two Koreas	
PSC 2369	Comparative Politics of South Asia	
PSC 2371	Politics and Foreign Policy of China	
PSC 2373	Comparative Politics of Southeast Asia	
PSC 2374	Politics and Foreign Policy of Japan	
PSC 2475	International Relations of East Asia	
PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)	
PSC 3192W	Proseminar: Political Science (South Asia Politics through Literature and Film)	
Group B:		
AH 2190	East Asian Art	

AH 2191	South Asian Art
AH 2192	Art of Southeast Asia
CHIN 3162	Chinese Culture Through Film
CHIN 3841	Religion and Politics in China
EALL 3881	Women, Gender, and Religion in China
or WGSS 3881	Women, Gender, and Religion in China
HIST 2305W	Majors' Introductory Seminar: United States (Cold War in Asia)
HIST 3035	The United States and the Wars in Indochina, 1945-1975
HIST 3301W	Topics: U.S. History (The Cold War in Asia)
HIST 3601	Topics: Asian History
HIST 3610	China to 1800
HIST 3611	History of Modern China
HIST 3614	Writing Modern Chinese History
HIST 3615	History of Chinese Communism
HIST 3621	History of Modern Japan
HIST 3631	History of Modern Korea
HIST 3640	History of Southeast Asia
HIST 3650	Modern South Asia, 1750-Present
HIST 3840	History of Central Asia
JAPN 3162	Japanese Culture Through Film
or ANTH 3709	Japanese Culture Through Film
KOR 3162	Korean Culture through Film
REL 2562	Mythologies of India
REL 2601	Buddhism
REL 2814	Religion and Philosophy in East Asia
REL 3841	Religion and Politics in China
REL 3989	The Goddess in India and Beyond
WGSS 3881	Women, Gender, and Religion in China
or EALL 3881	Women, Gender, and Religion in China

Any undergraduate literature or film course numbered 2000 or above with this regional focus.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, COMPARATIVE POLITICAL, ECONOMIC, AND SOCIAL SYSTEMS CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
One course from the following:		
PSC 2330	Comparative Politics of Western Europe	
PSC 2331	Comparative Politics of Central and Eastern Europe	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2339	Comparative Political Economy	
PSC 2369	Comparative Politics of South Asia	
PSC 2373	Comparative Politics of Southeast Asia	
PSC 2377	Comparative Politics of the Middle East	
PSC 2381	Comparative Politics of Sub-Saharan Africa	
PSC 2383	Comparative Politics of Latin America	
PSC 2993	Special Topics in Comparative Politics (Any offered topic)	
Four courses from the following:		
ANTH 3506	Politics, Ethnicity, and Nationalism	
ANTH 3513	Anthropology of Human Rights	

or IAFF 3513	Human Rights and Ethics
ECON 2169	Introduction to the Economy of China
ECON 2170	Introduction to the Economy of Japan
ECON 2185	Economic History and Problems of Latin America
GEOG 2120	World Regional Geography
GEOG 2148	Economic Geography
GEOG 3146	Political Geography
GEOG 3165	Geography of South Asia
GER 3183	Berlin Before and After the Wall
GER 3188	The Lives of East Germans
GER 3189	Dealing with the Communist Past in Germany and Eastern Europe
HIST 3001W	Special Topics (Comparative Colonialism in Asia and Africa)
HIST 3801	Topics in Middle Eastern History (The Making of Modern Iraq and Syria)
HIST 3820	History of Israel
IAFF 2090	Latin America: Problems and Promise
IAFF 2091	East Asia-Past and Present
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2093	Africa: Problems and Prospects
IAFF 2094	Europe: International and Domestic Interactions
IAFF 2095	The Middle East in International Affairs
IAFF 2190	Special Topics (Political Risk Analysis)
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Crowdsourcing and the Future of Work)
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)
IAFF 2190W	Special Topics (Foreign Policy Decision Making)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)

IAFF 2190W	Special Topics (Turkey and Its Neighbors)
IAFF 2190W	Special Topics (U.S. Foreign Policy in Africa)
IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 3177	Political Economy of Latin America
IAFF 3179	Special Topics in Science and Technology Policy (International Information Technology Policy)
IAFF 3180	Special Topics in Security Policy (Gender and Conflict)
IAFF 3180	Special Topics in Security Policy (Global Energy Security)
IAFF 3182	Special Topics in Foreign Policy (China's Rise and Implications)
IAFF 3183	Special Topics in Development Policy (Globalization for Sustainable Development)
IAFF 3185	Special Topics in European and Eurasian Studies (The End of Western Supremacy)
IAFF 3186	Special Topics in Asian Studies (Asian Order & Community-Building)
IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3186	Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Central American and Caribbean Perspective)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Global and Urban Development in Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)

IAFF 3187	Special Topics in Latin American and Hemispheric Studies (OAS and Democracy)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (State and Society in Egypt)
IAFF 3190	Special Topics in International Affairs (Arab Politics)
IAFF 3190	Special Topics in International Affairs (Catastrophic Crisis: Strategic Challenges and Leadership)
IAFF 3190	Special Topics in International Affairs (China and Africa)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 3190	Special Topics in International Affairs (Holocaust Memory)
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
IAFF 3190	Special Topics in International Affairs (topic Oil: Industry, Economy, Society. Same as IBUS 4403)
IAFF 3190	Special Topics in International Affairs (Religion in International Affairs)
IAFF 3190	Special Topics in International Affairs (Public-Private-NGO Collaboration)
IAFF 3190	Special Topics in International Affairs (Women, Rights, and Gender Equality)
IAFF 3190W	Special Topics (Arab Spring: Democracy and Human Rights)
IAFF 3191W	Latin American Populism in Global Context
IAFF 3513 or ANTH 3513	Human Rights and Ethics Anthropology of Human Rights
IAFF 4191	Research Seminar (Europe)
IAFF 4191	Research Seminar (Political Islam)
IAFF 4191W	Research Seminar (Foreign Policy Decision Making)

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, CONFLICT RESOLUTION CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed here, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
One from the following:		
IAFF 3172	Conflict and Conflict Resolution	
PSTD 1010	Introduction to Peace Studies and Conflict Resolution	
Supporting courses		
Four from the following:		
ANTH 3506	Politics, Ethnicity, and Nationalism	
ANTH 3513	Anthropology of Human Rights	
or IAFF 3513	Human Rights and Ethics	
GEOG 2127	Population Geography	
GEOG 2134	Energy Resources	
GEOG 2136	Water Resources	
GEOG 2147	Military Geography	
GEOG 3146	Political Geography	
HIST 3001	Special Topics (Arab-Israeli Disputes)	
HIST 3001	Special Topics (Cold War in Asia)	
HIST 3001	Special Topics (WWII in Asia)	
HIST 3031	Military History since 1860	
HIST 3035	The United States and the Wars in Indochina, 1945-1975	
HIST 3045	International History of the Cold War	
HIST 3046	The Cold War in the Third World	

IBUS 4403	Oil: Industry, Economy, and Society (same as IAFF 3190 Oil: Industry, Economy, Society)
JSTD 2002	Topics in Judaic Studies: Modern (Holocaust Memory)
PSC 2224	Issues in Domestic Public Policy (Energy Policy)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2334	Global Perspectives on Democracy
PSC 2336	State-Society Relations in the Developing World
PSC 2337	Development Politics
PSC 2338	Nationalism
PSC 2339	Comparative Political Economy *
PSC 2366	Russian Politics
PSC 2367	Human Rights
PSC 2368	Politics in the Two Koreas
PSC 2369	Comparative Politics of South Asia
PSC 2371	Politics and Foreign Policy of China
PSC 2373	Comparative Politics of Southeast Asia
PSC 2374	Politics and Foreign Policy of Japan
PSC 2377	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2383	Comparative Politics of Latin America
PSC 2476	The Arab-Israeli Conflict
PSC 2993	Special Topics in Comparative Politics
PSC 3192W	Proseminar: Political Science (Russian Politics: Comparative Perspective)

*If not taken as a concentration anchor course from the previous course selection list.

HIST 3062	War Crimes Trials	IAFF 3180	Special Topics in Security Policy (Gender, Conflict, and Security)
HIST 3168	Divided and United Germany Since 1945	IAFF 3180	Special Topics in Security Policy (Globalization and National Security)
HIST 3334	The Nuclear Arms Race	IAFF 3180	Special Topics in Security Policy (Responding to Terrorism)
HIST 3820	History of Israel	IAFF 3180	Special Topics in Security Policy (Transnational Security Threats)
HIST 3825	Land and Power in Israel/Palestine	IAFF 3180W	Special Topics in Security Policy (International Politics and Security Policy)
IAFF 2095	The Middle East in International Affairs	IAFF 3180W	Special Topics in Security Policy (Nuclear Security)
IAFF 2190	Special Topics (Civil Wars)	IAFF 3180W	Special Topics in Security Policy (U.S. Grand Strategy)
IAFF 2190	Special Topics (Presidents at War)	IAFF 3181	Special Topics in Conflict Resolution
IAFF 2190W	Special Topics (Arab Politics)	IAFF 3182	Special Topics in Foreign Policy (Contemporary Uses of Military Power)
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)	IAFF 3183	Special Topics in Development Policy (Gender, Peace, & Security in Africa)
IAFF 2190W	Special Topics (National Security, Foreign and Intelligence Policy)	IAFF 3183	Special Topics in Development Policy (Globalization for Sustainable Development)
IAFF 2190W	Special Topics (North Africa and the World)	IAFF 3183	Special Topics in Development Policy (International Human Rights Advocacy)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)	IAFF 3183	Special Topics in Development Policy (Human Trafficking)
IAFF 2190W	Special Topics (Security and Subcontractors)	IAFF 3183	Special Topics in Development Policy (NGOs Role in Humanitarian Assistance)
IAFF 2190W	Special Topics (Terrorism and Counterterrorism)	IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 2190W	Special Topics (Turkey and Its Neighbors)	IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation in Asia)
IAFF 2190W	Special Topics (Understanding Protracted Conflict)	IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
IAFF 2190W	Special Topics (U.S. Foreign Policy in Africa)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Conflict & Contestation in Latin America)
IAFF 2190W	Special Topics (War Crimes Trials in Asia)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Ethnicity and Conflict in the Andes)
IAFF 2190W	Special Topics (Women in Global Politics)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Historical Memory & Human Rights in Chile)
IAFF 2444	International Law		
or PSC 2444	Public International Law		
IAFF 3180	Special Topics in Security Policy (Civil War, Insurgency, and Terror)		
IAFF 3180	Special Topics in Security Policy (Gender and Conflict)		

IAFF 3188	Special Topics in Middle East Studies (Israel-Palestinian Conflict)	IAFF 4191	Research Seminar (Conflict and Development)
IAFF 3188	Special Topics in Middle East Studies (Israeli-Palestinian Peacebuilding)	IAFF 4191	Research Seminar (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)	IAFF 4191W	Research Seminar (International Politics and Security Policy)
IAFF 3188	Special Topics in Middle East Studies (U.S.-Iran Relations)	JSTD 2002	Topics in Judaic Studies: Modern (Holocaust Memory)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Gulf)	PHIL 2133	Philosophy and Nonviolence
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)	PSC 2338	Nationalism
IAFF 3189	Special Topics in African Studies (Horn of Africa)	PSC 2367	Human Rights
IAFF 3189	Special Topics in African Studies (Transitional Justice in Africa)	PSC 2368	Politics in the Two Koreas
IAFF 3190	Special Topics in International Affairs (Global Governance)	PSC 2377	Comparative Politics of the Middle East
IAFF 3190	Special Topics in International Affairs (Holocaust Memory)	PSC 2442	International Organizations
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)	PSC 2444	Public International Law
IAFF 3190	Special Topics in International Affairs (Human Rights Successes)	or IAFF 2444	International Law
IAFF 3190	Special Topics in International Affairs (Humanitarianism)	PSC 2449	International Security Politics
IAFF 3190	Special Topics in International Affairs (Humanitarian Assistance and International Development Law)	PSC 2476	The Arab-Israeli Conflict
IAFF 3190	Special Topics in International Affairs (Refugee and Migrant Crisis)	PSC 2991	Special Topics in Political Thought (Global Justice)
IAFF 3190	Special Topics in International Affairs (Religion in International Affairs)	PSC 2992	Special Topics in American Politics and Government (Ending Wars and Making Peace)
IAFF 3190	Special Topics in International Affairs (US Intervention and Forever Wars)	PSC 2992	Special Topics in American Politics and Government (Gender, War, and Peace)
IAFF 3190	Special Topics in International Affairs (Women, Rights, and Gender Equality)	PSC 2992	Special Topics in American Politics and Government (Politics of Peacekeeping)
IAFF 3194W	Latin America's Violent Peace	PSC 2994	Special Topics in International Relations (Insurgencies)
IAFF 3513	Human Rights and Ethics	PSC 2994	Special Topics in International Relations (War)
or ANTH 3513	Anthropology of Human Rights	PSC 3192W	Proseminar: Political Science (Ethnic Conflict and Peacebuilding)
		PSTD 1010	Introduction to Peace Studies and Conflict Resolution
		PSTD 3191	Special Topics Peace Studies (Concepts of Peace)
		REL 2921	The Religions Wage Peace
		REL 3923	Violence and Peace in Judaism, Christianity, and Islam

SMPA 3194	Selected Topics in Political Communication (Advocacy and Technology)
SMPA 3194	Selected Topics in Political Communication (Media and Peacebuilding)
SOC 2173	Social Movements
SOC 2189	Special Topics in Criminal Justice (Sociology of Terrorism)

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, CONTEMPORARY CULTURES AND SOCIETIES CONCENTRATION

Requirements for the concentration

Code	Title	Credits
In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.		
If a student wishes to take any course not listed below, prior approval of the academic advisor is required.		
Required		
Five courses from the following, at least two of which must be in the field of anthropology (ANTH). Note that ANTH 1002 is a prerequisite for most of the ANTH courses listed here.		
AMST 2490	Themes in U.S. Cultural History	
or HIST 2490	Themes in U.S. Cultural History	
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives	
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds	
ANTH 2506	Religion, Myth, and Magic	
ANTH 3501	Anthropology of Development	
or IAFF 3501	International Development Theory, Policy, and Practice	
ANTH 3502	Cultural Ecology	
ANTH 3503	Psychological Anthropology	

ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
or IAFF 3513	Human Rights and Ethics
ANTH 3601	Language, Culture, and Cognition
ANTH 3701	Native Peoples - North America
ANTH 3702	Anthropology of Latin America
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3707	Anthropology of the Middle East
ANTH 3708	Anthropology of Africa
ANTH 3991	Special Topics (Medical Anthropology)
ANTH 3991	Special Topics (Power and the Body)
ANTH 4008W	Seminar: Contemporary Anthropological Theory (Anthropological Theory)
CHIN 3162	Chinese Culture Through Film
GEOG 2120	World Regional Geography (formerly GEOG 3120)
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 3145	Cultural Geography
GER 3188	The Lives of East Germans
HIST 3301W	Topics: U.S. History (African Americans and Africa)
HIST 3366	Immigration, Ethnicity, and the American Experience
HIST 3367	The American Jewish Experience
IAFF 2040	Basic Topics in International Affairs (Ethics and International Affairs)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)

IAFF 2190W	Special Topics (US Foreign Policy in Africa)	IAFF 3190	Special Topics in International Affairs (Holocaust Memory)
IAFF 2190W	Special Topics (Women in Global Politics)	IAFF 3190	Special Topics in International Affairs (Human Rights Narratives)
IAFF 3180	Special Topics in Security Policy (Gender, Conflict, and Security)	IAFF 3190	Special Topics in International Affairs (Human Rights Successes)
IAFF 3183	Special Topics in Development Policy (Environmentalism and Development)	IAFF 3190	Special Topics in International Affairs (Religion in International Affairs)
IAFF 3183	Special Topics in Development Policy (Gender, Peace, and Security in Africa)	IAFF 3190W	Special Topics (Masculinities in International Affairs)
IAFF 3183	Special Topics in Development Policy (Globalization for Sustainable Development)	IAFF 3210W	Migration, Gender, and International Development
IAFF 3183	Special Topics in Development Policy (Human Trafficking)	IAFF 3501	International Development Theory, Policy, and Practice
IAFF 3186	Special Topics in Asian Studies (topic: Christianity and Islam in East Asia. Same as REL 3990: Christianity and Islam in East Asia)	or ANTH 3501	Anthropology of Development
IAFF 3186	Special Topics in Asian Studies (Politics of the Past in Korea)	IAFF 3513	Human Rights and Ethics
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin America in Motion: Indigenous Movements)	or ANTH 3513	Anthropology of Human Rights
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)	IAFF 4191	Research Seminar (Political Islam)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)	JAPN 3162	Japanese Culture Through Film
IAFF 3188	Special Topics in Middle East Studies (Political Islam)	or ANTH 3709	Japanese Culture Through Film
IAFF 3188	Special Topics in Middle East Studies (State and Society in Egypt)	JSTD 2002	Topics in Judaic Studies: Modern (Holocaust Memory)
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)	KOR 3162	Korean Culture through Film
IAFF 3189	Special Topics in African Studies (Hip Hop and Social Change in Africa)	KOR 3190	Korean Arts and Culture
IAFF 3189	Special Topics in African Studies (Horn of Africa)	PSYC 3125	Cross-Cultural Psychology
IAFF 3189	Special Topics in African Studies (New African Security Frontier)	REL 2506	Religion, Myth, and Magic
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)	or ANTH 2506	Religion, Myth, and Magic
		REL 3990	Selected Topics in Religion (topic: Christianity and Islam in East Asia. Same as IAFF 3186: Christianity and Islam in East Asia)
		SOC 2175	Sociology of Sex and Gender
		SOC 2179	Race and Minority Relations
		SPAN 3200	Bilingualism in the Spanish-Speaking World
		WGSS 2120	Introduction to Women's, Gender, and Sexuality Studies

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, EUROPE AND EURASIA CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
Five courses from the following. At least two courses must be from Group A and at least two courses from Group B.		
Group A:		
ECON 2151	Economic Development	
ECON 2199	Special Topics in Economics (Economics of the EU)	
GER 3183	Berlin Before and After the Wall	
GER 3188	The Lives of East Germans	
GER 3189	Dealing with the Communist Past in Germany and Eastern Europe	
IAFF 2092	Russia and Eastern Europe: An Introduction	
IAFF 2094	Europe: International and Domestic Interactions	
IAFF 3180	Special Topics in Security Policy (Nato's Strategic Challenges)	
IAFF 3185	Special Topics in European and Eurasian Studies	
IAFF 3186	Special Topics in Asian Studies (Central Asia Between East and West)	
IAFF 3190	Special Topics in International Affairs (Europe Economies and Crisis of Integration)	
IAFF 3190	Special Topics in International Affairs (History of Paris)	

IAFF 3190	Special Topics in International Affairs (topic: Holocaust Memory. Same as JSTD 2002: Holocaust Memory)
IAFF 4191	Research Seminar (Europe)
JSTD 2002	Topics in Judaic Studies: Modern (topic: Holocaust Memory. Same as IAFF 3190: Holocaust Memory)
PSC 2105	Major Issues of Western Political Thought I
PSC 2106	Major Issues of Western Political Thought II
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2337	Development Politics
PSC 2366	Russian Politics
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
PSC 3192W	Proseminar: Political Science (British Politics)
PSC 3192W	Proseminar: Political Science (Russian Politics: Comparative Perspective)
Group B:	
AH 2145	History of Decorative Arts: European Heritage
AH 3140	European Art of the Eighteenth Century
AH 3141	European Art of the Early Nineteenth Century
AH 3142	
AH 3143	Early Twentieth-Century Art
FREN 3020	Contemporary France
FREN 3220	Modern French Literature
FREN 3400	Studies in Genre
FREN 3560	Topics in Contemporary Francophone Literature and Cinema

FREN 3700	History of French Cinema
GER 2161	German Culture-in English I
GER 2162	German Culture-in English II
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 2060	Modern Jewish History
HIST 2113	The Roman World to 337 A.D.
HIST 2124	Nineteenth-Century Europe
HIST 2125	Twentieth-Century Europe
HIST 2160	History of Germany
HIST 3061	The Holocaust
HIST 3101	Topics: Europe
HIST 3103	European Intellectual History I
HIST 3104	European Intellectual History II
HIST 3111	Topics in Ancient History (Ancient Identity: Greeks, Romans, Others)
HIST 3111	Topics in Ancient History (The High Middle Ages)
HIST 3118	The Middle Ages: 500-1500
HIST 3126	European Integration: A History
HIST 3130	History of England I
HIST 3132	Tudor England
HIST 3134	Stuart England
HIST 3135	Victorian Britain
HIST 3137	The British Empire
HIST 3139	Twentieth-Century Britain
HIST 3140	History of France
HIST 3145	The French Revolution
HIST 3150	Spain and Its Empire, 1492-1700
HIST 3168	Divided and United Germany Since 1945
HIST 3173	The Habsburgs in East Central Europe
HIST 3178	The Making of the Modern Balkans
HIST 3180	Russia to 1801

HIST 3181	Russia Since 1801
HIST 3650	Modern South Asia, 1750-Present
HIST 3840	History of Central Asia
IAFF 3190	Special Topics in International Affairs (topic: Holocaust Memory. Same as JSTD 2002: Holocaust Memory)
JSTD 2002	Topics in Judaic Studies: Modern (topic: Holocaust Memory. Same as IAFF 3190: Holocaust Memory)
PHIL 2112	History of Modern Philosophy
PHIL 3113	Nineteenth-Century Philosophy
SLAV 2310	The Russian Media Since Communism
SLAV 2361	Russian Culture
SLAV 2362	Russian Culture
SLAV 2785	Introduction to Russian Cinema I
SLAV 2786	Introduction to Russian Cinema II

Any undergraduate literature or film course numbered 2000 or above with this regional focus.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, GLOBAL PUBLIC HEALTH CONCENTRATION

Requirements for the concentration

Code	Title	Credits
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In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

Approval of the academic advisor is required in order for any course not listed below to count toward program requirements.

Required

PUBH 3133	Global Health and Development
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Four courses from the following:

ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
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ANTH 3501	Anthropology of Development
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or IAFF 3501	International Development Theory, Policy, and Practice
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3513	Anthropology of Human Rights
or IAFF 3513	Human Rights and Ethics
ANTH 3991	Special Topics (Medical Anthropology)
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2136	Water Resources
GEOG 2137	Environmental Hazards
GEOG 2141	Cities in the Developing World
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 3183	Special Topics in Development Policy (Human Trafficking)
IAFF 3183	Special Topics in Development Policy (Women, Rights, and Gender Equality)
IAFF 3210W	Migration, Gender, and International Development
IAFF 3501	International Development Theory, Policy, and Practice
or ANTH 3501	Anthropology of Development
IAFF 3513	Human Rights and Ethics
or ANTH 3513	Anthropology of Human Rights
PUBH 1101	Introduction to Public Health and Health Services
PUBH 2110	Public Health Biology
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2115	Health, Human Rights, and Displaced Persons

PUBH 2116	Global Delivery of Health Systems
PUBH 3115	Global Health and Human Rights
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3132	Health and Environment
PUBH 3137	Global Public Health Nutrition
PUBH 3150	Sustainable Energy and Environmental Health
PUBH 3199	Topics in Public Health (Global Governance and Complex Emergencies)
SOC 2175	Sociology of Sex and Gender
SUST 1001	Introduction to Sustainability
WGSS 3170	Special Topics in Women's, Gender, and Sexuality Studies (Sociology of Sex and Gender)

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, INTERNATIONAL DEVELOPMENT CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed below approval of the academic advisor is required.

Code	Title	Credits
Required		
ECON 2151	Economic Development	
IAFF 3501	International Development Theory, Policy, and Practice	
or ANTH 3501	Anthropology of Development	
Three courses from the following. If ANTH 3501 or IAFF 3501 is being used to fulfill the advanced fundamentals major requirement, four courses are required.		
ANTH 3513	Anthropology of Human Rights	

or IAFF 3513	Human Rights and Ethics	IAFF 2190W	Special Topics (Latin American Populism)
ANTH 3701	Native Peoples - North America	IAFF 2190W	Special Topics (North Africa and the World)
ANTH 3702	Anthropology of Latin America	IAFF 2190W	Special Topics (Political Economy of Latin America)
ANTH 3703	Cultures of the Pacific	IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
ANTH 3704	Cultures of Southeast Asia	IAFF 2190W	Special Topics (Turkey and Its Neighbors)
ANTH 3705	Anthropology of East Asia	IAFF 2190W	Special Topics (U.S.-Asia Critical Issues)
ANTH 3707	Anthropology of the Middle East	IAFF 2190W	Special Topics (U.S. Foreign Policy in Africa)
ANTH 3708	Anthropology of Africa	IAFF 2190W	Special Topics (Women in Global Politics)
ANTH 3991	Special Topics (Anthropology of Displacement and Diaspora)	IAFF 3177	Political Economy of Latin America
ECON 2169	Introduction to the Economy of China	IAFF 3179	Special Topics in Science and Technology Policy (Energy and the Environment)
ECON 2185	Economic History and Problems of Latin America	IAFF 3180	Special Topics in Security Policy (Gender, Conflict, and Security)
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)	IAFF 3180	Special Topics in Security Policy (Globalization and National Security)
GEOG 2120	World Regional Geography	IAFF 3180	Special Topics in Security Policy (Global Energy Markets)
GEOG 2125	Transportation Systems and Networks	IAFF 3182	Special Topics in Foreign Policy (China's Rise and Implications)
GEOG 2127	Population Geography	IAFF 3183	Special Topics in Development Policy
GEOG 2141	Cities in the Developing World	IAFF 3185	Special Topics in European and Eurasian Studies (The End of Western Supremacy)
GEOG 2148	Economic Geography	IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
GEOG 3143	Urban Sustainability	IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
GEOG 3154	Geography of the Middle East and North Africa	IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
GEOG 3161	Geography of Latin America	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Central American and Caribbean Perspective)
GEOG 3164	The Geography of Africa	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic & Social Development of Latin America)
GEOG 3165	Geography of South Asia		
HSSJ 2160	Role of NGOs in International Humanitarian Assistance		
IAFF 2040	Basic Topics in International Affairs (Humanitarianism)		
IAFF 2190W	Special Topics (Arab Politics)		
IAFF 2190W	Special Topics (Foreign Policy Decision Making)		
IAFF 2190W	Special Topics (International Environmental Policy)		

IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Globalization and Urban Development in Latin America)	IAFF 3190	Special Topics in International Affairs (Religion in International Affairs)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Historical Memory and Human Rights in Chile)	IAFF 3190	Special Topics in International Affairs (Women, Rights, and Gender Equality)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States)	IAFF 3191W	Latin American Populism in Global Context
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)	IAFF 3513 or ANTH 3513	Human Rights and Ethics Anthropology of Human Rights
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)	IAFF 4191	Research Seminar (Conflict and Development)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)	IAFF 4191W	Research Seminar (Foreign Policy Decision Making)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)	IBUS 4202	Regional Strategy for Multinationals
IAFF 3189	Special Topics in African Studies (Horn of Africa)	IBUS 4402	Managing in Developing Countries
IAFF 3189	Special Topics in African Studies (International Relations in Africa)	IBUS 4900	Special Topics (Institutions and Economic Development: The Case of Rwanda)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)	PSC 2331	Comparative Politics of Central and Eastern Europe
IAFF 3190	Special Topics in International Affairs (China and Africa)	PSC 2336	State-Society Relations in the Developing World
IAFF 3190	Special Topics in International Affairs (Humanitarian Assistance and International Development Law)	PSC 2337	Development Politics
IAFF 3190	Special Topics in International Affairs (Human Rights Narratives)	PSC 2339	Comparative Political Economy
IAFF 3190	Special Topics in International Affairs (Human Rights Successes)	PSC 2367	Human Rights
IAFF 3190	Special Topics in International Affairs (International Business and Modern Slavery)	PSC 2368	Politics in the Two Koreas
IAFF 3190	Special Topics in International Affairs (International Environmental Policy)	PSC 2369	Comparative Politics of South Asia
IAFF 3190	Special Topics in International Affairs (Public/Private/NGO Collaboration)	PSC 2370	Comparative Politics of China and Northeast Asia
IAFF 3190	Special Topics in International Affairs (Refugee and Migrant Crisis)	PSC 2373	Comparative Politics of Southeast Asia
		PSC 2377	Comparative Politics of the Middle East
		PSC 2381	Comparative Politics of Sub-Saharan Africa
		PSC 2383	Comparative Politics of Latin America
		PSC 2439	International Political Economy
		PSC 2442	International Organizations
		PSC 2475	International Relations of East Asia
		PSC 2478	International Relations of the Middle East

PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
PSC 2990	Selected Topics (The Political Economy of Development)
PSC 2992	Special Topics in American Politics and Government (Politics of Peacemaking)
PUBH 2114	Environment, Health, and Development
PUBH 3133	Global Health and Development
SMPA 3471	Media in the Developing World
SMPP 4900W	Special Topics (Strategy and International Political Economy)
SOC 2168	Economic Sociology
SOC 2175	Sociology of Sex and Gender
SUST 1001	Introduction to Sustainability
WGSS 3170	Special Topics in Women's, Gender, and Sexuality Studies (Sociology of Sex and Gender)

ECON 2101 Intermediate Microeconomic Theory
or ECON 2103 Intermediate Microeconomic Theory: A Mathematical Approach

ECON 2102 Intermediate Macroeconomic Theory
or ECON 2104 Intermediate Macroeconomic Theory: A Mathematical Approach

ECON 2121 Financial Economics

ECON 2136 Environmental and Natural Resource Economics

ECON 2151 Economic Development

ECON 2157 Urban and Regional Economics

ECON 2158 Industrial Organization

ECON 2169 Introduction to the Economy of China

ECON 2170 Introduction to the Economy of Japan

ECON 2185 Economic History and Problems of Latin America

ECON 2198 Special Topics in Economics - Regional (East Asian Economies)

ECON 2198 Special Topics in Economics - Regional (Economics of Africa)

ECON 2199 Special Topics in Economics (Economics of the EU)

ECON 3161 Public Finance: Expenditure Programs

ECON 3162 Public Finance: Taxation

ECON 3191 Game Theory

GEOG 2120 World Regional Geography

GEOG 2125 Transportation Systems and Networks

GEOG 2127 Population Geography

GEOG 2133 People, Land, and Food

GEOG 2134 Energy Resources

GEOG 2136 Water Resources

GEOG 2141 Cities in the Developing World

GEOG 2148 Economic Geography

GEOG 3143 Urban Sustainability

IAFF 2040 Basic Topics in International Affairs (Game Theory and Strategy)

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, INTERNATIONAL ECONOMICS CONCENTRATION

Requirements for the concentration

Code	Title	Credits
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In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, IAFF 4191, and IBUS 4900, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Required

Students completing this concentration must use ECON 2181 and ECON 2182 or ECON 2182 and ECON 3181 to satisfy the advanced fundamentals international economics requirement.

Five courses from the following:

ANTH 3501	Anthropology of Development
or IAFF 3501	International Development Theory, Policy, and Practice

IAFF 2190W	Special Topics (Crowdsourcing and the Future of Work)
IAFF 2190W	Special Topics (Foreign Policy Decision Making)
IAFF 2190W	Special Topics (International Environmental Policy)
IAFF 2190W	Special Topics (Latin American Populism)
IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 3177	Political Economy of Latin America
IAFF 3180	Special Topics in Security Policy (Gender, Conflict, and Security)
IAFF 3180	Special Topics in Security Policy (Global Energy Markets)
IAFF 3180	Special Topics in Security Policy (Global Energy Security)
IAFF 3180	Special Topics in Security Policy (Globalization and National Security)
IAFF 3183	Special Topics in Development Policy (Globalization for Sustainable Development)
IAFF 3183	Special Topics in Development Policy (International Energy and Environmental Regulations)
IAFF 3184	Special Topics in Trade and International Economic Policy
IAFF 3186	Special Topics in Asian Studies (China and the World)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3190	Special Topics in International Affairs (Business Growth Strategies)
IAFF 3190	Special Topics in International Affairs (Europe Economies/Crisis of Integration)
IAFF 3190	Special Topics in International Affairs (Global Financial Crisis)
IAFF 3190	Special Topics in International Affairs (International Business and Modern Slavery)
IAFF 3190	Special Topics in International Affairs (International Environmental Policy)

IAFF 3190	Special Topics in International Affairs (topic Oil: Industry, Economy, Society. Same as IBUS 4403)
IAFF 3191W	Latin American Populism in Global Context
IAFF 3501	International Development Theory, Policy, and Practice
or ANTH 3501	Anthropology of Development
IAFF 4191W	Research Seminar (Foreign Policy Decision Making)
IBUS 3001	Introduction to International Business
IBUS 3101	Global Financial Environment
IBUS 3201	International Marketing Management
IBUS 3301	International Business Finance
IBUS 4202	Regional Strategy for Multinationals
IBUS 4203	Foreign Market Analysis
IBUS 4302	International Banking
IBUS 4303	International Monetary and Financial Issues
IBUS 4401	Managing the Multinational Enterprise
IBUS 4402	Managing in Developing Countries
IBUS 4403	Oil: Industry, Economy, and Society (same as IAFF 3190 Oil: Industry, Economy, Society)
IBUS 4900	Special Topics (China and the Global Economy)
IBUS 4900	Special Topics (Institutions and Economic Development: The Case of Rwanda)
IBUS 4900	Special Topics (Negotiations)
IBUS 4900W	Special Topics (Negotiations)
PSC 2337	Development Politics
PSC 2339	Comparative Political Economy
PSC 2439	International Political Economy
SMPP 4900W	Special Topics (Negotiations)

SMPP 4900W	Special Topics (Strategy and International Political Economy)
SOC 2168	Economic Sociology

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, INTERNATIONAL ENVIRONMENTAL STUDIES CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
In addition to the courses listed below, IAFF 2190W, IAFF 3100-level courses, and IAFF 4191 courses not listed here may also be relevant to this concentration. Consult your Academic Advisor regarding any course that does not appear below.		
One course from the following:		
GEOG 2120	World Regional Geography	
IAFF 3190	Special Topics in International Affairs (International Environmental Policy)	
SUST 1001	Introduction to Sustainability	
Four courses from the following:		
ANTH 3502	Cultural Ecology	
CHEM 2085	Environmental Chemistry	
ECON 2136	Environmental and Natural Resource Economics	
GEOG 2120	World Regional Geography *	
GEOG 2129	Biogeography	
GEOG 2133	People, Land, and Food	
GEOG 2134	Energy Resources	
GEOG 2136	Water Resources	

GEOG 2137	Environmental Hazards
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
GEOG 3193	Environmental Law and Policy
GEOG 3198	Special Topics (Global Perspectives on Environmental Conservation)
GEOL 1005	Environmental Geology
GEOL 3131	Global Climate Change
IAFF 2190W	Special Topics (International Environmental Policy)
IAFF 3179	Special Topics in Science and Technology Policy (Energy and the Environment)
IAFF 3180	Special Topics in Security Policy (Global Energy Markets)
IAFF 3180	Special Topics in Security Policy (Global Energy Security)
IAFF 3180	Special Topics in Security Policy (Globalization and National Security)
IAFF 3183	Special Topics in Development Policy (Challenge of Global Sustainable Development)
IAFF 3183	Special Topics in Development Policy (Environmentalism & Development)
IAFF 3183	Special Topics in Development Policy (Globalization for Sustainable Development)
IAFF 3183	Special Topics in Development Policy (International Energy & Environmental Regulations)
IAFF 3190	Special Topics in International Affairs (Arctic Affairs)
IAFF 3190	Special Topics in International Affairs (International Environmental Policy) *
PSC 2224	Issues in Domestic Public Policy (Environmental Policy and Law)
PUBH 2114	Environment, Health, and Development
PUBH 3132	Health and Environment
PUBH 3150	Sustainable Energy and Environmental Health

REL 3920	Man and the Natural Environment
SUST 1001	Introduction to Sustainability *
SUST 3003	World on a Plate

*This course may be taken under the "Four from the following" option only if it was not previously taken under the "One from the following" option.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, INTERNATIONAL POLITICS CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor. All offerings under IAFF 3182 may be used for this concentration and repeated for credit provided the topic differs.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
One course from the following:		
PSC 2440	Theories of International Politics	
PSC 2446	U.S. Foreign Policy	
If PSC 2440 or PSC 2446 is used to fulfill the advanced fundamentals, international and comparative politics requirement, the other course must be used to fulfill this requirement.		
Four courses from the following, at least one of which must have the PSC course designation:		
ANTH 3506	Politics, Ethnicity, and Nationalism	
ECON 2199	Special Topics in Economics (Economics of the EU)	
GEOG 2120	World Regional Geography	
GEOG 3146	Political Geography	
HIST 2340	U.S. Diplomatic History	
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War	

HIST 3035	The United States and the Wars in Indochina, 1945-1975
HIST 3045	International History of the Cold War
HIST 3046	The Cold War in the Third World
HIST 3047W	Writing Cold War History
HIST 3062	War Crimes Trials
HIST 3126	European Integration: A History
HIST 3137	The British Empire
HIST 3168	Divided and United Germany Since 1945
HIST 3178	The Making of the Modern Balkans
HIST 3301W	Topics: U.S. History (Cold War in Asia)
HIST 3332	History of American Foreign Policy Since World War II
HIST 3333	History of American Foreign Policy Since World War II
HIST 3334	The Nuclear Arms Race
HIST 3650	Modern South Asia, 1750-Present
HIST 3701	Topics in Latin American History (History of Argentina)
HIST 3801	Topics in Middle Eastern History (The Making of Modern Iraq and Syria)
HIST 3820	History of Israel
IAFF 2090	Latin America: Problems and Promise
IAFF 2091	East Asia-Past and Present
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2093	Africa: Problems and Prospects
IAFF 2094	Europe: International and Domestic Interactions
IAFF 2095	The Middle East in International Affairs
IAFF 2190	Special Topics (Civil Wars)
IAFF 2190	Special Topics (Political Risk Analysis)
IAFF 2190	Special Topics (Presidents at War)
IAFF 2190W	Special Topics (Arab Politics)

IAFF 2190W	Special Topics (Congress and Foreign Policy)
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)
IAFF 2190W	Special Topics (International Environmental Policy)
IAFF 2190W	Special Topics (Foreign Policy Decision Making)
IAFF 2190W	Special Topics (Latin American Populism)
IAFF 2190W	Special Topics (National Security, Foreign and Intelligence Policy)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 2190W	Special Topics (Rising Africa and the World)
IAFF 2190W	Special Topics (Science, Technology, and Policy)
IAFF 2190W	Special Topics (Security and Subcontractors)
IAFF 2190W	Special Topics (Terrorism and Counterterrorism)
IAFF 2190W	Special Topics (Turkey and Its Neighbors)
IAFF 2190W	Special Topics (U.S. - Asia: Critical Issues)
IAFF 2190W	Special Topics (U.S. Foreign Policy in Africa)
IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 2444 or PSC 2444	International Law Public International Law
IAFF 3171	U.S. Foreign Policy Summer Program
IAFF 3172	Conflict and Conflict Resolution
IAFF 3177	Political Economy of Latin America
IAFF 3179	Special Topics in Science and Technology Policy (Space in International Affairs)

IAFF 3180	Special Topics in Security Policy (Civil War, Insurgency & Terror)
IAFF 3180	Special Topics in Security Policy (Civilians in the Path of War)
IAFF 3180	Special Topics in Security Policy (Cyber and Security)
IAFF 3180	Special Topics in Security Policy (Defense Policy)
IAFF 3180	Special Topics in Security Policy (Global Energy Markets)
IAFF 3180	Special Topics in Security Policy (Global Energy Security)
IAFF 3180	Special Topics in Security Policy (Globalization and National Security)
IAFF 3180	Special Topics in Security Policy (International Politics and Security Policy)
IAFF 3180	Special Topics in Security Policy (National Security, Foreign and Intelligence Policy)
IAFF 3180	Special Topics in Security Policy (NATO's Strategic Challenges)
IAFF 3180	Special Topics in Security Policy (Responding to Terrorism)
IAFF 3180	Special Topics in Security Policy (Theory of War)
IAFF 3180	Special Topics in Security Policy (U.S. Grand Strategy)
IAFF 3180W	Special Topics in Security Policy (topic: International Politics and Security Policy. Same as IAFF 4191W: International Politics and Security Policy)
IAFF 3180W	Special Topics in Security Policy (Nuclear Security)
IAFF 3181	Special Topics in Conflict Resolution (Israeli-Palestinian Peacebuilding)
IAFF 3182	Special Topics in Foreign Policy
IAFF 3183	Special Topics in Development Policy (Environmentalism & Development)
IAFF 3183	Special Topics in Development Policy (Globalization and Sustainable Development)
IAFF 3183	Special Topics in Development Policy (Human Trafficking)

IAFF 3183	Special Topics in Development Policy (International Energy & Environmental Regulations)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Conflict and Contestation in Latin America)
IAFF 3183	Special Topics in Development Policy (NGOs Role in Humanitarian Assistance)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Contemporary Issues of US-Mexico Relations)
IAFF 3185	Special Topics in European and Eurasian Studies (EU and Russia)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Historical Memory & Human Rights in Chile)
IAFF 3185	Special Topics in European and Eurasian Studies (The End of Western Supremacy)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States)
IAFF 3185	Special Topics in European and Eurasian Studies (Ukraine and Georgia Between Russia and the West)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3186	Special Topics in Asian Studies (Asian Order & Community-Building)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)
IAFF 3186	Special Topics in Asian Studies (Central Asia Between East & West)	IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)
IAFF 3186	Special Topics in Asian Studies (China and the World)	IAFF 3188	Special Topics in Middle East Studies (Form and Practice: American Politics in the Middle East)
IAFF 3186	Special Topics in Asian Studies (Currents Events in East Asia)	IAFF 3188	Special Topics in Middle East Studies (Iran-U.S. Relations)
IAFF 3186	Special Topics in Asian Studies (East Asian Security)	IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)	IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)	IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Gulf)
IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation in Asia)	IAFF 3189	Special Topics in African Studies (Africa: Declassified)
IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)	IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)
IAFF 3186	Special Topics in Asian Studies (Politics of the Past in Korea)	IAFF 3189	Special Topics in African Studies (Horn of Africa)
IAFF 3186	Special Topics in Asian Studies (Taiwan: Present Challenges, Future Directions)	IAFF 3189	Special Topics in African Studies (International Relations in Africa)
IAFF 3186	Special Topics in Asian Studies (US-China Relations)	IAFF 3189	Special Topics in African Studies (New African Security Frontier)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Brazil in Global Arena)	IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Central American and Caribbean Perspective)		

IAFF 3189	Special Topics in African Studies (Transitional Justice in Africa)
IAFF 3189	Special Topics in African Studies (U.S.- Africa Relations)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)
IAFF 3190	Special Topics in International Affairs (Arctic Affairs)
IAFF 3190	Special Topics in International Affairs (Business Growth Strategies)
IAFF 3190	Special Topics in International Affairs (Catastrophic Crisis: Strategic Challenges and Leadership)
IAFF 3190	Special Topics in International Affairs (China and Africa)
IAFF 3190	Special Topics in International Affairs (Europe Economies and Crises of Integration)
IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
IAFF 3190	Special Topics in International Affairs (Global Financial Crisis)
IAFF 3190	Special Topics in International Affairs (Global Governance)
IAFF 3190	Special Topics in International Affairs (topic: Holocaust Memory. Same as JSTD 2002: Holocaust Memory)
IAFF 3190	Special Topics in International Affairs (Humanitarianism)
IAFF 3190	Special Topics in International Affairs (Humanitarian Assistance and International Development Law)
IAFF 3190	Special Topics in International Affairs (Human Rights Narratives)
IAFF 3190	Special Topics in International Affairs (Human Rights Successes)
IAFF 3190	Special Topics in International Affairs (International Business and Modern Slavery)
IAFF 3190	Special Topics in International Affairs (International Environmental Policy)
IAFF 3190	Special Topics in International Affairs (Introduction to Intelligence)

IAFF 3190	Special Topics in International Affairs (Issues in Contemporary Diplomacy and National Security)
IAFF 3190	Special Topics in International Affairs (Law of Diplomacy)
IAFF 3190	Special Topics in International Affairs (National Security, Foreign and Intelligence Policy)
IAFF 3190	Special Topics in International Affairs (Presidential Rhetoric: Wartime)
IAFF 3190	Special Topics in International Affairs (Public-Private-NGO Collaboration)
IAFF 3190	Special Topics in International Affairs (Refugee and Migrant Crisis)
IAFF 3190	Special Topics in International Affairs (Religion in International Affairs)
IAFF 3190	Special Topics in International Affairs (Space Policy)
IAFF 3190	Special Topics in International Affairs (Transforming Global Communications and Information Law)
IAFF 3190	Special Topics in International Affairs (U.S. Foreign Policy and International Organizations)
IAFF 3190	Special Topics in International Affairs (U.S. Intervention and Forever Wars)
IAFF 3190	Special Topics in International Affairs (Women, Rights, and Gender Equality)
IAFF 3190W	Special Topics (Arab Spring: Democracy and Human Rights)
IAFF 3190W	Special Topics (Masculinities in International Affairs)
IAFF 3191W	Latin American Populism in Global Context
IAFF 3194W	Latin America's Violent Peace
IAFF 4191	Research Seminar (Europe)
IAFF 4191	Research Seminar (Political Islam)
IAFF 4191W	Research Seminar (Foreign Policy Decision Making)
IAFF 4191W	Research Seminar (topic: International Politics and Security Policy. Same as IAFF 3180W: International Politics and Security Policy)

IBUS 4900	Special Topics (Negotiations)
JSTD 2002	Topics in Judaic Studies: Modern (topic: Holocaust Memory. Same as IAFF 3190: Holocaust Memory)
PSC 2332	European Integration
PSC 2338	Nationalism
PSC 2367	Human Rights
PSC 2368	Politics in the Two Koreas
PSC 2371	Politics and Foreign Policy of China
PSC 2374	Politics and Foreign Policy of Japan
PSC 2379	Politics and Foreign Policy of Israel
PSC 2439	International Political Economy
PSC 2440	Theories of International Politics *
PSC 2442	International Organizations
PSC 2444	Public International Law
or IAFF 2444	International Law
PSC 2446	U.S. Foreign Policy *
PSC 2449	International Security Politics
PSC 2461	European-Atlantic Relations
PSC 2468	Post-Soviet Foreign Policy
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2482	African International Politics
PSC 2484	International Relations of Latin America
PSC 2990	Selected Topics (Chinese Foreign Policy)
PSC 2990	Selected Topics (Ending Wars and Making Peace)
PSC 2991	Special Topics in Political Thought (Global Justice)
PSC 2992	Special Topics in American Politics and Government (Foreign Policy Making in the 21st Century)

PSC 2992	Special Topics in American Politics and Government (Politics of Peacemaking)
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
PSC 2994	Special Topics in International Relations (Presidents at War)
PSC 2994	Special Topics in International Relations (U.S. Foreign Policy Perspectives and Issues)
PSC 2994	Special Topics in International Relations (U.S. Foreign Policy Traditions)
PSC 2994	Special Topics in International Relations (War)
SMPA 3194	Selected Topics in Political Communication (Advocacy and Technology)
SMPA 3472	Media and Foreign Policy

*This course may be taken under the "Four courses from the following" option only if it was not previously taken under the "One course from the following" option.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, LATIN AMERICA CONCENTRATION

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed here, prior approval of the academic advisor is required.

Code	Title	Credits
Required		
Five courses from the following. At least two courses must be from Group A and at least two courses must from Group B.		
Group A:		
ANTH 3702	Anthropology of Latin America	
ANTH 3814	Ancient Mexican Civilizations	
ECON 2151	Economic Development	

ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America
IAFF 2090	Latin America: Problems and Promise
IAFF 2190W	Special Topics (Latin American Populism)
IAFF 3177	Political Economy of Latin America
IAFF 3183	Special Topics in Development Policy (Post-Disaster Development: Haiti)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies
IAFF 3191W	Latin American Populism in Global Context
IAFF 3194W	Latin America's Violent Peace
PSC 2337	Development Politics
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America
Group B:	
AH 3160	Latin American Art and Architecture
HIST 3150	Spain and Its Empire, 1492-1700
HIST 3701	Topics in Latin American History
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Documentary Film, Indigenous Media, and Social Movements) *
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence) *
SPAN 3021	Advanced Spanish for Oral Communication—Latin America
SPAN 3022	Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America
SPAN 3400	Theatre of Spain and Latin America
SPAN 3430	Afro-Latin America in the Diaspora
SPAN 3550	Queer Latin America

Any undergraduate literature or film course numbered 2000 or above with this regional focus.

*Only these specific topics offered under IAFF 3187 are approved for Group B. All other IAFF 3187 topics are approved for the Latin America concentration Group A.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, MIDDLE EAST CONCENTRATION

Requirements for the concentration

In addition to specific topics listed under IAFF 2190W, the IAFF 3100-range, and IAFF 4191, other topics relevant to the concentration may be approved by the academic advisor.

If a student wishes to take any course not listed, prior approval of the academic advisor is required.

Code	Title	Credits
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Required

Five courses from the following. At least two courses must be from Group A and at least two courses from Group B.

Group A:

ANTH 3707	Anthropology of the Middle East
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ECON 2151	Economic Development
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GEOG 3154	Geography of the Middle East and North Africa
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IAFF 2095	The Middle East in International Affairs
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IAFF 2190W	Special Topics (Arab Politics)
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IAFF 2190W	Special Topics (North Africa and the World)
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IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
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IAFF 2190W	Special Topics (Turkey and Its Neighbors)
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IAFF 3181	Special Topics in Conflict Resolution (Israeli-Palestinian Peacebuilding)
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IAFF 3188	Special Topics in Middle East Studies
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IAFF 3190	Special Topics in International Affairs (U.S. Intervention and Forever Wars)
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IAFF 3190W	Special Topics (Arab Spring: Democracy and Human Rights)
IAFF 4191	Research Seminar (Political Islam)
PSC 2337	Development Politics
PSC 2377	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2992	Special Topics in American Politics and Government (Oil and Politics)
PSC 2993	Special Topics in Comparative Politics (Israeli Politics and Culture)
Group B:	
AH 3113	Islamic Art and Architecture
ARAB 3105	Special Topics (Arabic Literature: Arabia to America)
HEBR 3104W	Gender and Sexuality in Israel
HEBR 3301	Modern Hebrew Fiction
or HEBR 3301W	Modern Hebrew Fiction
HIST 2060	Modern Jewish History
HIST 2803	The Ancient Near East and Egypt to 322 B.C.
HIST 2804	History of Ancient Israel (same as REL 3990: History of Ancient Israel)
HIST 2805W	Majors' Introductory Seminar: Middle East (Land and Power in Israel and Palestine)
HIST 3801	Topics in Middle Eastern History
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
HIST 3820	History of Israel
HIST 3825	Land and Power in Israel/Palestine
HIST 3830	History of Iraq
HIST 3840	History of Central Asia
HIST 3850	Modern Iran

IAFF 3188	Special Topics in Middle East Studies (Arabic Literature: Arabia to America) *
REL 2211	Rabbinic Thought and Literature
REL 2401	Islam
REL 3141	Second Temple/Hellenistic Judaism
REL 3291	Modern Jewish Thought
REL 3405	Shi'ite Islam
REL 3414	Islamic Philosophy and Theology
REL 3425	Islamic Political Thought
REL 3431	Sufism/Islamic Mysticism
REL 3475	Islamic Religion and Art
REL 3481	Women in Islam
REL 3990	Selected Topics in Religion (Dead Sea Scrolls)
REL 3990	Selected Topics in Religion (topic: History of Ancient Israel. Same as HIST 2804: History of Ancient Israel)

Any undergraduate literature or film course numbered 2000 or above with this regional focus.

*Only this specific topic under IAFF 3188 is approved for Group B. All other IAFF 3188 topic offerings are approved for the Middle East concentration Group A.

BACHELOR OF ARTS OR BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS, SECURITY POLICY CONCENTRATION

Requirements for the concentration

Code	Title	Credits
Required		
PSC 2449	International Security Politics	
Four courses from the following. If PSC 2449 is being used to satisfy the Advanced Fundamentals: International Politics requirement, select five courses.		
GEOG 2147	Military Geography	
GEOG 3146	Political Geography	

HIST 2305W	Majors' Introductory Seminar: United States (Cold War in Asia)
HIST 2341	History of FBI Counterintelligence
HIST 3001	Special Topics (Arab-Israeli Disputes)
HIST 3001	Special Topics (History of US Counterintelligence)
HIST 3001	Special Topics (Modernization and Cold War in Asia)
HIST 3001	Special Topics (World War II in Asia)
HIST 3001W	Special Topics (The Cold War in the Third World)
HIST 3031	Military History since 1860
HIST 3033	War and the Military in American Society from the Revolution to the Gulf War
HIST 3035	The United States and the Wars in Indochina, 1945-1975
HIST 3039	Naval History since 1815
HIST 3045	International History of the Cold War
HIST 3046	The Cold War in the Third World
HIST 3047W	Writing Cold War History
HIST 3062	War Crimes Trials
HIST 3168	Divided and United Germany Since 1945
HIST 3332	History of American Foreign Policy Since World War II
HIST 3333	History of American Foreign Policy Since World War II
HIST 3334	The Nuclear Arms Race
HIST 3801	Topics in Middle Eastern History (The Making of Modern Iraq and Syria)
HIST 3850	Modern Iran
IAFF 2040	Basic Topics in International Affairs (Game Theory)
IAFF 2095	The Middle East in International Affairs
IAFF 2190	Special Topics (Civil Wars)
IAFF 2190	Special Topics (Presidents at War)
IAFF 2190W	Special Topics (Arab Politics)

IAFF 2190W	Special Topics (Foreign Policy Decision Making)
IAFF 2190W	Special Topics (National Security, Foreign and Intelligence Policy)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 2190W	Special Topics (Presidential Wartime Rhetoric)
IAFF 2190W	Special Topics (Security and Subcontractors)
IAFF 2190W	Special Topics (Security Contractors and Stability)
IAFF 2190W	Special Topics (Terrorism and Counterterrorism)
IAFF 2190W	Special Topics (Turkey and Its Neighbors)
IAFF 2190W	Special Topics (US Foreign Policy in Africa)
IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 2444	International Law
or PSC 2444	Public International Law
IAFF 3172	Conflict and Conflict Resolution
IAFF 3179	Special Topics in Science and Technology Policy (Space in International Affairs)
IAFF 3180	Special Topics in Security Policy
IAFF 3180W	Special Topics in Security Policy (topic: International Politics and Security Policy. Same as IAFF 4191W: International Politics and Security Policy)
IAFF 3181	Special Topics in Conflict Resolution (Israeli-Palestinian Peacebuilding)
IAFF 3182	Special Topics in Foreign Policy (China's Rise and Implications)
IAFF 3182	Special Topics in Foreign Policy (Contemporary Uses of Military Power)
IAFF 3182	Special Topics in Foreign Policy (Current U.S. National Security Challenges)

IAFF 3182	Special Topics in Foreign Policy (National Security and Use of Force)
IAFF 3183	Special Topics in Development Policy (Gender, Peace, and Security in Africa)
IAFF 3183	Special Topics in Development Policy (Human Trafficking)
IAFF 3183	Special Topics in Development Policy (NGOs Role in Humanitarian Assistance)
IAFF 3185	Special Topics in European and Eurasian Studies (The End of Western Supremacy)
IAFF 3185	Special Topics in European and Eurasian Studies (The EU and Russia)
IAFF 3185	Special Topics in European and Eurasian Studies (Ukraine and Georgia Between Russia and the West)
IAFF 3186	Special Topics in Asian Studies (Asian Order and Community Building)
IAFF 3186	Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3186	Special Topics in Asian Studies (East Asian Security)
IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
IAFF 3186	Special Topics in Asian Studies (Taiwan: Present Challenges, Future Directions)
IAFF 3186	Special Topics in Asian Studies (U.S.-China Relations)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Conflict and Contestation in Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)
IAFF 3188	Special Topics in Middle East Studies (Iran-U.S. Relations)

IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Gulf)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3189	Special Topics in African Studies (Africa: Declassified)
IAFF 3189	Special Topics in African Studies (Horn of Africa)
IAFF 3189	Special Topics in African Studies (New African Security Frontier)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)
IAFF 3190	Special Topics in International Affairs (Arctic Affairs)
IAFF 3190	Special Topics in International Affairs (Catastrophic Crisis: Strategic Challenges and Leadership)
IAFF 3190	Special Topics in International Affairs (Global Governance)
IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
IAFF 3190	Special Topics in International Affairs (topic: Holocaust Memory. Same as JSTD 2002: Holocaust Memory)
IAFF 3190	Special Topics in International Affairs (Humanitarianism)
IAFF 3190	Special Topics in International Affairs (Introduction to Intelligence)
IAFF 3190	Special Topics in International Affairs (Issues in Contemporary Diplomacy and National Security)
IAFF 3190	Special Topics in International Affairs (Law of Diplomacy)
IAFF 3190	Special Topics in International Affairs (Refugee and Migrant Crisis)
IAFF 3190	Special Topics in International Affairs (Space Policy)

IAFF 3190	Special Topics in International Affairs (Transforming Global Communications and Information Law)
IAFF 3190	Special Topics in International Affairs (U.S. Intervention and Forever Wars)
IAFF 3190W	Special Topics (Masculinities in International Affairs)
IAFF 3194W	Latin America's Violent Peace
IAFF 4191	Research Seminar (Political Islam)
IAFF 4191	Research Seminar (Security)
IAFF 4191W	Research Seminar (Foreign Policy Decision Making)
IAFF 4191W	Research Seminar (topic: International Politics and Security Policy. Same as IAFF 3180W: International Politics and Security Policy)
JSTD 2002	Topics in Judaic Studies: Modern (topic: Holocaust Memory. Same as IAFF 3190: Holocaust Memory)
NSC 2126	Sea Power and Maritime Affairs
NSC 2160	Evolution of Warfare
NSC 2180	Amphibious Warfare
PSC 2368	Politics in the Two Koreas
PSC 2371	Politics and Foreign Policy of China
PSC 2377	Comparative Politics of the Middle East
PSC 2379	Politics and Foreign Policy of Israel
PSC 2444	Public International Law
or IAFF 2444	International Law
PSC 2475	International Relations of East Asia
PSC 2476	The Arab-Israeli Conflict
PSC 2478	International Relations of the Middle East
PSC 2484	International Relations of Latin America
PSC 2990	Selected Topics (Ending Wars and Making Peace)
PSC 2994	Special Topics in International Relations (Cyber Security)
PSC 2994	Special Topics in International Relations (Insurgencies)

PSC 2994	Special Topics in International Relations (Presidents at War)
PSC 2994	Special Topics in International Relations (War)
SMPA 3194	Selected Topics in Political Communication (Advocacy and Technology)
SOC 2189	Special Topics in Criminal Justice (Comparative Police Systems)
SOC 2189	Special Topics in Criminal Justice (Sociology of Terrorism)

BACHELOR OF ARTS WITH A MAJOR IN LATIN AMERICAN AND HEMISPHERIC STUDIES

GENERAL REQUIREMENTS

General requirements

Elliott School bachelor's degrees engage students with global issues through multidisciplinary and interdisciplinary approaches. Students begin their studies in the first year with foundational courses in political science, economics, history, and anthropology or geography. They supplement these courses with others in the traditional liberal arts categories of writing, natural or physical science, mathematics or statistics, and the humanities/creative arts, plus two writing in the disciplines courses. Foreign language study also is emphasized early in each program to enable students to satisfy the third-year language proficiency requirement of the bachelor's degree in a timely manner.

Introduction to the major

Code	Title	Credits
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Prerequisite core (19 credits)

Required

The following courses must be taken in the first year. With the exception of IAFF 1001 (fall), ECON 1011 (fall) and ECON 1012 (spring), courses can be taken in fall or spring. IAFF 1001 is not required for internal or external transfer students.

IAFF 1001	First-Year Experience
IAFF 1005	Introduction to International Affairs
ECON 1011	Principles of Economics I
ECON 1012	Principles of Economics II
HIST 1011	World History, 1500-Present

PSC 1001	Introduction to Comparative Politics
One of the following (not required in the first year):	
ANTH 1002	Sociocultural Anthropology
ANTH 1004	Language in Culture and Society
GEOG 1001	Introduction to Human Geography
With advisor approval, a student may select another introductory social science course if s/he can demonstrate why it is relevant to the student's academic pursuits. An example of a course that might be accepted is GEOG 1003.	

Supporting courses in the liberal arts

Code	Title	Credits
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Writing (credits vary)

Writing requirements are established by the University Writing Program. Students must complete UW 1020 in their first year before enrolling in a Writing in the Discipline (WID) course for WID credit. The two required WID courses should be taken in the student's major, minor, or a related field, and must be completed in separate semesters to receive WID credit. WID courses are designated in this Bulletin with a "W" appended to the course number, e.g., HIST 2340W.

Required

UW 1020	University Writing
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Two WID courses

Mathematics or statistics (3 credits)

MATH courses numbered 1051 and above require a placement test. Credit for only one of the following MATH courses may be applied toward a degree: MATH 1221, MATH 1231, or MATH 1252. Credit for only one of the following STAT courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127. STAT courses may not be double-counted between the Mathematics requirement and the Research Methods requirement (see "Major Requirements.")

One of the following:

MATH 1007	Mathematics and Politics
MATH 1008	History of Mathematics
MATH 1009	Mathematical Ideas I
MATH 1010	Mathematical Ideas II
MATH 1051	Finite Mathematics for the Social and Management Sciences
MATH 1221	Calculus with Precalculus II

MATH 1231	Single-Variable Calculus I
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MATH 1232	Single-Variable Calculus II
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MATH 1252	Calculus for the Social and Management Sciences
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MATH 2233	Multivariable Calculus
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STAT 1051	Introduction to Business and Economic Statistics
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STAT 1053	Introduction to Statistics in Social Science
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STAT 1111	Business and Economic Statistics I
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STAT 1127	Statistics for the Biological Sciences
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Science (3 to 4 credits), lab required

One of the following:

ANTH 1001	Biological Anthropology
ANTH 3412	Hominin Evolution
ASTR 1001	Stars, Planets, and Life in the Universe
ASTR 1002	Origins of the Cosmos
BISC 1005	The Biology of Nutrition and Health
BISC 1006	The Ecology and Evolution of Organisms
BISC 1007	Food, Nutrition, and Service
BISC 1008	Understanding Organisms through Service Learning
BISC 1111	Introductory Biology: Cells and Molecules
BISC 1112	Introductory Biology: The Biology of Organisms
CHEM 1003	Contemporary Science for Nonscience Majors
CHEM 1004	Contemporary Science for Nonscience Majors
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
GEOG 1002	Introduction to Physical Geography
GEOL 1001	Physical Geology
GEOL 1002	Historical Geology

GEOL 1005	Environmental Geology
HONR 1033	Honors Seminar: Scientific Reasoning and Discovery
HONR 1034	Honors Seminar: Scientific Reasoning and Discovery
PHYS 1003	Physics for Future Presidents
PHYS 1007	Music and Physics
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PHYS 1021	University Physics I
PHYS 1022	University Physics II
PHYS 1025	University Physics I with Biological Applications
PHYS 1026	University Physics II with Biological Applications

Humanities/creative arts (9 credits)*

This requirement can be satisfied by completing 9 credits in humanities courses, or 6 credits in humanities courses and 3 credits in creative arts courses.

Humanities—two or three of the following:

Any Art History (AH) course except AH 4199.

AMST 1160	Race, Gender, and Law
AMST 1200	The Sixties in America
AMST 2010	Early American Cultural History
or HIST 2010	Early American Cultural History
AMST 2011	Modern American Cultural History
or HIST 2011	Modern American Cultural History
AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
or HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
AMST 2120W	Freedom in American Thought and Popular Culture
or PSC 2120W	Freedom in American Thought and Popular Culture

AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History
or HIST 2320	U.S. Media and Cultural History
AMST 2350	U.S. Religion and Politics
or HIST 2350	U.S. Religion and Politics
AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
or WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
AMST 2410	Twentieth Century U.S. Immigration
or HIST 2410	Twentieth Century U.S. Immigration
AMST 2430	Capitalism and Culture
AMST 2440	The American City
or AMST 2440W	The American City
or HIST 2440	The American City
or HIST 2440W	The American City
AMST 2520	American Architecture I
AMST 2521	American Architecture II
AMST 2600	U.S. Popular Music and Culture
AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
or HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2630	Discovering the Mind
AMST 2710	The United States in the World
or HIST 2710	The United States in the World

AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
or HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States
or ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
AMST 3600	Popular Music and Politics
ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
or AMST 2750W	Latinos in the United States
ARAB 3105	Special Topics (Arabic Literature: Arabia to America) -- or IAFF 3188 (Arabic Literature: Arabia to America)
ARAB 3105	Special Topics (Readings: Contemporary Arabic Literature)
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts
Any non-language Classical Studies (CLAS) course.	
EALL 3811	Confucian Literature in East Asia
or REL 2811	Confucian Literature in East Asia
EALL 3814	Religion and Philosophy in East Asia
or EALL 3814W	Religion and Philosophy in East Asia
or REL 2814	Religion and Philosophy in East Asia
ENGL 1050	Introduction to Literary Studies
ENGL 1300	The Bible as Literature
ENGL 1315	Literature and the Financial Imagination
ENGL 1320	Literature of the Americas

or ENGL 1320W	Literature of the Americas
ENGL 1330	Myths of Britain
or ENGL 1330W	Myths of Britain
ENGL 1340	Essential Shakespeare
or ENGL 1340W	Essential Shakespeare
ENGL 1351	Shakespeare Seminar
ENGL 1360	Fantasy and Speculative Fiction
ENGL 1365	Literature and the Environment
ENGL 2100	Introduction to Asian American Studies through Literature
ENGL 2410	Introduction to English Literature I
or ENGL 2410W	Introduction to English Literature I
ENGL 2411	Introduction to English Literature II
or ENGL 2411	Introduction to English Literature II
ENGL 2510	Introduction to American Literature I
or ENGL 2510W	Introduction to American Literature I
ENGL 2511	Introduction to American Literature II
or ENGL 2511W	Introduction to American Literature II
ENGL 2610	Introduction to Black Literature of America I
or ENGL 2610W	Introduction to Black Literature of America I
ENGL 2611	Introduction to Black Literature of America II
or ENGL 2611W	Introduction to Black Literature of America II
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
ENGL 2712	Bollywood Cinema
ENGL 3400	Topics in Literature and Finance
ENGL 3446	Shakespearean London

ENGL 3621	American Poetry II
ENGL 3730	Topics in Global Postcolonial Literature and Film
or ENGL 3730W	Topics in Global Postcolonial Literature and Film
ENGL 3910	Disability Studies
ENGL 3918	Literature and Medicine
Any Film Studies (FILM) course.	
HEBR 3101	Modern Hebrew Literary Classics in Translation
HEBR 3102	Israeli Society and Culture: Literary Perspectives
HEBR 3103	Israeli Cinema (in English)
HEBR 3104W	Gender and Sexuality in Israel
HEBR 3301	Modern Hebrew Fiction
or HEBR 3301W	Modern Hebrew Fiction
HEBR 4001	Advanced Hebrew Literature I
or HEBR 4001W	Advanced Hebrew Literature I
HEBR 4002	Advanced Hebrew Literature II
HIST 1020	Approaches to Women's History
HIST 1110	Foundations of Europe to 1715
HIST 1120	Europe in the World Since 1715
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 1310	Introduction to American History from the Pre-Columbian Era to 1877
HIST 1311	Introduction to American History since 1877
HIST 2010	Early American Cultural History
or AMST 2010	Early American Cultural History
HIST 2011	Modern American Cultural History
or AMST 2011	Modern American Cultural History
HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics

or AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2060	Modern Jewish History
or JSTD 2060	Modern Jewish History
HIST 2113	The Roman World to 337 A.D.
HIST 2124	Nineteenth-Century Europe
HIST 2125	Twentieth-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1789
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History
or AMST 2320	U.S. Media and Cultural History
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics
or AMST 2350	U.S. Religion and Politics
HIST 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
HIST 2410	Twentieth Century U.S. Immigration
or AMST 2410	Twentieth Century U.S. Immigration
HIST 2440	The American City
or HIST 2440W	The American City
or AMST 2440	The American City
or AMST 2440W	The American City
HIST 2520	Africans in the Making of the Atlantic World
HIST 2610	Science, Technology, and Politics in Modern America

or HIST 2610W	Science, Technology, and Politics in Modern America	HONR 2054	Arts and Humanities Seminar
or AMST 2610	Science, Technology, and Politics in Modern America	or HONR 2054W	Arts and Humanities Seminar
or AMST 2610W	Science, Technology, and Politics in Modern America	IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)
HIST 2630	History of Korea	IAFF 3188	Special Topics in Middle East Studies (Arabic Literature: Arabia to America) -- or ARAB 3105 (Arabic Literature: Arabia to America)
HIST 2710	The United States in the World	IAFF 3189	Special Topics in African Studies (African Literature and Politics)
or AMST 2710	The United States in the World	IAFF 3189	Special Topics in African Studies (Hip Hop and Social Change in Africa)
HIST 2730	World War II in History and Memory	IAFF 3189	Special Topics in African Studies (West African Film and Literature)
or HIST 2730W	World War II in History and Memory	IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
or AMST 2730	World War II in History and Memory	JSTD 2060	Modern Jewish History
or AMST 2730W	World War II in History and Memory	or HIST 2060	Modern Jewish History
HIST 2811	The Formation of Islam to 1500	LATN 2002	Poetry of Empire
HIST 2850	Modernization in Russia, Turkey, and Iran	LATN 3001	Major Latin Authors I
HIST 3044W	The Price of Freedom: Normandy 1944	LATN 3002	Major Latin Authors II
HIST 3352	U.S. Women's History to 1865	MUS 1103	Music in the Western World
or HIST 3352W	U.S. Women's History to 1865	MUS 1104	Topics in Music
or AMST 3352	U.S. Women's History to 1865	MUS 1105	Introduction to Musical Thought and Practice
or AMST 3352W	U.S. Women's History to 1865	MUS 1107	Music of the World
or WGSS 3352	U.S. Women's History to 1865	MUS 1108	History of Jazz
or WGSS 3352W	U.S. Women's History to 1865	MUS 2101	Harmony
HIST 3353	U.S. Women's History II	MUS 2105	Introduction to Ethnomusicology
HIST 3360	African American History to 1865	MUS 2106	Music History III: Twentieth-Century Art Traditions
or AMST 3360	African American History to 1865	MUS 2122	Music in the U.S.
HIST 3361	African American History Since 1865	MUS 2123	Musical Cultures of Black Americans
or AMST 3361	African American History Since 1865	MUS 2174	Introduction to Jazz Harmony
HIST 3611	History of Modern China	MUS 2661	Electronic and Computer Music I
HIST 3811	The Emergence of the Modern Middle East	MUS 2662	Electronic and Computer Music II *
HONR 1016	Honors Seminar: Origins and Evolution of Modern Thought		
HONR 2053	Arts and Humanities Seminar		
or HONR 2053W	Arts and Humanities Seminar		

MUS 3126	Music History I: Antiquity through Early Baroque
MUS 3127	Music History II: The Tonal Era
MUS 3139	Form and Analysis
MUS 3174	Topics in Music Theory and Composition
MUS 3175	Topics in Music History and Literature
Any Philosophy (PHIL) course except PHIL 2045 and PHIL 3121.	
PSC 2105	Major Issues of Western Political Thought I
PSC 2120W	Freedom in American Thought and Popular Culture
or AMST 2120W	Freedom in American Thought and Popular Culture
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
Any Religion (REL) course.	
SLAV 2310	The Russian Media Since Communism
SPAN 3100	Texts and Contexts of the Spanish-Speaking World
TRDA 1015	Understanding the Dance
TRDA 1020	Women and the Creative Process
TRDA 1025	Understanding the Theatre
TRDA 2185	Trends in Performance
TRDA 2191	Dance History
TRDA 2240	Play Analysis
TRDA 3245	History of the Theatre I
TRDA 3246	History of the Theatre II
UNIV 1006	Questions of Culture
WLP 1020	Writing, Literature, and Society
WGSS 1020	Approaches to Women's History
WGSS 2225	Philosophy of Race And Gender
or PHIL 2125	Philosophy of Race and Gender
WGSS 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History

or HIST 2380	Sexuality in U.S. History
WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
or AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
WGSS 3353	U.S. Women's History II
WGSS 3981	Women in Western Religion
or REL 2981	Women in Western Religion
Literature and film classes in the Departments of Classical and Near Eastern Languages and Civilizations; East Asian Languages and Literatures; English; and Romance, German, Slavic Languages and Literatures also fulfill this requirement.	
Creative Arts—a maximum of 3 credits from the following:	
Any Corcoran Studio Arts (CSA) course.	
ENGL 1210	Introduction to Creative Writing
ENGL 2460	Fiction Writing
ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3390	Topics in Creative Writing
Non-ensemble performance study (MUS) courses, including:	
MUS 1101	Elements of Music Theory
MUS 1102	Comprehensive Musicianship I
MUS 1106	Introduction to Musical Performance and Experience
MUS 2102	Comprehensive Musicianship II
MUS 2134	Composition
MUS 2173	Comprehensive Musicianship for Jazz
MUS 4184	Advanced Composition

Performance Study Courses (TRDA), including:

TRDA 1035	Theatre Production
TRDA 1151	Beginning/Intermediate Ballet
TRDA 1152	Beginning Modern/Postmodern Dance
TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance
TRDA 1170 & TRDA 1171	Intermediate Modern/Postmodern Dance I and Intermediate Modern/Postmodern Dance II
TRDA 1214	Beginning Acting
TRDA 1330	Basics of Production Design
TRDA 2160	Intermediate Ballet
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II
TRDA 2179	Contact Improvisation
TRDA 2180	Movement Improvisation/Performance
TRDA 2192	Repertory/Performance
TRDA 2193 & TRDA 2194	Dance Styles I and Dance Styles II
TRDA 2215	Intermediate Acting
TRDA 2250	Dramatic Writing
TRDA 2339	Theatre Practicum
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II
TRDA 3182 & TRDA 3183	Dance Composition I and Dance Composition II
TRDA 3186	Embodied Kinesis for Dance
TRDA 3222	Topics in Advanced Acting
TRDA 3240	Introduction to Dramaturgy
TRDA 3250	Intermediate Dramatic Writing
TRDA 3331	Introduction to Lighting
TRDA 3332	Theatrical Makeup Design

TRDA 3333	Stage Management
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming
TRDA 4184	Choreography and Performance
TRDA 4275	Directing for the Theatre
TRDA 4338	Scene Painting

*Some MUS and TRDA courses may be repeated for credit. Consult course descriptions in this Bulletin for additional information. All courses must be taken for a letter grade to fulfill this requirement. Courses taken Pass/No Pass are not accepted.

**Note that MUS 2661 is a prerequisite to MUS 2662.

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements. (p. 830)

A minimum grade of C- must be earned in all major requirement courses, to include the last course used to prove third-year proficiency in a modern regional language .

Major Requirements

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements (p. 830).

A minimum grade of C- must be earned in all major requirement courses, to include the last course used to prove third-year proficiency in a modern regional language.

If a student wishes to take any course not listed here, prior approval of the Program Director is required.

Code	Title	Credits
Foundation (3 credits)		
Required		
IAFF 2090	Latin America: Problems and Promise	
Foreign Language (credits vary)		

Students must demonstrate third-year proficiency in a modern foreign languages (Spanish or Portuguese) by examination or coursework. Additional information regarding the Elliott School foreign language examinations is available from the academic advisor.

Spanish	
Option one:	
SPAN 1011	Intensive Beginning Spanish: the Spanish-speaking world
or SPAN 1012	Intensive Elementary Spanish: the Spanish-speaking world
SPAN 1013	Intermediate Spanish I: the Spanish-speaking world
SPAN 1014	Intermediate Spanish II: the Spanish-speaking world
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
Or	
Option two:	
SPAN 1012	Intensive Elementary Spanish: the Spanish-speaking world
SPAN 1034	Intensive Intermediate Spanish
SPAN 2056	Intensive Advanced Spanish
Or	
Option three:	
SPAN 1013	Intermediate Spanish I: the Spanish-speaking world
SPAN 1014	Intermediate Spanish II: the Spanish-speaking world
SPAN 2026	Advanced Spanish for Heritage Learners *
Or	
Option four:	
SPAN 1034	Intensive Intermediate Spanish
or SPAN 1134	Intensive Intermediate Spanish for Heritage Learners
SPAN 2026	Advanced Spanish for Heritage Learners *
Or	
Option five:	
SPAN 1013	Intermediate Spanish I: the Spanish-speaking world

SPAN 1014	Intermediate Spanish II: the Spanish-speaking world
SPAN 2005	Advanced Spanish I
SPAN 2006	Advanced Spanish II
or SPAN 2026	Advanced Spanish for Heritage Learners
*Spanish language options three and four require an interview prior to enrolling in SPAN 2026. Please contact the Department of Romance, German, and Slavic Languages and Literatures for additional information about these options.	
Portuguese	
Option one:	
PORT 1001	Basic Portuguese I
PORT 1002	Basic Portuguese II
PORT 1003	Intermediate Portuguese I
PORT 1004	Intermediate Portuguese II
PORT 2005	Composition and Conversation
PORT 2006	Applied Portuguese Grammar
Or	
Option two:	
PORT 1012	Intensive Basic Portuguese
PORT 1003	Intermediate Portuguese I
PORT 1004	Intermediate Portuguese II
PORT 2005	Composition and Conversation
PORT 2006	Applied Portuguese Grammar
Portuguese courses offerings are dependent on faculty availability.	
Regional Foundations (3 credits)	
One course from the following in any region other than Latin America.	
Code	Title
Credits	
Africa	
ANTH 3708	Anthropology of Africa
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)
GEOG 3164	The Geography of Africa

HIST 3501	Topics: Africa (African History Since 1880)	ANTH 3705	Anthropology of East Asia
HIST 3530	Women in Africa	ANTH 3791	Topics in Regional Anthropology (Anthropology of South Asia)
HIST 3540	West Africa to Independence	ECON 2198	Special Topics in Economics - Regional (East Asian Economies)
IAFF 2093	Africa: Problems and Prospects	GEOG 3165	Geography of South Asia
IAFF 2190W	Special Topics (North Africa and the World)*	HIST 3640	History of Southeast Asia
IAFF 2190W	Special Topics (Rising Africa and the World)	HIST 3650	Modern South Asia, 1750-Present
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)	IAFF 2091	East Asia-Past and Present
IAFF 3189	Special Topics in African Studies (International Relations in Africa)	IAFF 3186	Special Topics in Asian Studies (Asian Order and Community Building)
IAFF 3189	Special Topics in African Studies (New African Security Frontier)	IAFF 3186	Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3189	Special Topics in African Studies (Religion in Africa)	IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)	IAFF 3186	Special Topics in Asian Studies (East Asian Security)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)	IAFF 3186	Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)	IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
IAFF 3190	Special Topics in International Affairs (Africa: Declassified)	IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3190	Special Topics in International Affairs (China and Africa)	IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation: Asia)
PSC 2381	Comparative Politics of Sub-Saharan Africa	IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
PSC 2482	African International Politics	IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)	PSC 2369	Comparative Politics of South Asia
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)	PSC 2373	Comparative Politics of Southeast Asia
PSC 3192W	Proseminar: Political Science (Government and Politics of Africa)	PSC 2475	International Relations of East Asia
Asia (Students in the BA in Asian studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Asia.)		PSC 3192W	Proseminar: Political Science (Politics and Protest in East Asia)
ANTH 3703	Cultures of the Pacific	PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)
ANTH 3704	Cultures of Southeast Asia	Europe and Eurasia	
		ECON 2199	Special Topics in Economics (Economics of the EU)

HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 2125	Twentieth-Century Europe
HIST 3126	European Integration: A History
HIST 3178	The Making of the Modern Balkans
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2094	Europe: International and Domestic Interactions
IAFF 3185	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union and Russia)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 4191W	Research Seminar (Europe)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
Latin America (Students in the BA in Latin American and hemispheric studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Latin America.)	
ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America
HIST 3701	Topics in Latin American History (Latin America and the World Since 1820)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise

IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3194W	Latin America's Violent Peace
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America
Middle East (Students in the BA in Middle East studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than the Middle East.)	
ANTH 3707	Anthropology of the Middle East
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History (Gender and the Middle East)
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
IAFF 2095	The Middle East in International Affairs
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Challenges and Change in the Middle East)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3188	Special Topics in Middle East Studies (Militaries and Politics in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Persian Gulf)

IAFF 4191	Research Seminar (Political Islam)
PSC 2377	Comparative Politics of the Middle East
PSC 2478	International Relations of the Middle East

*IAFF 2190W (North Africa and the World) is not approved as a Regional Foundations course for students in the Middle East Studies program due to the degree of overlap between issues in North Africa and the Middle East.

Code	Title	Credits
Research Methods (3 credits)		
One course pertaining to qualitative or quantitative social science research methods from the following:		
ANTH 3531	Methods in Sociocultural Anthropology	
ECON 2123	Introduction to Econometrics	
GEOG 2104	Introduction to Cartography and GIS	
IAFF 2101	International Affairs Research Methods	
IAFF 2190	Special Topics (Political Risk Analysis)	
IAFF 3190	Special Topics in International Affairs (Qualitative Research Methods)	
PSC 2101	Scope and Methods of Political Science	
PSC 2102	Visualizing and Modeling Politics	
PSYC 2101	Research Methods in Psychology	
PUBH 3131	Epidemiology: Measuring Health and Disease	
PUBH 3199	Topics in Public Health (Qualitative Research Methods)	
SOC 2101	Social Research Methods	
SOC 2111	Field Research	
STAT 1051	Introduction to Business and Economic Statistics *	
STAT 1053	Introduction to Statistics in Social Science *	
STAT 1111	Business and Economic Statistics I *	
STAT 1127	Statistics for the Biological Sciences	
STAT 2112	Business and Economic Statistics II	
STAT 2183	Intermediate Statistics Lab/Packages	

or STAT 2183W Intermediate Statistical Laboratory: Statistical Computing Packages

*Credit for only one of the following courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127.

STAT courses may not be double-counted between the Math requirement and the research methods requirement.

Code	Title	Credits
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Latin American Literature (3 credits)

One course from the following. Another literature course at the 3000- or 4000-level may be substituted with the approval of the Program Director.

PORT 4800	Independent Study *
SPAN 3100	Texts and Contexts of the Spanish-Speaking World
SPAN 3410	Latin American Short Fiction
SPAN 3420	The Essay in Spain and Latin America
SPAN 3600	Special Topics
or SPAN 4600	Special Topics
SPAN 4800	Independent Study *

Multi-disciplinary Core (21 credits)

History (3 credits)

One course from the following:

HIST 3701	Topics in Latin American History
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II

Political Science (3 credits)

One course from the following:

PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America

Economics (3 credits)

One course from the following:

ECON 2151	Economic Development
or ECON 2151W	Economic Development
ECON 2185	Economic History and Problems of Latin America

Geography (3 credits)

Required:

GEOG 3161 Geography of Latin America

Anthropology (3 credits)

ANTH 3702 Anthropology of Latin America

Students may request to use other 3000-level anthropology courses with Latin American content but this must be approved by the Program Director

International Affairs (6 credits)

Two courses from the following:

IAFF 3177 Political Economy of Latin America

IAFF 3187 Special Topics in Latin American and Hemispheric Studies

IAFF 3191W Latin American Populism in Global Context

Undergraduate students may be able to enroll in Latin American and Hemispheric Studies graduate courses with instructor approval.

Related Coursework (6 credits)

Two courses related to Latin America from any discipline, including International Affairs (IAFF), selected with the approval of the Program Director.

Study Abroad

Students are encouraged to study in Latin America through one of GW's formal partnerships with a regional university or an approved self-designed study abroad program.

*Program Director approval is required for PORT 4800 or SPAN 4800 Independent Study courses.

BACHELOR OF ARTS WITH A MAJOR IN MIDDLE EAST STUDIES

GENERAL REQUIREMENTS

General requirements

Elliott School bachelor's degrees engage students with global issues through multidisciplinary and interdisciplinary approaches. Students begin their studies in the first year with foundational courses in political science, economics, history, and anthropology or geography. They supplement these courses with others in the traditional liberal arts categories of writing, natural or physical science, mathematics or statistics, and the humanities/creative arts, plus two writing in the disciplines courses. Foreign language study also is emphasized

early in each program to enable students to satisfy the third-year language proficiency requirement of the bachelor's degree in a timely manner.

Introduction to the major

Code	Title	Credits
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Prerequisite core (19 credits)

Required

The following courses must be taken in the first year. With the exception of IAFF 1001 (fall), ECON 1011 (fall) and ECON 1012 (spring), courses can be taken in fall or spring. IAFF 1001 is not required for internal or external transfer students.

IAFF 1001	First-Year Experience
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IAFF 1005	Introduction to International Affairs
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ECON 1011	Principles of Economics I
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ECON 1012	Principles of Economics II
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HIST 1011	World History, 1500-Present
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PSC 1001	Introduction to Comparative Politics
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One of the following (not required in the first year):

ANTH 1002	Sociocultural Anthropology
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ANTH 1004	Language in Culture and Society
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GEOG 1001	Introduction to Human Geography
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With advisor approval, a student may select another introductory social science course if s/he can demonstrate why it is relevant to the student's academic pursuits. An example of a course that might be accepted is GEOG 1003.

Supporting courses in the liberal arts

Code	Title	Credits
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Writing (credits vary)

Writing requirements are established by the University Writing Program. Students must complete UW 1020 in their first year before enrolling in a Writing in the Discipline (WID) course for WID credit. The two required WID courses should be taken in the student's major, minor, or a related field, and must be completed in separate semesters to receive WID credit. WID courses are designated in this Bulletin with a "W" appended to the course number, e.g., HIST 2340W.

Required

UW 1020	University Writing
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Two WID courses

Mathematics or statistics (3 credits)

MATH courses numbered 1051 and above require a placement test. Credit for only one of the following MATH courses may be applied toward a degree: MATH 1221, MATH 1231, or MATH 1252. Credit for only one of the following STAT courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127. STAT courses may not be double-counted between the Mathematics requirement and the Research Methods requirement (see "Major Requirements.")

One of the following:

MATH 1007	Mathematics and Politics
MATH 1008	History of Mathematics
MATH 1009	Mathematical Ideas I
MATH 1010	Mathematical Ideas II
MATH 1051	Finite Mathematics for the Social and Management Sciences
MATH 1221	Calculus with Precalculus II
MATH 1231	Single-Variable Calculus I
MATH 1232	Single-Variable Calculus II
MATH 1252	Calculus for the Social and Management Sciences
MATH 2233	Multivariable Calculus
STAT 1051	Introduction to Business and Economic Statistics
STAT 1053	Introduction to Statistics in Social Science
STAT 1111	Business and Economic Statistics I
STAT 1127	Statistics for the Biological Sciences

Science (3 to 4 credits), lab required

One of the following:

ANTH 1001	Biological Anthropology
ANTH 3412	Hominin Evolution
ASTR 1001	Stars, Planets, and Life in the Universe
ASTR 1002	Origins of the Cosmos
BISC 1005	The Biology of Nutrition and Health
BISC 1006	The Ecology and Evolution of Organisms

BISC 1007 Food, Nutrition, and Service

BISC 1008 Understanding Organisms through Service Learning

BISC 1111 Introductory Biology: Cells and Molecules

BISC 1112 Introductory Biology: The Biology of Organisms

CHEM 1003 Contemporary Science for Nonscience Majors

CHEM 1004 Contemporary Science for Nonscience Majors

CHEM 1111 General Chemistry I

CHEM 1112 General Chemistry II

GEOG 1002 Introduction to Physical Geography

GEOL 1001 Physical Geology

GEOL 1002 Historical Geology

GEOL 1005 Environmental Geology

HONR 1033 Honors Seminar: Scientific Reasoning and Discovery

HONR 1034 Honors Seminar: Scientific Reasoning and Discovery

PHYS 1003 Physics for Future Presidents

PHYS 1007 Music and Physics

PHYS 1011 General Physics I

PHYS 1012 General Physics II

PHYS 1021 University Physics I

PHYS 1022 University Physics II

PHYS 1025 University Physics I with Biological Applications

PHYS 1026 University Physics II with Biological Applications

Humanities/creative arts (9 credits)*

This requirement can be satisfied by completing 9 credits in humanities courses, or 6 credits in humanities courses and 3 credits in creative arts courses.

Humanities—two or three of the following:

Any Art History (AH) course except AH 4199.

AMST 1160	Race, Gender, and Law
AMST 1200	The Sixties in America
AMST 2010	Early American Cultural History
or HIST 2010	Early American Cultural History
AMST 2011	Modern American Cultural History
or HIST 2011	Modern American Cultural History
AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
or HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
AMST 2120W	Freedom in American Thought and Popular Culture
or PSC 2120W	Freedom in American Thought and Popular Culture
AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History
or HIST 2320	U.S. Media and Cultural History
AMST 2350	U.S. Religion and Politics
or HIST 2350	U.S. Religion and Politics
AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
or WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
AMST 2410	Twentieth Century U.S. Immigration
or HIST 2410	Twentieth Century U.S. Immigration
AMST 2430	Capitalism and Culture
AMST 2440	The American City
or AMST 2440W	The American City
or HIST 2440	The American City
or HIST 2440W	The American City

AMST 2520	American Architecture I
AMST 2521	American Architecture II
AMST 2600	U.S. Popular Music and Culture
AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
or HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2630	Discovering the Mind
AMST 2710	The United States in the World
or HIST 2710	The United States in the World
AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
or HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
AMST 2750W	Latinos in the United States
or ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
AMST 3600	Popular Music and Politics
ANTH 2750	Latinos in the United States
or ANTH 2750W	Latinos in the United States
or AMST 2750W	Latinos in the United States
ARAB 3105	Special Topics (Arabic Literature: Arabia to America) -- or IAFF 3188 (Arabic Literature: Arabia to America)

ARAB 3105	Special Topics (Readings: Contemporary Arabic Literature)	or ENGL 2610W	Introduction to Black Literature of America I
CAH 1090	Art History I: Art Now, Contemporary Perspectives in the Visual Arts	ENGL 2611	Introduction to Black Literature of America II
Any non-language Classical Studies (CLAS) course.		or ENGL 2611W	Introduction to Black Literature of America II
EALL 3811	Confucian Literature in East Asia	ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
or REL 2811	Confucian Literature in East Asia	or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film
EALL 3814	Religion and Philosophy in East Asia	ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film
or EALL 3814W	Religion and Philosophy in East Asia	or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film
or REL 2814	Religion and Philosophy in East Asia	ENGL 2712	Bollywood Cinema
ENGL 1050	Introduction to Literary Studies	ENGL 3400	Topics in Literature and Finance
ENGL 1300	The Bible as Literature	ENGL 3446	Shakespearean London
ENGL 1315	Literature and the Financial Imagination	ENGL 3621	American Poetry II
ENGL 1320	Literature of the Americas	ENGL 3730	Topics in Global Postcolonial Literature and Film
or ENGL 1320W	Literature of the Americas	or ENGL 3730W	Topics in Global Postcolonial Literature and Film
ENGL 1330	Myths of Britain	ENGL 3910	Disability Studies
or ENGL 1330W	Myths of Britain	ENGL 3918	Literature and Medicine
ENGL 1340	Essential Shakespeare	Any Film Studies (FILM) course.	
or ENGL 1340W	Essential Shakespeare	HEBR 3101	Modern Hebrew Literary Classics in Translation
ENGL 1351	Shakespeare Seminar	HEBR 3102	Israeli Society and Culture: Literary Perspectives
ENGL 1360	Fantasy and Speculative Fiction	HEBR 3103	Israeli Cinema (in English)
ENGL 1365	Literature and the Environment	HEBR 3104W	Gender and Sexuality in Israel
ENGL 2100	Introduction to Asian American Studies through Literature	HEBR 3301	Modern Hebrew Fiction
ENGL 2410	Introduction to English Literature I	or HEBR 3301W	Modern Hebrew Fiction
or ENGL 2410W	Introduction to English Literature I	HEBR 4001	Advanced Hebrew Literature I
ENGL 2411	Introduction to English Literature II	or HEBR 4001W	Advanced Hebrew Literature I
or ENGL 2411	Introduction to English Literature II	HEBR 4002	Advanced Hebrew Literature II
ENGL 2510	Introduction to American Literature I	HIST 1020	Approaches to Women's History
or ENGL 2510W	Introduction to American Literature I	HIST 1110	Foundations of Europe to 1715
ENGL 2511	Introduction to American Literature II		
or ENGL 2511W	Introduction to American Literature II		
ENGL 2610	Introduction to Black Literature of America I		

HIST 1120	Europe in the World Since 1715
or HIST 1120W	European Civilization in its World Context
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 1310	Introduction to American History from the Pre-Columbian Era to 1877
HIST 1311	Introduction to American History since 1877
HIST 2010	Early American Cultural History
or AMST 2010	Early American Cultural History
HIST 2011	Modern American Cultural History
or AMST 2011	Modern American Cultural History
HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
or AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2060	Modern Jewish History
or JSTD 2060	Modern Jewish History
HIST 2113	The Roman World to 337 A.D.
HIST 2124	Nineteenth-Century Europe
HIST 2125	Twentieth-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1789
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History
or AMST 2320	U.S. Media and Cultural History
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics

or AMST 2350	U.S. Religion and Politics
HIST 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
HIST 2410	Twentieth Century U.S. Immigration
or AMST 2410	Twentieth Century U.S. Immigration
HIST 2440	The American City
or HIST 2440W	The American City
or AMST 2440	The American City
or AMST 2440W	The American City
HIST 2520	Africans in the Making of the Atlantic World
HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
or AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
HIST 2630	History of Korea
HIST 2710	The United States in the World
or AMST 2710	The United States in the World
HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
or AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
HIST 2811	The Formation of Islam to 1500
HIST 2850	Modernization in Russia, Turkey, and Iran
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865

or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
HIST 3353	U.S. Women's History II
HIST 3360	African American History to 1865
or AMST 3360	African American History to 1865
HIST 3361	African American History Since 1865
or AMST 3361	African American History Since 1865
HIST 3611	History of Modern China
HIST 3811	The Emergence of the Modern Middle East
HONR 1016	Honors Seminar: Origins and Evolution of Modern Thought
HONR 2053	Arts and Humanities Seminar
or HONR 2053W	Arts and Humanities Seminar
HONR 2054	Arts and Humanities Seminar
or HONR 2054W	Arts and Humanities Seminar
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)
IAFF 3188	Special Topics in Middle East Studies (Arabic Literature: Arabia to America) -- or ARAB 3105 (Arabic Literature: Arabia to America)
IAFF 3189	Special Topics in African Studies (African Literature and Politics)
IAFF 3189	Special Topics in African Studies (Hip Hop and Social Change in Africa)
IAFF 3189	Special Topics in African Studies (West African Film and Literature)
IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
JSTD 2060	Modern Jewish History
or HIST 2060	Modern Jewish History
LATN 2002	Poetry of Empire
LATN 3001	Major Latin Authors I
LATN 3002	Major Latin Authors II
MUS 1103	Music in the Western World
MUS 1104	Topics in Music

MUS 1105 Introduction to Musical Thought and Practice

MUS 1107 Music of the World

MUS 1108 History of Jazz

MUS 2101 Harmony

MUS 2105 Introduction to Ethnomusicology

MUS 2106 Music History III: Twentieth-Century Art Traditions

MUS 2122 Music in the U.S.

MUS 2123 Musical Cultures of Black Americans

MUS 2174 Introduction to Jazz Harmony

MUS 2661 Electronic and Computer Music I

MUS 2662 Electronic and Computer Music II *

MUS 3126 Music History I: Antiquity through Early Baroque

MUS 3127 Music History II: The Tonal Era

MUS 3139 Form and Analysis

MUS 3174 Topics in Music Theory and Composition

MUS 3175 Topics in Music History and Literature

Any Philosophy (PHIL) course except PHIL 2045 and PHIL 3121.

PSC 2105 Major Issues of Western Political Thought I

PSC 2120W Freedom in American Thought and Popular Culture

or AMST 2120W Freedom in American Thought and Popular Culture

PSTD 1010 Introduction to Peace Studies and Conflict Resolution

Any Religion (REL) course.

SLAV 2310 The Russian Media Since Communism

SPAN 3100 Texts and Contexts of the Spanish-Speaking World

TRDA 1015 Understanding the Dance

TRDA 1020 Women and the Creative Process

TRDA 1025 Understanding the Theatre

TRDA 2185	Trends in Performance
TRDA 2191	Dance History
TRDA 2240	Play Analysis
TRDA 3245	History of the Theatre I
TRDA 3246	History of the Theatre II
UNIV 1006	Questions of Culture
WLP 1020	Writing, Literature, and Society
WGSS 1020	Approaches to Women's History
WGSS 2225	Philosophy of Race And Gender
or PHIL 2125	Philosophy of Race and Gender
WGSS 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
or AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
WGSS 3353	U.S. Women's History II
WGSS 3981	Women in Western Religion
or REL 2981	Women in Western Religion
Literature and film classes in the Departments of Classical and Near Eastern Languages and Civilizations; East Asian Languages and Literatures; English; and Romance, German, Slavic Languages and Literatures also fulfill this requirement.	
Creative Arts—a maximum of 3 credits from the following:	
Any Corcoran Studio Arts (CSA) course.	
ENGL 1210	Introduction to Creative Writing
ENGL 2460	Fiction Writing

ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3390	Topics in Creative Writing
Non-ensemble performance study (MUS) courses, including:	
MUS 1101	Elements of Music Theory
MUS 1102	Comprehensive Musicianship I
MUS 1106	Introduction to Musical Performance and Experience
MUS 2102	Comprehensive Musicianship II
MUS 2134	Composition
MUS 2173	Comprehensive Musicianship for Jazz
MUS 4184	Advanced Composition
Performance Study Courses (TRDA), including:	
TRDA 1035	Theatre Production
TRDA 1151	Beginning/Intermediate Ballet
TRDA 1152	Beginning Modern/Postmodern Dance
TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance
TRDA 1170 & TRDA 1171	Intermediate Modern/Postmodern Dance I and Intermediate Modern/Postmodern Dance II
TRDA 1214	Beginning Acting
TRDA 1330	Basics of Production Design
TRDA 2160	Intermediate Ballet
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II
TRDA 2179	Contact Improvisation
TRDA 2180	Movement Improvisation/Performance
TRDA 2192	Repertory/Performance
TRDA 2193 & TRDA 2194	Dance Styles I and Dance Styles II
TRDA 2215	Intermediate Acting
TRDA 2250	Dramatic Writing

TRDA 2339	Theatre Practicum
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II
TRDA 3182 & TRDA 3183	Dance Composition I and Dance Composition II
TRDA 3186	Embodied Kinesis for Dance
TRDA 3222	Topics in Advanced Acting
TRDA 3240	Introduction to Dramaturgy
TRDA 3250	Intermediate Dramatic Writing
TRDA 3331	Introduction to Lighting
TRDA 3332	Theatrical Makeup Design
TRDA 3333	Stage Management
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming
TRDA 4184	Choreography and Performance
TRDA 4275	Directing for the Theatre
TRDA 4338	Scene Painting
*Some MUS and TRDA courses may be repeated for credit. Consult course descriptions in this Bulletin for additional information. All courses must be taken for a letter grade to fulfill this requirement. Courses taken Pass/No Pass are not accepted.	

**Note that MUS 2661 is a prerequisite to MUS 2662.

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Degree Requirements (p. 830).

A minimum grade of C- must be earned in all major requirement courses, to include the last course used to prove third-year proficiency in a modern regional language .

If a student wishes to take any course not listed here, prior approval of the Program Director is required.

Major requirements

Code	Title	Credits
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Foundation (3 credits)

IAFF 2095	The Middle East in International Affairs
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It is strongly recommended that students take IAFF 2095 before more advanced coursework in the major.

Foreign Language (credits vary)

Students must demonstrate third-year proficiency in a modern foreign languages (Arabic, Hebrew or Persian) by examination or coursework. Additional information regarding the Elliott School foreign language examinations is available from the academic advisor.

Arabic

One of the following two options:

Option one:

ARAB 1001	Beginning Arabic I
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ARAB 1002	Beginning Arabic II
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ARAB 2001	Intermediate Arabic I
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ARAB 2002	Intermediate Arabic II
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ARAB 3001	Advanced Arabic
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and one of the following courses:

ARAB 3301	Modern Arabic Literature
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ARAB 3302	Media Arabic
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ARAB 3311	Business Arabic
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Or

Option two:

ARAB 1201	Intensive Elementary Arabic I
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ARAB 1202	Intensive Elementary Arabic II
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ARAB 2201	Intensive Intermediate Arabic
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ARAB 3201	Intensive Advanced Arabic: Mass Media
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Hebrew

HEBR 1001	Beginning Hebrew I
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HEBR 1002	Beginning Hebrew II
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HEBR 2001	Intermediate Hebrew I
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HEBR 2002	Intermediate Hebrew II
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HEBR 3001	Hebrew Conversation and Writing
and one of the following courses:	
HEBR 3301	Modern Hebrew Fiction
or HEBR 3301W	Modern Hebrew Fiction
HEBR 3302	The Israeli Media
Persian	
PERS 1001	Beginning Persian I
PERS 1002	Beginning Persian II
PERS 2001	Intermediate Persian I
PERS 2002	Intermediate Persian II
PERS 3001	Advanced Persian
PERS 3002	Media Persian
or PERS 3002W	Media Persian

Regional Foundations (3 credits)

One course from the following in any region except the Middle East.

Code	Title	Credits
Africa		
ANTH 3708	Anthropology of Africa	
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)	
GEOG 3164	The Geography of Africa	
HIST 3501	Topics: Africa (African History Since 1880)	
HIST 3530	Women in Africa	
HIST 3540	West Africa to Independence	
IAFF 2093	Africa: Problems and Prospects	
IAFF 2190W	Special Topics (North Africa and the World) *	
IAFF 2190W	Special Topics (Rising Africa and the World)	
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)	
IAFF 3189	Special Topics in African Studies (International Relations in Africa)	

IAFF 3189	Special Topics in African Studies (New African Security Frontier)
IAFF 3189	Special Topics in African Studies (Religion in Africa)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)
IAFF 3190	Special Topics in International Affairs (Africa: Declassified)
IAFF 3190	Special Topics in International Affairs (China and Africa)
PSC 2381	Comparative Politics of Sub-Saharan Africa
PSC 2482	African International Politics
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)
PSC 3192W	Proseminar: Political Science (Government and Politics of Africa)
Asia (Students in the BA in Asian studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Asia.)	
ANTH 3703	Cultures of the Pacific
ANTH 3704	Cultures of Southeast Asia
ANTH 3705	Anthropology of East Asia
ANTH 3791	Topics in Regional Anthropology (Anthropology of South Asia)
ECON 2198	Special Topics in Economics - Regional (East Asian Economies)
GEOG 3165	Geography of South Asia
HIST 3640	History of Southeast Asia
HIST 3650	Modern South Asia, 1750-Present
IAFF 2091	East Asia-Past and Present
IAFF 3186	Special Topics in Asian Studies (Asian Order and Community Building)

IAFF 3186	Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3186	Special Topics in Asian Studies (East Asian Security)
IAFF 3186	Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation: Asia)
IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 2369	Comparative Politics of South Asia
PSC 2373	Comparative Politics of Southeast Asia
PSC 2475	International Relations of East Asia
PSC 3192W	Proseminar: Political Science (Politics and Protest in East Asia)
PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)
Europe and Eurasia	
ECON 2199	Special Topics in Economics (Economics of the EU)
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 2125	Twentieth-Century Europe
HIST 3126	European Integration: A History
HIST 3178	The Making of the Modern Balkans
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2094	Europe: International and Domestic Interactions
IAFF 3185	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)

IAFF 3185	Special Topics in European and Eurasian Studies (The European Union)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union and Russia)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 4191W	Research Seminar (Europe)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
Latin America (Students in the BA in Latin American and hemispheric studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Latin America.)	
ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America
HIST 3701	Topics in Latin American History (Latin America and the World Since 1820)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise
IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3194W	Latin America's Violent Peace
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America

Middle East (Students in the BA in Middle East studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than the Middle East.)

ANTH 3707	Anthropology of the Middle East
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History (Gender and the Middle East)
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
IAFF 2095	The Middle East in International Affairs
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Challenges and Change in the Middle East)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3188	Special Topics in Middle East Studies (Military and Politics in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Persian Gulf)
IAFF 4191	Research Seminar (Political Islam)
PSC 2377	Comparative Politics of the Middle East
PSC 2478	International Relations of the Middle East

*IAFF 2190W (North Africa and the World) is not approved as a Regional Foundations course for students in the Middle East Studies program due to the degree of overlap between issues in North Africa and the Middle East.

Code Title Credits

Research Methods (3 credits)

One course pertaining to qualitative or quantitative social science research methods from the following:

ANTH 3531	Methods in Sociocultural Anthropology
ECON 2123	Introduction to Econometrics
GEOG 2104	Introduction to Cartography and GIS
IAFF 2101	International Affairs Research Methods
IAFF 2190	Special Topics (Political Risk Analysis)
IAFF 3190	Special Topics in International Affairs (Qualitative Research Methods)
PSC 2101	Scope and Methods of Political Science
PSC 2102	Visualizing and Modeling Politics
PSYC 2101	Research Methods in Psychology
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3199	Topics in Public Health (Qualitative Research Methods)
SOC 2101	Social Research Methods
SOC 2111	Field Research
STAT 1051	Introduction to Business and Economic Statistics *
STAT 1053	Introduction to Statistics in Social Science *
STAT 1111	Business and Economic Statistics I *
STAT 1127	Statistics for the Biological Sciences
STAT 2112	Business and Economic Statistics II
STAT 2183	Intermediate Statistics Lab/Packages
or STAT 2183W	Intermediate Statistical Laboratory: Statistical Computing Packages

*Credit for only one of the following courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127.

STAT courses may not be double-counted between the Math requirement and the research methods requirement.

Code	Title	Credits		
Multi-disciplinary Core (24 credits)				
The following lists are not exhaustive and new courses may be added at any time. Contact the Director of the Middle East Studies program for approval to count a course not listed toward one of these requirements.				
History (6 credits)				
Two courses from the following:				
HIST 2803	The Ancient Near East and Egypt to 322 B.C.		ARAB 3502	Arab Film and Culture in English
HIST 2804	History of Ancient Israel		ARAB 4001	Genres in Modern Arabic Literature
HIST 3801	Topics in Middle Eastern History		ARAB 4002	Arabic Narratives Through the Ages
HIST 3810	History of the Middle East to 1800		HEBR 3101	Modern Hebrew Literary Classics in Translation
HIST 3811	The Emergence of the Modern Middle East		HEBR 3102	Israeli Society and Culture: Literary Perspectives
HIST 3820	History of Israel		HEBR 3103	Israeli Cinema (in English)
or HIST 3820W	The History of Israel		HEBR 3104W	Gender and Sexuality in Israel
HIST 3825	Land and Power in Israel/Palestine		HEBR 3301	Modern Hebrew Fiction
HIST 3830	History of Iraq		or HEBR 3301W	Modern Hebrew Fiction
HIST 3850	Modern Iran		HEBR 4001	Advanced Hebrew Literature I
Economics (3 credits)			HEBR 4002	Advanced Hebrew Literature II
One course from the following:			REL 3432	Persian Sufi Literature East and West
ECON 2136	Environmental and Natural Resource Economics		Political Science (6 credits)	
ECON 2151	Economic Development		Two courses from the following:	
or ECON 2151W	Economic Development		PSC 2377	Comparative Politics of the Middle East
ECON 2180	Survey of International Economics		PSC 2379	Politics and Foreign Policy of Israel
ECON 2181	International Trade Theory and Policy		PSC 2476	The Arab-Israeli Conflict
ECON 2182	International Macroeconomic Theory and Policy		or PSC 2476W	The Arab-Israeli Conflict
Middle East Arts and Literature (3 credits)			PSC 2478	International Relations of the Middle East
One course from the following:			Religion (6 credits)	
AH 3113	Islamic Art and Architecture		Two courses from the following:	
ARAB 3301	Modern Arabic Literature		REL 2401	Islam
ARAB 3501	Arabic and Arab Identity		REL 3405	Shi'ite Islam
			REL 3414	Islamic Philosophy and Theology
			REL 3425	Islamic Political Thought
			REL 3431	Sufism/Islamic Mysticism
			REL 3432	Persian Sufi Literature East and West
			REL 3475	Islamic Religion and Art
			REL 3481	Women in Islam
			REL 3482	Gender and Piety in Islam

REL 3990 Selected Topics in Religion (topic: Law and Diplomacy in the Ancient Near East and the Mediterranean. Same as REL 3990W: Law and Diplomacy in the Ancient Near East and the Mediterranean)

Related Coursework (6 credits)

Two courses related to the Middle East from any discipline, including International Affairs (IAFF), selected with the approval of the Middle East Studies program director.

Study Abroad

Students are encouraged to study in the Middle East through one of GW's formal partnerships with a regional university or an approved self-designed study abroad program.

ECON 1012 Principles of Economics II

HIST 1011 World History, 1500-Present

PSC 1001 Introduction to Comparative Politics

One of the following (not required in the first year):

ANTH 1002 Sociocultural Anthropology

ANTH 1004 Language in Culture and Society

GEOG 1001 Introduction to Human Geography

With advisor approval, a student may select another introductory social science course if s/he can demonstrate why it is relevant to the student's academic pursuits. An example of a course that might be accepted is GEOG 1003.

BACHELOR OF SCIENCE WITH A MAJOR IN INTERNATIONAL AFFAIRS

GENERAL REQUIREMENTS

General requirements

Elliott School bachelor's degrees engage students with global issues through multidisciplinary and interdisciplinary approaches. Students begin their studies in the first year with foundational courses in political science, economics, history, and anthropology or geography. They supplement these courses with others in the traditional liberal arts categories of writing, natural or physical science, mathematics or statistics, and the humanities/creative arts, plus two writing in the disciplines courses. Foreign language study also is emphasized early in each program to enable students to satisfy the third-year language proficiency requirement of the bachelor's degree in a timely manner.

Introduction to the major

Code	Title	Credits
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Prerequisite core (19 credits)

Required

The following courses must be taken in the first year. With the exception of IAFF 1001 (fall), ECON 1011 (fall) and ECON 1012 (spring), courses can be taken in fall or spring. IAFF 1001 is not required for internal or external transfer students.

IAFF 1001	First-Year Experience
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IAFF 1005	Introduction to International Affairs
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ECON 1011	Principles of Economics I
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Supporting courses in the liberal arts

Code	Title	Credits
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Writing (credits vary)

Writing requirements are established by the University Writing Program. Students must complete UW 1020 in their first year before enrolling in a Writing in the Discipline (WID) course for WID credit. The two required WID courses should be taken in the student's major, minor, or a related field, and must be completed in separate semesters to receive WID credit. WID courses are designated in this Bulletin with a "W" appended to the course number, e.g., HIST 2340W.

Required

UW 1020	University Writing
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Two WID courses

Mathematics or statistics (3 credits)

MATH courses numbered 1051 and above require a placement test. Credit for only one of the following MATH courses may be applied toward a degree: MATH 1221, MATH 1231, or MATH 1252. Credit for only one of the following STAT courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127. STAT courses may not be double-counted between the Mathematics requirement and the Research Methods requirement (see "Major Requirements.")

One of the following:

MATH 1007	Mathematics and Politics
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MATH 1008	History of Mathematics
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MATH 1009	Mathematical Ideas I
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MATH 1010	Mathematical Ideas II
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MATH 1051	Finite Mathematics for the Social and Management Sciences	GEOL 1001	Physical Geology
MATH 1221	Calculus with Precalculus II	GEOL 1002	Historical Geology
MATH 1231	Single-Variable Calculus I	GEOL 1005	Environmental Geology
MATH 1232	Single-Variable Calculus II	HONR 1033	Honors Seminar: Scientific Reasoning and Discovery
MATH 1252	Calculus for the Social and Management Sciences	HONR 1034	Honors Seminar: Scientific Reasoning and Discovery
MATH 2233	Multivariable Calculus	PHYS 1003	Physics for Future Presidents
STAT 1051	Introduction to Business and Economic Statistics	PHYS 1007	Music and Physics
STAT 1053	Introduction to Statistics in Social Science	PHYS 1011	General Physics I
STAT 1111	Business and Economic Statistics I	PHYS 1012	General Physics II
STAT 1127	Statistics for the Biological Sciences	PHYS 1021	University Physics I
Science (3 to 4 credits), lab required		PHYS 1022	University Physics II
One of the following:		PHYS 1025	University Physics I with Biological Applications
ANTH 1001	Biological Anthropology	PHYS 1026	University Physics II with Biological Applications
ANTH 3412	Hominin Evolution	Humanities/creative arts (9 credits)*	
ASTR 1001	Stars, Planets, and Life in the Universe	This requirement can be satisfied by completing 9 credits in humanities courses, or 6 credits in humanities courses and 3 credits in creative arts courses.	
ASTR 1002	Origins of the Cosmos	Humanities—two or three of the following:	
BISC 1005	The Biology of Nutrition and Health	Any Art History (AH) course except AH 4199.	
BISC 1006	The Ecology and Evolution of Organisms	AMST 1160	Race, Gender, and Law
BISC 1007	Food, Nutrition, and Service	AMST 1200	The Sixties in America
BISC 1008	Understanding Organisms through Service Learning	AMST 2010	Early American Cultural History
BISC 1111	Introductory Biology: Cells and Molecules	or HIST 2010	Early American Cultural History
BISC 1112	Introductory Biology: The Biology of Organisms	AMST 2011	Modern American Cultural History
CHEM 1003	Contemporary Science for Nonscience Majors	or HIST 2011	Modern American Cultural History
CHEM 1004	Contemporary Science for Nonscience Majors	AMST 2020	Washington, DC: History, Culture, and Politics
CHEM 1111	General Chemistry I	or AMST 2020W	Washington, DC: History, Culture, and Politics
CHEM 1112	General Chemistry II	or HIST 2020	Washington, DC: History, Culture, and Politics
GEOG 1002	Introduction to Physical Geography	or HIST 2020W	Washington, DC: History, Culture, and Politics
		AMST 2120W	Freedom in American Thought and Popular Culture

or PSC 2120W	Freedom in American Thought and Popular Culture
AMST 2210	The African American Experience
AMST 2320	U.S. Media and Cultural History
or HIST 2320	U.S. Media and Cultural History
AMST 2350	U.S. Religion and Politics
or HIST 2350	U.S. Religion and Politics
AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
or WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
AMST 2410	Twentieth Century U.S. Immigration
or HIST 2410	Twentieth Century U.S. Immigration
AMST 2430	Capitalism and Culture
AMST 2440	The American City
or AMST 2440W	The American City
or HIST 2440	The American City
or HIST 2440W	The American City
AMST 2520	American Architecture I
AMST 2521	American Architecture II
AMST 2600	U.S. Popular Music and Culture
AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
or HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
AMST 2620	Human Mind and Artificial Intelligence
AMST 2630	Discovering the Mind

AMST 2710 The United States in the World

or HIST 2710 The United States in the World

AMST 2730 World War II in History and Memory

or AMST 2730W World War II in History and Memory

or HIST 2730 World War II in History and Memory

or HIST 2730W World War II in History and Memory

AMST 2750W Latinos in the United States

or ANTH 2750 Latinos in the United States

or ANTH 2750W Latinos in the United States

AMST 3352 U.S. Women's History to 1865

or AMST 3352W U.S. Women's History to 1865

or HIST 3352 U.S. Women's History to 1865

or HIST 3352W U.S. Women's History to 1865

or WGSS 3352 U.S. Women's History to 1865

or WGSS 3352W U.S. Women's History to 1865

AMST 3600 Popular Music and Politics

ANTH 2750 Latinos in the United States

or ANTH 2750W Latinos in the United States

or AMST 2750W Latinos in the United States

ARAB 3105 Special Topics (Arabic Literature: Arabia to America) -- or IAFF 3188 (Arabic Literature: Arabia to America)

ARAB 3105 Special Topics (Readings: Contemporary Arabic Literature)

CAH 1090 Art History I: Art Now, Contemporary Perspectives in the Visual Arts

Any non-language Classical Studies (CLAS) course.

EALL 3811 Confucian Literature in East Asia

or REL 2811 Confucian Literature in East Asia

EALL 3814 Religion and Philosophy in East Asia

or EALL 3814W Religion and Philosophy in East Asia

or REL 2814 Religion and Philosophy in East Asia

ENGL 1050 Introduction to Literary Studies

ENGL 1300 The Bible as Literature

ENGL 1315	Literature and the Financial Imagination	ENGL 3400	Topics in Literature and Finance
ENGL 1320	Literature of the Americas	ENGL 3446	Shakespearean London
or ENGL 1320W	Literature of the Americas	ENGL 3621	American Poetry II
ENGL 1330	Myths of Britain	ENGL 3730	Topics in Global Postcolonial Literature and Film
or ENGL 1330W	Myths of Britain	or ENGL 3730W	Topics in Global Postcolonial Literature and Film
ENGL 1340	Essential Shakespeare	ENGL 3910	Disability Studies
or ENGL 1340W	Essential Shakespeare	ENGL 3918	Literature and Medicine
ENGL 1351	Shakespeare Seminar	Any Film Studies (FILM) course.	
ENGL 1360	Fantasy and Speculative Fiction	HEBR 3101	Modern Hebrew Literary Classics in Translation
ENGL 1365	Literature and the Environment	HEBR 3102	Israeli Society and Culture: Literary Perspectives
ENGL 2100	Introduction to Asian American Studies through Literature	HEBR 3103	Israeli Cinema (in English)
ENGL 2410	Introduction to English Literature I	HEBR 3104W	Gender and Sexuality in Israel
or ENGL 2410W	Introduction to English Literature I	HEBR 3301	Modern Hebrew Fiction
ENGL 2411	Introduction to English Literature II	or HEBR 3301W	Modern Hebrew Fiction
or ENGL 2411	Introduction to English Literature II	HEBR 4001	Advanced Hebrew Literature I
ENGL 2510	Introduction to American Literature I	or HEBR 4001W	Advanced Hebrew Literature I
or ENGL 2510W	Introduction to American Literature I	HEBR 4002	Advanced Hebrew Literature II
ENGL 2511	Introduction to American Literature II	HIST 1020	Approaches to Women's History
or ENGL 2511W	Introduction to American Literature II	HIST 1110	Foundations of Europe to 1715
ENGL 2610	Introduction to Black Literature of America I	HIST 1120	Europe in the World Since 1715
or ENGL 2610W	Introduction to Black Literature of America I	or HIST 1120W	European Civilization in its World Context
ENGL 2611	Introduction to Black Literature of America II	HIST 1121	The War of Ideas in European and International History, 1750-Present
or ENGL 2611W	Introduction to Black Literature of America II	HIST 1310	Introduction to American History from the Pre-Columbian Era to 1877
ENGL 2710	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film	HIST 1311	Introduction to American History since 1877
or ENGL 2710W	Postcolonialism, Race, and Gender in Global Anglophone Literature and Film	HIST 2010	Early American Cultural History
ENGL 2711	Postcolonialism and Migration in Global Anglophone Literature and Film	or AMST 2010	Early American Cultural History
or ENGL 2711W	Postcolonialism and Migration in Global Anglophone Literature and Film	HIST 2011	Modern American Cultural History
ENGL 2712	Bollywood Cinema	or AMST 2011	Modern American Cultural History

HIST 2020	Washington, DC: History, Culture, and Politics
or HIST 2020W	Washington, DC: History, Culture, and Politics
or AMST 2020	Washington, DC: History, Culture, and Politics
or AMST 2020W	Washington, DC: History, Culture, and Politics
HIST 2050	History of Jewish Civilization: From the Bible to Modernity
HIST 2060	Modern Jewish History
or JSTD 2060	Modern Jewish History
HIST 2113	The Roman World to 337 A.D.
HIST 2124	Nineteenth-Century Europe
HIST 2125	Twentieth-Century Europe
HIST 2131	History of England Since 1689
HIST 2141	History of France Since 1789
HIST 2160	History of Germany
HIST 2312	The American Civil War and Reconstruction, 1850-1877
HIST 2313	History of the American West
HIST 2320	U.S. Media and Cultural History
or AMST 2320	U.S. Media and Cultural History
HIST 2321	U.S. History, 1890-1945
HIST 2322	U.S. History since 1945
HIST 2350	U.S. Religion and Politics
or AMST 2350	U.S. Religion and Politics
HIST 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or WGSS 2380	Sexuality in U.S. History
HIST 2410	Twentieth Century U.S. Immigration
or AMST 2410	Twentieth Century U.S. Immigration
HIST 2440	The American City
or HIST 2440W	The American City
or AMST 2440	The American City
or AMST 2440W	The American City

HIST 2520	Africans in the Making of the Atlantic World
HIST 2610	Science, Technology, and Politics in Modern America
or HIST 2610W	Science, Technology, and Politics in Modern America
or AMST 2610	Science, Technology, and Politics in Modern America
or AMST 2610W	Science, Technology, and Politics in Modern America
HIST 2630	History of Korea
HIST 2710	The United States in the World
or AMST 2710	The United States in the World
HIST 2730	World War II in History and Memory
or HIST 2730W	World War II in History and Memory
or AMST 2730	World War II in History and Memory
or AMST 2730W	World War II in History and Memory
HIST 2811	The Formation of Islam to 1500
HIST 2850	Modernization in Russia, Turkey, and Iran
HIST 3044W	The Price of Freedom: Normandy 1944
HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
HIST 3353	U.S. Women's History II
HIST 3360	African American History to 1865
or AMST 3360	African American History to 1865
HIST 3361	African American History Since 1865
or AMST 3361	African American History Since 1865
HIST 3611	History of Modern China
HIST 3811	The Emergence of the Modern Middle East

HONR 1016	Honors Seminar: Origins and Evolution of Modern Thought
HONR 2053	Arts and Humanities Seminar
or HONR 2053W	Arts and Humanities Seminar
HONR 2054	Arts and Humanities Seminar
or HONR 2054W	Arts and Humanities Seminar
IAFF 2190W	Special Topics (Dissent: A Study in Memoirs)
IAFF 3188	Special Topics in Middle East Studies (Arabic Literature: Arabia to America) -- or ARAB 3105 (Arabic Literature: Arabia to America)
IAFF 3189	Special Topics in African Studies (African Literature and Politics)
IAFF 3189	Special Topics in African Studies (Hip Hop and Social Change in Africa)
IAFF 3189	Special Topics in African Studies (West African Film and Literature)
IAFF 3190	Special Topics in International Affairs (Film and U.S. Foreign Policy)
JSTD 2060	Modern Jewish History
or HIST 2060	Modern Jewish History
LATN 2002	Poetry of Empire
LATN 3001	Major Latin Authors I
LATN 3002	Major Latin Authors II
MUS 1103	Music in the Western World
MUS 1104	Topics in Music
MUS 1105	Introduction to Musical Thought and Practice
MUS 1107	Music of the World
MUS 1108	History of Jazz
MUS 2101	Harmony
MUS 2105	Introduction to Ethnomusicology
MUS 2106	Music History III: Twentieth-Century Art Traditions
MUS 2122	Music in the U.S.
MUS 2123	Musical Cultures of Black Americans

MUS 2174	Introduction to Jazz Harmony
MUS 2661	Electronic and Computer Music I
MUS 2662	Electronic and Computer Music II *
MUS 3126	Music History I: Antiquity through Early Baroque
MUS 3127	Music History II: The Tonal Era
MUS 3139	Form and Analysis
MUS 3174	Topics in Music Theory and Composition
MUS 3175	Topics in Music History and Literature
Any Philosophy (PHIL) course except PHIL 2045 and PHIL 3121.	
PSC 2105	Major Issues of Western Political Thought I
PSC 2120W	Freedom in American Thought and Popular Culture
or AMST 2120W	Freedom in American Thought and Popular Culture
PSTD 1010	Introduction to Peace Studies and Conflict Resolution
Any Religion (REL) course.	
SLAV 2310	The Russian Media Since Communism
SPAN 3100	Texts and Contexts of the Spanish-Speaking World
TRDA 1015	Understanding the Dance
TRDA 1020	Women and the Creative Process
TRDA 1025	Understanding the Theatre
TRDA 2185	Trends in Performance
TRDA 2191	Dance History
TRDA 2240	Play Analysis
TRDA 3245	History of the Theatre I
TRDA 3246	History of the Theatre II
UNIV 1006	Questions of Culture
WLP 1020	Writing, Literature, and Society
WGSS 1020	Approaches to Women's History
WGSS 2225	Philosophy of Race And Gender

or PHIL 2125	Philosophy of Race and Gender
WGSS 2380	Sexuality in U.S. History
or AMST 2380	Sexuality in U.S. History
or HIST 2380	Sexuality in U.S. History
WGSS 2385	Sex and Citizenship
or WGSS 2385W	Sex and Citizenship
or AMST 2385	Sex and Citizenship
or AMST 2385W	Sex and Citizenship
WGSS 3352	U.S. Women's History to 1865
or WGSS 3352W	U.S. Women's History to 1865
or AMST 3352	U.S. Women's History to 1865
or AMST 3352W	U.S. Women's History to 1865
or HIST 3352	U.S. Women's History to 1865
or HIST 3352W	U.S. Women's History to 1865
WGSS 3353	U.S. Women's History II
WGSS 3981	Women in Western Religion
or REL 2981	Women in Western Religion

Literature and film classes in the Departments of Classical and Near Eastern Languages and Civilizations; East Asian Languages and Literatures; English; and Romance, German, Slavic Languages and Literatures also fulfill this requirement.

Creative Arts—a maximum of 3 credits from the following:

Any Corcoran Studio Arts (CSA) course.

ENGL 1210	Introduction to Creative Writing
ENGL 2460	Fiction Writing
ENGL 2470	Poetry Writing
ENGL 2560	Intermediate Fiction Writing
ENGL 3390	Topics in Creative Writing
Non-ensemble performance study (MUS) courses, including:	
MUS 1101	Elements of Music Theory
MUS 1102	Comprehensive Musicianship I
MUS 1106	Introduction to Musical Performance and Experience
MUS 2102	Comprehensive Musicianship II

MUS 2134	Composition
MUS 2173	Comprehensive Musicianship for Jazz
MUS 4184	Advanced Composition
Performance Study Courses (TRDA), including:	
TRDA 1035	Theatre Production
TRDA 1151	Beginning/Intermediate Ballet
TRDA 1152	Beginning Modern/Postmodern Dance
TRDA 1153	Beginning/Intermediate Modern/Postmodern Dance
TRDA 1170 & TRDA 1171	Intermediate Modern/Postmodern Dance I and Intermediate Modern/Postmodern Dance II
TRDA 1214	Beginning Acting
TRDA 1330	Basics of Production Design
TRDA 2160	Intermediate Ballet
TRDA 2172	Intermediate/Advanced Modern/Postmodern Dance I
TRDA 2173	Intermediate/Advanced Modern/Postmodern Dance II
TRDA 2179	Contact Improvisation
TRDA 2180	Movement Improvisation/Performance
TRDA 2192	Repertory/Performance
TRDA 2193 & TRDA 2194	Dance Styles I and Dance Styles II
TRDA 2215	Intermediate Acting
TRDA 2250	Dramatic Writing
TRDA 2339	Theatre Practicum
TRDA 3174	Advanced Modern/Postmodern Dance I
TRDA 3175	Advanced Modern/Postmodern Dance II
TRDA 3182 & TRDA 3183	Dance Composition I and Dance Composition II
TRDA 3186	Embodied Kinesis for Dance
TRDA 3222	Topics in Advanced Acting
TRDA 3240	Introduction to Dramaturgy

TRDA 3250	Intermediate Dramatic Writing
TRDA 3331	Introduction to Lighting
TRDA 3332	Theatrical Makeup Design
TRDA 3333	Stage Management
TRDA 3335	Introduction to Scene Design
TRDA 3336	Introduction to Costuming
TRDA 4184	Choreography and Performance
TRDA 4275	Directing for the Theatre
TRDA 4338	Scene Painting

*Some MUS and TRDA courses may be repeated for credit. Consult course descriptions in this Bulletin for additional information. All courses must be taken for a letter grade to fulfill this requirement. Courses taken Pass/No Pass are not accepted.

**Note that MUS 2661 is a prerequisite to MUS 2662.

MAJOR REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Elliott School of International Affairs, Undergraduate Programs (<http://bulletin.gwu.edu/international-affairs/#regulationtext>).

A minimum of 120 credits, which includes completion of either a concentration or a second major. The total number of required credits depends on which option the student selects.

Advanced fundamentals (15 to 18 Credits)

Advanced Fundamentals build on the Introduction to the Major (p. 853) and continue the student's education in the basic skills of international affairs. Fundamentals focus on central disciplines such as economics, history, and political science, and other relevant disciplines, such as anthropology and geography. In addition, students gain a broader understanding of at least two regions of the world outside of the United States.

A minimum grade of C- must be earned in all international affairs major courses. This includes advanced fundamentals, regional foundations, advanced STEM requirements, concentrations, and foreign language (the last course used to prove third-year proficiency).

With the exception of WID courses, courses may not be double-counted between any international affairs requirements.

Advanced fundamental courses are divided into the following areas. Course options for each are listed below.

Research methods (3 credits)
International economics (3 or 6 credits)
Historical analysis: U.S. foreign policy (3 credits)
International and comparative politics (3 credits)
Anthropology or geography (3 credits)

Code	Title	Credits
Research Methods (3 credits)		
One course pertaining to qualitative or quantitative social science research methods from the following:		
ANTH 3531	Methods in Sociocultural Anthropology	
ECON 2123	Introduction to Econometrics	
GEOG 2104	Introduction to Cartography and GIS	
IAFF 2101	International Affairs Research Methods	
IAFF 2190	Special Topics (Political Risk Analysis)	
IAFF 3190	Special Topics in International Affairs (Qualitative Research Methods)	
PSC 2101	Scope and Methods of Political Science	
PSC 2102	Visualizing and Modeling Politics	
PSYC 2101	Research Methods in Psychology	
PUBH 3131	Epidemiology: Measuring Health and Disease	
PUBH 3199	Topics in Public Health (Qualitative Research Methods)	
SOC 2101	Social Research Methods	
SOC 2111	Field Research	
STAT 1051	Introduction to Business and Economic Statistics *	
STAT 1053	Introduction to Statistics in Social Science *	
STAT 1111	Business and Economic Statistics I *	
STAT 1127	Statistics for the Biological Sciences	
STAT 2112	Business and Economic Statistics II	
STAT 2183	Intermediate Statistics Lab/Packages	
or STAT 2183W	Intermediate Statistical Laboratory: Statistical Computing Packages	

*Credit for only one of the following courses may be applied toward a degree: STAT 1051, STAT 1053, STAT 1111, or STAT 1127.

STAT courses may not be double-counted between the Math requirement and the research methods requirement.

Code	Title	Credits
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International Economics (3 or 6 credits)

One or two courses pertaining to the theory of international economics, selected from one of the following three options:

Option one (3 credits):

ECON 2180	Survey of International Economics
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Option two (6 credits):

ECON 2181 & ECON 2182	International Trade Theory and Policy and International Macroeconomic Theory and Policy
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Option three (6 credits):

ECON 2182 & ECON 3181	International Macroeconomic Theory and Policy and International Trade Theory
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*Students pursuing the international economics concentration must select either option two or option three.

The following courses are required as prerequisites for ECON 3181: ECON 2101 or ECON 2103; and MATH 1221 or MATH 1231 or MATH 1252.

Credit cannot be earned for both ECON 2181 and ECON 3181.

Code	Title	Credits
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Historical Analysis: U.S. Foreign Policy (3 credits)

One of the following courses pertaining to the history of the U.S. approach to contemporary international affairs:

HIST 2340	U.S. Diplomatic History
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HIST 3035	The United States and the Wars in Indochina, 1945-1975
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HIST 3332	History of American Foreign Policy Since World War II (I)
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HIST 3333	History of American Foreign Policy Since World War II (II)
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IAFF 3180W	Special Topics in Security Policy (U.S. Grand Strategy)
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Code	Title	Credits
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International and Comparative Politics (3 credits)

One of the following courses pertaining to international political issues and theories from either an international relations or comparative politics perspective:

IAFF 2040	Basic Topics in International Affairs (topic: Ethics in International Affairs. Same as PSC 2990: Ethics in International Affairs)
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IAFF 2444 or PSC 2444	International Law Public International Law
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IAFF 3180W	Special Topics in Security Policy (International Politics and Security Policy)
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IAFF 3190	Special Topics in International Affairs (Issues in Contemporary Diplomacy and National Security)
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IAFF 3190	Special Topics in International Affairs (Global Governance)
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IAFF 4191W	Research Seminar (International Politics and Security Policy)
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PSC 2334	Global Perspectives on Democracy
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PSC 2336	State-Society Relations in the Developing World
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PSC 2337	Development Politics
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PSC 2338	Nationalism
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PSC 2339	Comparative Political Economy
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PSC 2439	International Political Economy
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PSC 2440	Theories of International Politics
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PSC 2442	International Organizations
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PSC 2444	Public International Law
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or IAFF 2444	International Law
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PSC 2446	U.S. Foreign Policy
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PSC 2449	International Security Politics
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PSC 2990	Selected Topics (topic: Ethics in International Affairs. Same as IAFF 2040: Ethics in International Affairs)
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PSC 2991	Special Topics in Political Thought (Global Justice)
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PSC 2994	Special Topics in International Relations (U.S. Foreign Policy)
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Code	Title	Credits
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Anthropology or Geography (3 credits)

One of the following courses in anthropology or geography relevant to international affairs. Many of these courses have lower-level prerequisites as detailed in course descriptions in this Bulletin.

ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives
ANTH 2506	Religion, Myth, and Magic
ANTH 3501	Anthropology of Development
or IAFF 3501	International Development Theory, Policy, and Practice
ANTH 3502	Cultural Ecology
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
or IAFF 3513	Human Rights and Ethics
ANTH 3601	Language, Culture, and Cognition
ANTH 3691	Special Topics in Linguistic Anthropology (topic: Anthropology of Religion. Same as REL 3990: Anthropology of Religion)
IAFF 3501	International Development Theory, Policy, and Practice
or ANTH 3501	Anthropology of Development
IAFF 3513	Human Rights and Ethics
or ANTH 3513	Anthropology of Human Rights
IAFF 3190	Special Topics in International Affairs (Ethnic and Religious Conflict in Africa)
GEOG 2120	World Regional Geography
GEOG 2125	Transportation Systems and Networks
GEOG 2127	Population Geography

GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2137	Environmental Hazards
GEOG 2141	Cities in the Developing World
GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
GEOG 3145	Cultural Geography
GEOG 3146	Political Geography
GEOG 3810	Planning Cities
REL 3990	Selected Topics in Religion (topic: Anthropology of Religion. Same as ANTH 3691: Anthropology of Religion)

Regional foundations (6 Credits)

Students take two courses from the following to gain an understanding of two regions of the world outside of the United States. These courses must be taken in two different regions.

Code	Title	Credits
Africa		
ANTH 3708	Anthropology of Africa	
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)	
GEOG 3164	The Geography of Africa	
HIST 3501	Topics: Africa (African History Since 1880)	
HIST 3530	Women in Africa	
HIST 3540	West Africa to Independence	
IAFF 2093	Africa: Problems and Prospects	
IAFF 2190W	Special Topics (North Africa and the World) *	
IAFF 2190W	Special Topics (Rising Africa and the World)	

IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)	IAFF 2091	East Asia-Past and Present
IAFF 3189	Special Topics in African Studies (International Relations in Africa)	IAFF 3186	Special Topics in Asian Studies (Asian Order and Community Building)
IAFF 3189	Special Topics in African Studies (New African Security Frontier)	IAFF 3186	Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3189	Special Topics in African Studies (Religion in Africa)	IAFF 3186	Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)	IAFF 3186	Special Topics in Asian Studies (East Asian Security)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)	IAFF 3186	Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)	IAFF 3186	Special Topics in Asian Studies (Indo-Pacific Security Challenges)
IAFF 3190	Special Topics in International Affairs (Africa: Declassified)	IAFF 3186	Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3190	Special Topics in International Affairs (China and Africa)	IAFF 3186	Special Topics in Asian Studies (Memory and Reconciliation: Asia)
PSC 2381	Comparative Politics of Sub-Saharan Africa	IAFF 3186	Special Topics in Asian Studies (Politics and Conflict of South Asia)
PSC 2482	African International Politics	IAFF 3190	Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)	PSC 2369	Comparative Politics of South Asia
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)	PSC 2373	Comparative Politics of Southeast Asia
PSC 3192W	Proseminar: Political Science (Government and Politics of Africa)	PSC 2475	International Relations of East Asia
Asia (Students in the BA in Asian studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Asia.)		PSC 3192W	Proseminar: Political Science (Politics and Protest in East Asia)
ANTH 3703	Cultures of the Pacific	PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)
ANTH 3704	Cultures of Southeast Asia	Europe and Eurasia	
ANTH 3705	Anthropology of East Asia	ECON 2199	Special Topics in Economics (Economics of the EU)
ANTH 3791	Topics in Regional Anthropology (Anthropology of South Asia)	HIST 1121	The War of Ideas in European and International History, 1750-Present
ECON 2198	Special Topics in Economics - Regional (East Asian Economies)	HIST 2125	Twentieth-Century Europe
GEOG 3165	Geography of South Asia	HIST 3126	European Integration: A History
HIST 3640	History of Southeast Asia	HIST 3178	The Making of the Modern Balkans
HIST 3650	Modern South Asia, 1750-Present	IAFF 2092	Russia and Eastern Europe: An Introduction

IAFF 2094	Europe: International and Domestic Interactions
IAFF 3185	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union and Russia)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 4191W	Research Seminar (Europe)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
Latin America (Students in the BA in Latin American and hemispheric studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Latin America.)	
ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America
GEOG 3161	Geography of Latin America
HIST 3701	Topics in Latin American History (Latin America and the World Since 1820)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise
IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3194W	Latin America's Violent Peace

PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America
Middle East (Students in the BA in Middle East studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than the Middle East.)	
ANTH 3707	Anthropology of the Middle East
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History (Gender and the Middle East)
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
IAFF 2095	The Middle East in International Affairs
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Challenges and Change in the Middle East)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)
IAFF 3188	Special Topics in Middle East Studies (Militaries and Politics in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Persian Gulf)
IAFF 4191	Research Seminar (Political Islam)
PSC 2377	Comparative Politics of the Middle East
PSC 2478	International Relations of the Middle East

*IAFF 2190W (North Africa and the World) is not approved as a Regional Foundations course for students in the Middle East Studies program due to the degree of overlap between issues in North Africa and the Middle East.

Advanced requirements (18 or more credits)

Students take six courses in STEM disciplines at the 2000-level or above. These courses must include scientific or quantitative reasoning or analysis, and must be approved by the Elliott School academic advisor. MATH 1232, CSCI 1112, and CSCI 1311 may count toward this requirement.

The below courses are currently approved for the BSIA Advanced STEM requirement. A list of courses that have already been reviewed but are not approved is available on the BSIA webpage. If you are interested in taking a course for the STEM requirement that is not on this list, please submit a Course Substitution Request (<https://form.jotform.us/ESIA/course-substitution-request/>) to have the course reviewed.

Code	Title	Credits
BSIA Advanced STEM Requirement		
ACCY 2001	Introduction to Financial Accounting	
ACCY 3106	Financial Statement Analysis	
ANAT 2160	Human Functional Neuroanatomy	
APSC 2057	Analytical Mechanics I	
APSC 2058	Analytical Mechanics II	
BADM 3501	Financial Management and Markets	
BADM 3601	Operations Management	
BISC 2207	Genetics	
BISC 2214	Developmental Biology	
BISC 2220	Developmental Neurobiology	
BISC 2320	Neural Circuits and Behavior	
BISC 2450	Organic Evolution	
BISC 2452 & BISC 2453	Animal Behavior and Animal Behavior Lab	
BISC 3209	Molecular Biology	
BISC 3458 & BISC 3453	Plant Comparative Structure and Function and Plant Comparative Structure and Function Lab	
CE 2220	Introduction to the Mechanics of Solids	

CHEM 2085	Environmental Chemistry
CHEM 2122	Introductory Quantitative Analysis
CHEM 2123	Introductory Quantitative Analysis Laboratory
or CHEM 2123W	Introductory Quantitative Analysis Laboratory
CHEM 2151	Organic Chemistry I
CHEM 2152	Organic Chemistry II
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3140	Geochemistry
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
CHEM 3170	Introduction to Physical Chemistry
CHEM 3171	Physical Chemistry I
CHEM 3172	Physical Chemistry II
CHEM 3173	Physical Chemistry Laboratory
CHEM 3262	Biochemistry Laboratory
CHEM 3564	Lipid Biotechnology
CHEM 4113	Chemical Instrumentation
CHEM 4122	Instrumental Analytical Chemistry
CHEM 4123	Instrumental Analytical Chemistry Laboratory
CHEM 4134	Inorganic Chemistry
CSCI 1112	Algorithms and Data Structures
CSCI 1311	Discrete Structures I
CSCI 2113	Software Engineering
CSCI 2312	Discrete Structures II
CSCI 2441	Database Systems and Team Projects
CSCI 2461	Computer Architecture I
CSCI 3212	Algorithms
CSCI 3221	Programming Languages
CSCI 3313	Foundations of Computing

CSCI 3362	Probability for Computer Science
CSCI 3410	Systems Programming
CSCI 3411	Operating Systems
CSCI 3462	Computer Architecture II
CSCI 3571	Introduction to Bioinformatics
CSCI 4222	Theory of Computer Translators
CSCI 4223	Principles of Programming Languages
CSCI 4235	Development of Open-Source Software
CSCI 4237	Software Design for Handheld Devices
CSCI 4243	Capstone Design Project I
CSCI 4244	Capstone Design Project II
CSCI 4314	Discrete Analysis-Computer Science
CSCI 4331	Cryptography
CSCI 4341	Continuous Algorithms
CSCI 4342	Computational Linear Algebra and Applications
CSCI 4361	Simulation Methods
CSCI 4364	Machine Learning
CSCI 4415	Real-Time and Embedded Systems
CSCI 4417	UNIX System Programming
CSCI 4418	UNIX System Administration
CSCI 4431	Computer Networks I
CSCI 4432	Computer Networks II
CSCI 4455	Computer Game Design and Programming
CSCI 4511	Artificial Intelligence Algorithms
CSCI 4521	Introduction to Mobile Robotics
CSCI 4525	Autonomous Robotics: Manipulation
CSCI 4527	Introduction to Computer Vision
CSCI 4531	Computer Security
CSCI 4541	Network Security
CSCI 4551	Concepts and Applications of Computer Graphics
CSCI 4552	Design of Computer Animation I

CSCI 4553	Design of Computer Animation II
CSCI 4554	Computer Graphics I
CSCI 4561	Design of User-Interface Programs
CSCI 4572	Computational Biology
CSCI 4576	Introduction to Biomedical Computing
CSCI 4577	Biomedical Computing
ECON 2101	Intermediate Microeconomic Theory
ECON 2102	Intermediate Macroeconomic Theory
ECON 2103	Intermediate Microeconomic Theory: A Mathematical Approach
ECON 2104	Intermediate Macroeconomic Theory: A Mathematical Approach
ECON 2121	Financial Economics
ECON 2123	Introduction to Econometrics
ECON 2151	Economic Development
ECON 2167	Economics of Crime
ECON 3142	Labor Economics
ECON 3162	Public Finance: Taxation
ECON 3191	Game Theory
EMSE 4701	Optimization in Operations Research
FINA 3001	Intermediate Finance
FINA 3101	Investment and Portfolio Management
FINA 3201	Exploring Finance with Simulation
FINA 4001	Advanced Financial Management
FINA 4201	Real Estate Investment
FINA 4301	Financial Derivatives
FINA 4900	Special Topics (Applied Financial Security Analysis: Fixed Income)
FINA 3301	Money and Capital Markets
FINA 4101	Applied Financial Securities Analysis
GEOG 2104	Introduction to Cartography and GIS
GEOG 2129	Biogeography
GEOG 3105	Techniques of Spatial Analysis

GEOG 3106	Intermediate Geographic Information Systems	MATH 3848	Differential Geometry
GEOG 3107	Introduction to Remote Sensing	MATH 4121	Introduction to Abstract Algebra I
GEOG 3128	Geomorphology	MATH 4122	Introduction to Abstract Algebra II
GEOG 3196	Special Topics in Techniques (Geographic Information Systems III)	MATH 4239	Real Analysis I
GEOG 4307	Digital Image Processing and Analysis	MATH 4240	Real Analysis II
GEOG 4308	Programming for Geospatial Applications	MATH 2971W	Introduction to Mathematical Reasoning
GEOG 4311	Open Source Solutions for Geospatial Project Management	PHYS 2023	Modern Physics
GEOG 6305	Geospatial Statistics	PHYS 2151	Intermediate Laboratory I: Techniques and Methods
MAE 2131	Thermodynamics	PHYS 2152	Intermediate Laboratory II: Instrumentation
MATH 1232	Single-Variable Calculus II	PHYS 2183	Computational Modern Physics
MATH 2184	Linear Algebra I	PHYS 3127	Biophysics: Macroscopic Physics in the Life Sciences
MATH 2185	Linear Algebra I for Math Majors	PHYS 3128	Biophysics: Microscopic Physics in the Life Sciences
MATH 2233	Multivariable Calculus	PHYS 3161	Mechanics
MATH 2971	Introduction to Mathematical Reasoning	PHYS 3163	Physical and Quantum Optics
MATH 3120	Elementary Number Theory	PHYS 3164	Thermal and Statistical Physics
MATH 3125	Linear Algebra II	PHYS 3165	Electromagnetic Theory I
MATH 3257	Introduction to Complex Variables	PHYS 3166	Electromagnetic Theory II
MATH 3342	Ordinary Differential Equations	PHYS 3167	Principles of Quantum Physics
MATH 3343	Partial Differential Equations	PHYS 3181	Computational Physics
MATH 3359	Introduction to Mathematical Modeling	PHYS 4170	Solid-State Physics
MATH 3410	Mathematics of Finance	PHYS 4175	Nuclear Physics
MATH 3411	Stochastic Calculus Methods in Finance	PSC 2101	Scope and Methods of Political Science
MATH 3553	Introduction to Numerical Analysis	PSC 2102	Visualizing and Modeling Politics
MATH 3613	Introduction to Combinatorics	PSYC 4106W	Research Lab in Sensation and Perception
MATH 3632	Introduction to Graph Theory	PSYC 4107W	Research Lab in Cognitive Neuroscience
MATH 3710	Introduction to Mathematical Logic	PSYC 4201W	Research Lab in Clinical/Community Psychology
MATH 3720	Axiomatic Set Theory	PSYC 4203W	Research Lab in Developmental Psychology
MATH 3730	Computability Theory	PUBH 2110	Public Health Biology
MATH 3740	Computational Complexity		
MATH 3806	Introduction to Topology		

PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3152	Qualitative Research Methods in Public Health
PUBH 3201	Introduction to Bioinformatics
STAT 2112	Business and Economic Statistics II
STAT 2118	Regression Analysis
STAT 2123	Introduction to Econometrics
STAT 2183 or STAT 2183W	Intermediate Statistics Lab/Packages Intermediate Statistical Laboratory: Statistical Computing Packages
STAT 3119	Analysis of Variance
STAT 3187 or STAT 3187W	Introduction to Sampling Introduction to Sampling
STAT 4157	Introduction to Mathematical Statistics I
STAT 4158	Introduction to Mathematical Statistics II
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Statistics Inference
STAT 4189	Mathematical Probability and Applications I
STAT 4190	Mathematical Probability and Applications II
STAT 4197	Fundamentals of SAS Programming for Data Management

Concentration or second major option (15 or more credits)

A concentration represents an academic and professional specialization within the field of international affairs. Students in the BS in international affairs program may complete one of the functional or regional concentrations listed below or they may take 15 credits in courses that count toward a second major.

- Concentrations consist of five courses (15 credits) relating to the functional or regional themes below.
- Concentrations must consist of courses from at least two different academic departments.
- Concentrations and second majors must be declared no later than the end of the second semester of the student's sophomore year. Concentrations must be declared by completing the online Concentration Declaration Form (<https://form.jotform.us/ESIA/concentration-declaration/>).

- With the exception of WID courses, courses may not be double-counted between any international affairs requirements.
- A minimum grade of C- must be earned in all concentration courses.

Functional Concentrations

- Comparative Political, Economic, and Social Systems (p. 871)
- Conflict Resolution (p. 873)
- Contemporary Cultures and Societies (p. 876)
- Global Public Health (p. 879)
- International Development (p. 880)
- International Economics (p. 883)
- International Environmental Studies (p. 885)
- International Politics (p. 886)
- Security Policy (p. 892)

Regional Concentrations

- Africa (p. 868)
- Asia (p. 869)
- Europe and Eurasia (p. 878)
- Latin America (p. 890)
- Middle East (p. 891)

Electives

In consultation with an academic advisor, students complement their required coursework with elective courses to complete their second major or fulfill remaining credit hour requirements.

Foreign language requirement

Students must demonstrate third-year proficiency in a modern foreign language by examination or coursework. Additional information regarding the Elliott School foreign language examinations is available from the academic advisor. This requirement is waived automatically for students who were required to take the TOEFL or IELTS examination as part of GW's admissions process.

Code	Title	Credits
Arabic		
Option one:		
ARAB 1001	Beginning Arabic I	
ARAB 1002	Beginning Arabic II	
ARAB 2001	Intermediate Arabic I	
ARAB 2002	Intermediate Arabic II	
ARAB 3001	Advanced Arabic	

and one course from the following:

ARAB 3301 Modern Arabic Literature

ARAB 3302 Media Arabic

ARAB 3311 Business Arabic

Or

Option two:

ARAB 1201 Intensive Elementary Arabic I

ARAB 1202 Intensive Elementary Arabic II

ARAB 2201 Intensive Intermediate Arabic

ARAB 3201 Intensive Advanced Arabic: Mass Media

Code	Title	Credits
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Chinese

CHIN 1001	Beginning Chinese I	
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CHIN 1002	Beginning Chinese II	
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CHIN 2003	Intermediate Chinese I	
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CHIN 2004	Intermediate Chinese II	
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CHIN 3105	Intermediate Chinese III	
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CHIN 3106	Intermediate Chinese IV	
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Code	Title	Credits
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French

FREN 1001	Basic French I	
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FREN 1002	Basic French II	
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FREN 1003	Intermediate French I	
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FREN 1004	Intermediate French II	
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FREN 2005	Language, Culture, and Society I	
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FREN 2006	Language, Culture, and Society II	
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Code	Title	Credits
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German

Option one:

GER 1001	First-Year German I	
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GER 1002	First-Year German II	
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GER 1003	Second-Year German I	
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GER 1004	Second-Year German II	
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and one of the following sequences:

GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
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GER 2101 & GER 2102	Readings in Contemporary German I and Readings in Contemporary German II	
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Or

Option two:

GER 1005	Intensive Beginning German I	
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GER 1006	Intensive Beginning German II	
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and one of the following sequences:

GER 2009 & GER 2010	Intermediate German I and Intermediate German II	
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GER 2101 & GER 2102	Readings in Contemporary German I and Readings in Contemporary German II	
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Code	Title	Credits
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Hebrew

HEBR 1001	Beginning Hebrew I	
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HEBR 1002	Beginning Hebrew II	
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HEBR 2001	Intermediate Hebrew I	
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HEBR 2002	Intermediate Hebrew II	
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HEBR 3001	Hebrew Conversation and Writing	
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and one course from the following:

HEBR 3301	Modern Hebrew Fiction	
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HEBR 3302	The Israeli Media	
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Code	Title	Credits
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Italian

ITAL 1001	Basic Italian I	
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ITAL 1002	Basic Italian II	
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ITAL 1003	Intermediate Italian I	
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ITAL 1004	Intermediate Italian II	
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ITAL 2005	Language, Culture, and Society I	
ITAL 2006	Language, Culture, and Society II	
Code	Title	Credits
Japanese		
JAPN 1001	Beginning Japanese I	
JAPN 1002	Beginning Japanese II	
JAPN 2003	Intermediate Japanese I	
JAPN 2004	Intermediate Japanese II	
JAPN 3105	Intermediate Japanese III	
JAPN 3106	Intermediate Japanese IV	
Code	Title	Credits
Korean		
KOR 1001	Beginning Korean I	
KOR 1002	Beginning Korean II	
KOR 2003	Intermediate Korean I	
KOR 2004	Intermediate Korean II	
KOR 3105	Intermediate Korean III	
KOR 3106	Intermediate Korean IV	
Code	Title	Credits
Persian		
PERS 1001	Beginning Persian I	
PERS 1002	Beginning Persian II	
PERS 2001	Intermediate Persian I	
PERS 2002	Intermediate Persian II	
PERS 3001	Advanced Persian	
PERS 3002	Media Persian	
Code	Title	Credits
Portuguese		
Portuguese course offerings are dependent on faculty availability.		
Option one:		

PORT 1001	Basic Portuguese I	
PORT 1002	Basic Portuguese II	
PORT 1003	Intermediate Portuguese I	
PORT 1004	Intermediate Portuguese II	
PORT 2005	Composition and Conversation	
PORT 2006	Applied Portuguese Grammar	
Or		
Option two:		
PORT 1012	Intensive Basic Portuguese	
PORT 1003	Intermediate Portuguese I	
PORT 1004	Intermediate Portuguese II	
PORT 2005	Composition and Conversation	
PORT 2006	Applied Portuguese Grammar	
Code	Title	Credits
Russian		
Option one:		
SLAV 1001	First-Year Russian I	
SLAV 1002	First-Year Russian II	
SLAV 1003	Second-Year Russian I	
SLAV 1004	Second-Year Russian II	
and one of the following sequences:		
SLAV 2005 & SLAV 2006	Intermediate Russian I and Intermediate Russian I	
SLAV 1013 & SLAV 1014	Russian for Heritage Speakers I and Russian for Heritage Speakers II	
SLAV 2015 & SLAV 2016	Readings in the Russian Press I and Readings in the Russian Press II	
Or		
Option two:		
SLAV 1012	Intensive Basic Russian I	
SLAV 1034	Intensive Basic Russian II	
and one of the following sequences:		
SLAV 2005 & SLAV 2006	Intermediate Russian I and Intermediate Russian I	

SLAV 1013
& SLAV 1014 Russian for Heritage Speakers I
and Russian for Heritage Speakers II

SLAV 2015
& SLAV 2016 Readings in the Russian Press I
and Readings in the Russian Press II

Code	Title	Credits
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Spanish

Option one:

SPAN 1011 Intensive Beginning Spanish: the
Spanish-speaking world

or SPAN 1012 Intensive Elementary Spanish: the Spanish-
speaking world

SPAN 1013 Intermediate Spanish I: the Spanish-
speaking world

SPAN 1014 Intermediate Spanish II: the Spanish-
speaking world

SPAN 2005 Advanced Spanish I

SPAN 2006 Advanced Spanish II

Or

Option two:

SPAN 1012 Intensive Elementary Spanish: the
Spanish-speaking world

SPAN 1034 Intensive Intermediate Spanish

SPAN 2056 Intensive Advanced Spanish

Or

Option three:

SPAN 1013 Intermediate Spanish I: the Spanish-
speaking world

SPAN 1014 Intermediate Spanish II: the Spanish-
speaking world

SPAN 2026 Advanced Spanish for Heritage
Learners *

Or

Option four:

SPAN 1034 Intensive Intermediate Spanish

or SPAN 1134 Intensive Intermediate Spanish for Heritage
Learners

SPAN 2026 Advanced Spanish for Heritage
Learners *

Or

Option five:

SPAN 1013 Intermediate Spanish I: the Spanish-
speaking world

SPAN 1014 Intermediate Spanish II: the Spanish-
speaking world

SPAN 2005 Advanced Spanish I

SPAN 2006 Advanced Spanish II

or SPAN 2026 Advanced Spanish for Heritage Learners

*Spanish language options three and four require an interview prior to enrolling in SPAN 2026. Please contact the Department of Romance, German, and Slavic Languages and Literatures for additional information about these options.

CONCENTRATIONS

All students in the BA in international affairs program must complete either a functional or regional concentration, which are listed below. Students in the BS in international affairs program may complete one of these concentrations or they may take 15 credits in courses that count toward a second major in a STEM-related discipline.

To fulfill the concentration requirement, students complete five courses (15 credits) relating to their chosen functional or regional theme. These courses must be taken in at least two different academic departments. Students must declare a concentration no later than the end of the second semester of their sophomore year by completing the Concentration Declaration Form (<https://form.jotform.us/ESIA/concentration-declaration/>). With the exception of WID courses, courses may not be double-counted between any international affairs requirements. A minimum grade of C- must be earned in all concentration courses.

Concentrations

Functional concentrations

- Comparative Political, Economic, and Social Systems (p. 871)
- Conflict Resolution (p. 873)
- Contemporary Cultures and Societies (p. 876)
- Global Public Health (p. 879)
- International Development (p. 880)
- International Economics (p. 883)
- International Environmental Studies (p. 885)

- International Politics (p. 886)
- Security Policy (p. 892)

Regional concentrations

- Africa (p. 868)
- Asia (p. 869)
- Europe and Eurasia (p. 878)
- Latin America (p. 890)
- Middle East (p. 891)

DUAL BS IN INTERNATIONAL AFFAIRS AND MS IN INFORMATION SYSTEMS TECHNOLOGY

The Elliott School for International Affairs (ESIA) and GW School of Business (GWSB) offer a dual bachelor of science in international affairs (p. 919) and master of science in information systems (p. 581) degree program. The combined program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the ESIA (<https://elliott.gwu.edu/>) and GWSB (<https://business.gwu.edu/academics/programs/undergraduate/bs-information-systems/>) websites for additional information.

DUAL BS IN INTERNATIONAL AFFAIRS AND MASTER IN MANAGEMENT

The Elliott School for International Affairs and GW School of Business offer a dual bachelor of science in international affairs (p. 919) and master in management (p. 572) degree program. The combined program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the ESIA (<https://elliott.gwu.edu/>) and GWSB (<https://business.gwu.edu/>) websites for additional information.

DUAL BS IN INTERNATIONAL AFFAIRS AND MS IN BUSINESS ANALYTICS

The Elliott School for International Affairs and GW School of Business offer a dual bachelor of science in international affairs (p. 919) and master of science in the field of business analytics (p. 581) degree program. The combined program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number

of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the ESIA (<https://elliott.gwu.edu/undergraduate-academics/>) and GWSB (<https://gsehd.gwu.edu/academics/>) websites for additional information.

MINOR IN INTERNATIONAL AFFAIRS

The following requirements must be fulfilled: 18 to 21 credits in coursework for the minor and 0 to 8 credits of foreign language, as outlined below.

A minimum grade of C- is required in all courses taken to satisfy the minor.

Foreign language (0 to 8 credits)

Students must demonstrate first-year proficiency in a modern foreign language by examination or coursework. Additional information regarding the Elliott School foreign language examinations is available from the academic advisor.

Code	Title	Credits
Arabic		
ARAB 1001 & ARAB 1002	Beginning Arabic I and Beginning Arabic II	
or ARAB 1201 & ARAB 1202	Intensive Elementary Arabic I and Intensive Elementary Arabic II	
Chinese		
CHIN 1001 & CHIN 1002	Beginning Chinese I and Beginning Chinese II	
French		
FREN 1001 & FREN 1002	Basic French I and Basic French II	
German		
GER 1001 & GER 1002	First-Year German I and First-Year German II	
Hebrew		
HEBR 1001 & HEBR 1002	Beginning Hebrew I and Beginning Hebrew II	
Italian		
ITAL 1001 & ITAL 1002	Basic Italian I and Basic Italian II	
Japanese		

JAPN 1001 & JAPN 1002	Beginning Japanese I and Beginning Japanese II
Korean	
KOR 1001 & KOR 1002	Beginning Korean I and Beginning Korean II
Persian	
PERS 1001 & PERS 1002	Beginning Persian I and Beginning Persian II
Portuguese	
PORT 1001 & PORT 1002	Basic Portuguese I and Basic Portuguese II
Russian	
SLAV 1001 & SLAV 1002	First-Year Russian I and First-Year Russian II
or SLAV 1012	Intensive Basic Russian I
Spanish	
SPAN 1011	Intensive Beginning Spanish: the Spanish-speaking world
or SPAN 1012	Intensive Elementary Spanish: the Spanish- speaking world
Turkish	
TURK 1001 & TURK 1002	Beginning Turkish I and Beginning Turkish II

Advanced fundamentals

Anthropology or geography (3 credits)

One of the following courses in anthropology or geography relevant to international affairs. Many of these courses have lower-level prerequisites as detailed in course descriptions in this Bulletin.

Code	Title	Credits
ANTH 2501	The Anthropology of Gender: Cross-Cultural Perspectives	
ANTH 2506	Religion, Myth, and Magic	
ANTH 3501	Anthropology of Development	
or IAFF 3501	International Development Theory, Policy, and Practice	
ANTH 3502	Cultural Ecology	
ANTH 3503	Psychological Anthropology	

ANTH 3504	Illness, Healing, and Culture
ANTH 3506	Politics, Ethnicity, and Nationalism
ANTH 3507	Kinship, Family, and Community
ANTH 3508	Art and Culture
ANTH 3513	Anthropology of Human Rights
or IAFF 3513	Human Rights and Ethics
ANTH 3601	Language, Culture, and Cognition
ANTH 3691	Special Topics in Linguistic Anthropology (Language and Religion)
IAFF 3501	International Development Theory, Policy, and Practice
or ANTH 3501	Anthropology of Development
IAFF 3513	Human Rights and Ethics
or ANTH 3513	Anthropology of Human Rights
GEOG 2120	World Regional Geography
GEOG 2125	Transportation Systems and Networks
GEOG 2127	Population Geography
GEOG 2133	People, Land, and Food
GEOG 2134	Energy Resources
GEOG 2136	Water Resources
GEOG 2137	Environmental Hazards
GEOG 2141	Cities in the Developing World
GEOG 2147	Military Geography
GEOG 2148	Economic Geography
GEOG 3132	Environmental Quality and Management
GEOG 3143	Urban Sustainability
GEOG 3145	Cultural Geography
GEOG 3146	Political Geography
GEOG 3810	Planning Cities

Historical analysis: U.S. foreign policy (3 credits)

One of the following courses pertaining to the history of the U.S. approach to contemporary international affairs.

Code	Title	Credits
HIST 2340	U.S. Diplomatic History	
HIST 3035	The United States and the Wars in Indochina, 1945-1975	
HIST 3332	History of American Foreign Policy Since World War II (I)	
HIST 3333	History of American Foreign Policy Since World War II (II)	
IAFF 3180W	Special Topics in Security Policy (U.S. Grand Strategy)	

International and comparative politics (3 credits)

One of the following courses pertaining to international political issues and theories from either an international relations or comparative politics perspective:

Code	Title	Credits
IAFF 2040	Basic Topics in International Affairs (topic: Ethics in International Affairs. Same as PSC 2990: Ethics in International Affairs)	
IAFF 2444 or PSC 2444	International Law Public International Law	
IAFF 3180W	Special Topics in Security Policy (International Politics and Security Policy)	
IAFF 3190	Special Topics in International Affairs (Global Governance)	
IAFF 3190 or PSC 2444	Special Topics in International Affairs (International Law) Public International Law	
IAFF 3190	Special Topics in International Affairs (Issues in Contemporary Diplomacy and National Security)	
IAFF 4191W	Research Seminar (International Politics and Security Policy)	
PSC 2334	Global Perspectives on Democracy	
PSC 2336	State-Society Relations in the Developing World	
PSC 2337	Development Politics	
PSC 2338	Nationalism	
PSC 2339	Comparative Political Economy	

PSC 2439	International Political Economy
PSC 2440	Theories of International Politics
PSC 2442	International Organizations
PSC 2444 or IAFF 2444	Public International Law International Law
PSC 2446	U.S. Foreign Policy
PSC 2449	International Security Politics
PSC 2990	Selected Topics (topic: Ethics in International Affairs. Same as IAFF 2040: Ethics in International Affairs)
PSC 2991	Special Topics in Political Thought (Global Justice)
PSC 2994	Special Topics in International Relations (U.S. Foreign Policy)

International economics (3 or 6 credits)

One or two courses pertaining to the theory of international economics, selected from one of the following three options:

Code	Title	Credits
Option One (3 credits):		
ECON 2180	Survey of International Economics	
Option Two (6 credits):		
ECON 2181 & ECON 2182	International Trade Theory and Policy and International Macroeconomic Theory and Policy	
Option Three (6 credits):		
ECON 2182 & ECON 3181	International Macroeconomic Theory and Policy and International Trade Theory	

The following courses are required as prerequisites for ECON 3181: ECON 2101 or ECON 2103; and MATH 1221 or MATH 1231 or MATH 1252.

Credit cannot be earned for both ECON 2181 and ECON 3181.

Regional foundations

Students take two courses (at least 6 credits) from the following to gain an understanding of two regions of the world outside of the United States. These courses must be taken in two different regions.

Code	Title	Credits	
Africa			PSC 3192W Proseminar: Political Science (Government and Politics of Africa)
ANTH 3708	Anthropology of Africa		Asia (Students in the BA in Asian studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Asia.)
ECON 2198	Special Topics in Economics - Regional (Economics of Africa)		ANTH 3703 Cultures of the Pacific
GEOG 3164	The Geography of Africa		ANTH 3704 Cultures of Southeast Asia
HIST 3501	Topics: Africa (African History Since 1880)		ANTH 3705 Anthropology of East Asia
HIST 3530	Women in Africa		ANTH 3791 Topics in Regional Anthropology (Anthropology of South Asia)
HIST 3540	West Africa to Independence		ECON 2198 Special Topics in Economics - Regional (East Asian Economies)
IAFF 2093	Africa: Problems and Prospects		GEOG 3165 Geography of South Asia
IAFF 2190W	Special Topics (North Africa and the World) *		HIST 3640 History of Southeast Asia
IAFF 2190W	Special Topics (Rising Africa and the World)		HIST 3650 Modern South Asia, 1750-Present
IAFF 3189	Special Topics in African Studies (Ethnic and Religious Conflict in Africa)		IAFF 2091 East Asia-Past and Present
IAFF 3189	Special Topics in African Studies (International Relations in Africa)		IAFF 3186 Special Topics in Asian Studies (Asian Order and Community Building)
IAFF 3189	Special Topics in African Studies (New African Security Frontier)		IAFF 3186 Special Topics in Asian Studies (Current Events in East Asia)
IAFF 3189	Special Topics in African Studies (Religion in Africa)		IAFF 3186 Special Topics in Asian Studies (Development Issues in Southeast Asia)
IAFF 3189	Special Topics in African Studies (Security Challenges in Africa)		IAFF 3186 Special Topics in Asian Studies (East Asian Security)
IAFF 3189	Special Topics in African Studies (Transnational Justice in Africa)		IAFF 3186 Special Topics in Asian Studies (History and Politics of South Asia)
IAFF 3189	Special Topics in African Studies (Women and Leadership in Africa)		IAFF 3186 Special Topics in Asian Studies (Indo- Pacific Security Challenges)
IAFF 3190	Special Topics in International Affairs (Africa: Declassified)		IAFF 3186 Special Topics in Asian Studies (International Relations of South Asia)
IAFF 3190	Special Topics in International Affairs (China and Africa)		IAFF 3186 Special Topics in Asian Studies (Memory and Reconciliation: Asia)
PSC 2381	Comparative Politics of Sub-Saharan Africa		IAFF 3186 Special Topics in Asian Studies (Politics and Conflict of South Asia)
PSC 2482	African International Politics		IAFF 3190 Special Topics in International Affairs (Human Rights and Democracy in Southeast Asia)
PSC 3192W	Proseminar: Political Science (Comparative Politics of Africa)		PSC 2369 Comparative Politics of South Asia
PSC 3192W	Proseminar: Political Science (Development Challenges in Africa)		PSC 2373 Comparative Politics of Southeast Asia
			PSC 2475 International Relations of East Asia

PSC 3192W	Proseminar: Political Science (Politics and Protest in East Asia)
PSC 3192W	Proseminar: Political Science (Protest and Participation in East Asia)
Europe and Eurasia	
ECON 2199	Special Topics in Economics (Economics of the EU)
HIST 1121	The War of Ideas in European and International History, 1750-Present
HIST 2125	Twentieth-Century Europe
HIST 3126	European Integration: A History
HIST 3178	The Making of the Modern Balkans
IAFF 2092	Russia and Eastern Europe: An Introduction
IAFF 2094	Europe: International and Domestic Interactions
IAFF 3185	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union)
IAFF 3185	Special Topics in European and Eurasian Studies (The European Union and Russia)
IAFF 3190	Special Topics in International Affairs (European Economies and Crisis of Integration)
IAFF 4191W	Research Seminar (Europe)
PSC 2330	Comparative Politics of Western Europe
PSC 2331	Comparative Politics of Central and Eastern Europe
PSC 2332	European Integration
PSC 2994	Special Topics in International Relations (International Politics of Central and Eastern Europe)
Latin America (Students in the BA in Latin American and hemispheric studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than Latin America.)	
ANTH 3702	Anthropology of Latin America
ECON 2185	Economic History and Problems of Latin America

GEOG 3161	Geography of Latin America
HIST 3701	Topics in Latin American History (Latin America and the World Since 1820)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 2090	Latin America: Problems and Promise
IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 3194W	Latin America's Violent Peace
PSC 2383	Comparative Politics of Latin America
PSC 2484	International Relations of Latin America
Middle East (Students in the BA in Middle East studies program must fulfill the Regional Foundations requirement using a course focused in a world region other than the Middle East.)	
ANTH 3707	Anthropology of the Middle East
GEOG 3154	Geography of the Middle East and North Africa
HIST 3801	Topics in Middle Eastern History (Gender and the Middle East)
HIST 3810	History of the Middle East to 1800
HIST 3811	The Emergence of the Modern Middle East
IAFF 2095	The Middle East in International Affairs
IAFF 2190W	Special Topics (Arab Politics)
IAFF 2190W	Special Topics (Challenges and Change in the Middle East)
IAFF 2190W	Special Topics (North Africa and the World)
IAFF 2190W	Special Topics (Politics and Culture in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (The Middle East Since WWII)

IAFF 3188	Special Topics in Middle East Studies (Militaries and Politics in the Middle East)
IAFF 3188	Special Topics in Middle East Studies (Political Islam)
IAFF 3188	Special Topics in Middle East Studies (Security Issues in the Greater Middle East)
IAFF 3188	Special Topics in Middle East Studies (U.S. Policy in the Persian Gulf)
IAFF 4191	Research Seminar (Political Islam)
PSC 2377	Comparative Politics of the Middle East
PSC 2478	International Relations of the Middle East
*IAFF 2190W (North Africa and the World) is not approved as a Regional Foundations course for students in the Middle East Studies program due to the degree of overlap between issues in North Africa and the Middle East.	

GRADUATE PROGRAMS

Master's programs

- Master of Arts in the field of Asian studies (p. 943)
- Master of Arts in the field of European and Eurasian studies (p. 952)
- Master of Arts in the field of global communication (p. 960)
- Master of Arts in the field of international affairs (p. 970)
- Master of Arts in the field of international development studies (p. 986)
- Master of Arts in the field of international economic policy (p. 999)
- Master of Arts in the field of international economic policy, STEM Track (p. 1000)
- Master of Arts in the field of international science and technology policy (p. 1001)
- Master of Arts in the field of international trade and investment policy (p. 1004)
- Master of Arts in the field of Latin American and hemispheric studies (p. 1006)
- Master of Arts in the field of Middle East studies (p. 1012)
- Master of Arts in the field of security policy studies (p. 1027)
- Master of International Policy and Practice (p. 1032)
- Master of International Policy and Practice - Online (p. 1033)
- Master of International Studies (p. 1034)

Combined programs

- Dual Master of Arts in any Elliott School graduate program and Master of Public Health (p. 1036)
- Joint Master of Arts and Juris Doctor (p. 1036)
- Joint Master of Arts in Elliott School programs and Master of Business Administration (p. 1037)

MASTER OF ARTS IN THE FIELD OF ASIAN STUDIES

The Sigur Center for Asian Studies at the Elliott School administers the MA program in Asian studies and offers students many valuable resources and opportunities. The program is directed by a large, renowned faculty whose expertise includes foreign affairs, security and policy, language and culture, economics, and history of East, Southeast, and South Asia. The highly diverse and experienced faculty prepares students for careers in the public, private, and non-profit sectors through rigorous coursework in political science, history, and international affairs. To supplement studies in Washington, D.C., the Sigur Center also provides funding for summer language study and research projects in Asia.

Visit the program website (<https://elliott.gwu.edu/academics/graduate/asian-studies/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 9 credits in core field courses, a 4-credit capstone sequence, 9 credits in a thematic specialization courses, 6 credits in a professional specialization, a 3-credit research methods course, and 9 credits in elective courses. In addition, all students must fulfill a foreign language proficiency requirement (see below).

See notes regarding special topics and skills courses, the capstone sequence, and the thesis option*.

Code	Title	Credits
Required		
Core courses (9 credits)		
HIST 6602	Asia: History, Memory, and Violence	
PSC 6475	International Politics of East Asia	
PSC 6373	Political Economy of Industrializing Asia	
Capstone sequence (4 credits)		

Students complete a two-course capstone sequence that most closely matches the thematic area of their project. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898	Capstone Workshop
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IAFF 6899	Capstone Course
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Thematic specialization (9 credits)

Three courses in a thematic specialization. Students may design their own field with the approval of the Program Director, or select one of the specializations listed below.

Professional specialization (6 credits)

Two courses in a professional specialization. Students may design their own field with the approval of the Program Director, or select one of the specializations listed below.

Research methods course (3 credits)

Research methods courses are listed below under professional specializations. The course selected to fulfill this requirement cannot also count toward the 2-course requirement for the professional specialization.

Electives (9 credits)

9 credits in elective courses. Students may use elective credits for foreign language, background coursework, or 1-credit skills courses.

Skills courses

Skills courses are designed to supplement substantive graduate coursework with practical skills and knowledge that students need to perform effectively in the workplace. A maximum of three one-credit skills courses may be taken as electives.

IAFF 6502	Professional Skills I
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IAFF 6503	Professional Skills II
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IAFF 6504	Intermediate Conversation
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Additional thesis option

Students who wish to complete a thesis do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum GPA of 3.5 and approval from the faculty member who will serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits are counted as elective or specialization credits with Program Director approval. The two 3-credit thesis courses must be taken consecutively.

IAFF 6998	Thesis
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IAFF 6999	Thesis
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Thematic specialization courses (9 credits)

Code	Title	Credits
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Three courses from one of the following areas. Courses taken for the thematic specialization cannot also be counted toward the professional specializations or vice versa.

History of Modern Asia

HIST 6001	Special Topics (China-Japan Relations in History)
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HIST 6001	Special Topics (Gender, Power, and Sexuality in East Asia)
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HIST 6301	Topics: U.S. History (U.S.-Asia Relations)
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HIST 6601	Topics: Asian History (China-Japan Relations in History)
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HIST 6601	Topics: Asian History (Geography and Politics of Afghanistan and South and Central Asia)
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HIST 6610	Readings Seminar: Late Imperial China
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HIST 6611	Readings Seminar: Twentieth-Century China
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HIST 6625	Japan's Empire and Its Legacies
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HIST 6630	Special Topics in Korean History (Modern Korea)
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HIST 6641	Modern Southeast Asia
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HIST 6801	Topics in Middle Eastern History (Central Asia: Crossroads of Empire)
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PSC 6388	Topics in Comparative Politics (Vietnam Post War)
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Politics and Policy in Asia

HIST 6601	Topics: Asian History (Geography and Politics of Afghanistan and South and Central Asia)
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IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)
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IAFF 6302	Taiwan: Internal Development and Foreign Policy
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IAFF 6318	Special Topics in Asian Studies (Chinese Business Law)
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IAFF 6318	Special Topics in Asian Studies (Chinese Law and Legal Institutions)
IAFF 6318	Special Topics in Asian Studies (Law of the People's Republic of China)
PSC 6368	Japanese Politics and Foreign Policy
PSC 6370	Politics of China I
PSC 6371	Politics of China II
PSC 6374	Korean Politics
PSC 6388	Topics in Comparative Politics (Political Economy of India)
PSC 6388	Topics in Comparative Politics (Politics and Policy in Asia)
PSC 6388	Topics in Comparative Politics (State and Society in East Asia)

International Relations of Asia

HIST 6301	Topics: U.S. History (U.S.-Asia Relations)
HIST 6625	Japan's Empire and Its Legacies
IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)
IAFF 6302	Taiwan: Internal Development and Foreign Policy
IAFF 6305	U.S.-South Asia Relations
IAFF 6308	International Relations of South Asia
PSC 6372	Foreign Policy of China
PSC 6467	Asian Security
PSC 6489	Topics in International Relations (U.S.-China Relations)

Asian Business and Development

ECON 6269	Economy of China I
ECON 6270	Economy of China II
IAFF 6318	Special Topics in Asian Studies (Chinese Business Law)
MBAD 6290	Special Topics (Chinese Economy and the Business Environment)
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6388	Topics in Comparative Politics (The Political Economy of India)

Culture, Art, and Relations of Asia

AH 6262	Seminar in South Asian Art
AH 6265	Seminar in Islamic Art and Architecture
CHIN 3163	Taiwanese Literature and Film
or CHIN 6163	Taiwanese Literature and Film
CHIN 6109	Introduction to Classical Chinese I
CHIN 6110	Introduction to Classical Chinese II
CHIN 6111	Chinese Literature in Translation
CHIN 6112	Chinese Literature in Translation II
ENGL 6260	Seminar in Medieval and Early Modern Studies (Screening Race, Gender and Shakespeare)
ENGL 6510	Writing, Race, and Nation (Asian North American Literature)
ENGL 6560	Postcolonialism (Representing Displacement: Gender, Religion and Migration in Postcolonial South Asia and Beyond)
REL 3990	Selected Topics in Religion (India's Great Epics)
or REL 6557	India's Great Epics

China/Taiwan

CHIN 3163	Taiwanese Literature and Film
or CHIN 6163	Taiwanese Literature and Film
CHIN 3173	Chinese Drama and Theatre
or CHIN 6173	Traditional Chinese Theatre and Drama
CHIN 6111	Chinese Literature in Translation
CHIN 6112	Chinese Literature in Translation II
CHIN 6123	Structure of Chinese
CHIN 6125	History of the Chinese Language
CHIN 6126	Chinese Phonology
CHIN 6128	Chinese Semantics
CHIN 6173	Traditional Chinese Theatre and Drama
CHIN 6180	Twentieth-Century Chinese Literature II
CHIN 6201	Second Language Acquisition of Mandarin Chinese

CHIN 6841	Religion and Politics in China
EALL 3881	Women, Gender, and Religion in China
or EALL 6881	Women, Gender, and Religion in China
ECON 6269	Economy of China I
ECON 6270	Economy of China II
HIST 6001	Special Topics (China-Japan Relations in History)
HIST 6601	Topics: Asian History (China-Japan Relations in History)
HIST 6610	Readings Seminar: Late Imperial China
HIST 6611	Readings Seminar: Twentieth-Century China
IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)
IAFF 6302	Taiwan: Internal Development and Foreign Policy
IAFF 6318	Special Topics in Asian Studies (Chinese Business Law)
IAFF 6318	Special Topics in Asian Studies (Chinese Law and Legal Institutions)
IAFF 6318	Special Topics in Asian Studies (Law of the People's Republic of China)
MBAD 6290	Special Topics (Chinese Economy and Business Environment)
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6370	Politics of China I
PSC 6371	Politics of China II
PSC 6372	Foreign Policy of China
PSC 6489	Topics in International Relations (U.S.-China Relations)

Korea

HIST 6001	Special Topics (topic: History of North Korea. Same as HIST 3001: History of North Korea)
HIST 6625	Japan's Empire and Its Legacies
HIST 6630	Special Topics in Korean History *

IAFF 6318 Special Topics in Asian Studies (topic: Politics of the Past in Korea. Same as IAFF 3186: Politics of the Past in Korea)

KOR 3111	Korean Literature in Translation
KOR 3162	Korean Culture through Film
PSC 6374	Korean Politics

Japan

HIST 3621	History of Modern Japan
HIST 6601	Topics: Asian History (China-Japan Relations in History)
HIST 6625	Japan's Empire and Its Legacies
JAPN 3111	Japanese Literature in Translation I
JAPN 3112	Japanese Literature in Translation II
JAPN 3162	Japanese Culture Through Film
PSC 6368	Japanese Politics and Foreign Policy
PSC 6388	Topics in Comparative Politics (State and Society in East Asia)

Professional specialization courses (6 credits)

Code	Title	Credits
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Two courses from one of the following professional specialization fields. Courses taken for the professional specialization cannot also be counted toward the thematic specializations or vice versa.

Conflict and Conflict Resolution

GEOG 6224	Seminar: Political Geography
IAFF 6171	Introduction to Conflict Resolution
IAFF 6186	Special Topics in Security Policy Studies (Conflict Early Warning and Prevention)
IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
IAFF 6186	Special Topics in Security Policy Studies (Political Violence and Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)

IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)
MGT 6215	Conflict Management and Negotiations
PSC 6476	The Arab-Israeli Conflict
Global Communication and Public Diplomacy	
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education *
IAFF 6208	Special Topics in Global Communication (Public Diplomacy)
or SMPA 6275	Public Diplomacy
PUBH 6571	Social Marketing: Theory and Practice
SMPA 6204	Strategic Political Communication
SMPA 6205	Media, Development, and Globalization
SMPA 6270	Special Topics in Media and Public Affairs (Development, Governance, and Digital Technology)
SMPA 6274	Media and War
International Development	
Required	
IAFF 6108	International Development Policy
Supporting courses:	
A. Anthropology	
ANTH 6301	The Anthropology of Development
ANTH 6302	Issues in Development *
ANTH 6331	Research Methods in Development Anthropology
ANTH 6391	Anthropology and Contemporary Problems
ANTH 6505	Medical Anthropology
ANTH 6508	Ethics and Cultural Property
ANTH 6591	Topics in Sociocultural Anthropology *
PPPA 6006	Policy Analysis
B. Environment	

ECON 6237	Economics of the Environment and Natural Resources
EMSE 6200	Policy Factors in Environmental and Energy Management
EMSE 6290	Climate Change: Policy, Impacts, and Response
GEOG 6223	Seminar: Population and Health
GEOG 6244	Urban Sustainability
GEOG 6250	Geographical Perspectives on Development
IAFF 6138	Special Topics in International Development Studies (Agriculture and Sustainable Development)
IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Renewable Energy in a Decarbonizing World)
PHIL 6281	Environmental Philosophy and Policy
PPPA 6066	U.S. Environmental Policy
PUBH 6130	Sustainable Energy and the Environment
C. Humanitarian Assistance	
EMSE 6305	Crisis and Emergency Management
EMSE 6320	International Disaster Management
GEOG 6224	Seminar: Political Geography
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (M&E for Foreign Assistance Programs)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender and Humanitarian Assistance)

PUBH 6430	Theories for Global Health Communication Interventions	EDUC 6610	Programs and Policies in International Education
PUBH 6442	Comparative Global Health Systems	EDUC 6620	Strategies and Analysis in International Education
PUBH 6503	Introduction to Public Health Communication and Marketing	EDUC 6640	Selected Topics in International Education *
D. International Development Management		EDUC 6650	Education and National Development
ECON 6250	Survey of Economic Development	F. Global Health	
EMSE 6820	Program and Project Management	ANTH 6505	Medical Anthropology
IAFF 6108	International Development Policy	PUBH 6430	Theories for Global Health Communication Interventions
IAFF 6118	Special Topics in International Affairs (Managing the World's Waters)	PUBH 6442	Comparative Global Health Systems
IAFF 6138	Special Topics in International Development Studies (Local Government, Decentralization and Development)	PUBH 6503	Introduction to Public Health Communication and Marketing
IAFF 6138	Special Topics in International Development Studies (Poverty and Bottom-Up Development)	G. Women and Development	
IAFF 6138	Special Topics in International Development Studies (Private Sector Development)	ANTH 6501	Gender and Sexuality
IBUS 6402	Managing in Developing Countries	GEOG 6223	Seminar: Population and Health
PPPA 6049	Urban and Regional Policy Analysis	IAFF 6102	Global Gender Policy
PPPA 6057	International Development Administration	IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)
PPPA 6058	International Development NGO Management	IAFF 6138	Special Topics in International Development Studies (Gender and Development)
PPPA 6059	International Development Management Processes and Tools	IAFF 6138	Special Topics in International Development Studies (Gender and Economic Development)
PPPA 6062	Community Development Policy and Management	IAFF 6138	Special Topics in International Development Studies (Violence, Gender and Humanitarian Assistance)
PPPA 6081	Poverty and Social Policy	MGT 6290	Special Topics (Women's Entrepreneurial Leadership)
SMPA 6250	Topics in Media Processes and Institutions *	SOC 6273	The Sex Industry
E. International Education		WGSS 6230	Global Feminisms
EDUC 6100	Experimental Courses *	WGSS 6270	Seminar: Selected Topics (Global Islamic Feminisms)
EDUC 6601	International and Comparative Education	International Economics, Political Economy, and Business	
EDUC 6602	Regional Studies in International Education	ECON 6217	Survey of Economics I (Intermediate-level Macroeconomic Theory)
		ECON 6250	Survey of Economic Development

ECON 6269	Economy of China I
ECON 6271	Economy of Japan
ECON 6283	Survey of International Trade Theory and Policy
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
ECON 6293	Topics in International Finance *
ECON 6295	Special Topics *
FINA 6274	Corporate Financial Management and Modeling
FINA 6275	Investment Analysis and Global Portfolio Management
FINA 6277	Comparative Financial Market Regulation and Development
IAFF 6118	Special Topics in International Affairs (Strategy, Global Markets, and Politics)
IBUS 6201	International Marketing
IBUS 6202	Regional Strategy for Multinationals
IBUS 6301	International Business Finance
IBUS 6302	Seminar: International Banking
IBUS 6310	International Financial Reporting Standards
IBUS 6401	International Business Strategy
MBAD 6233	Financial Markets
MBAD 6234	Financial Management
MBAD 6242	Microeconomics for the World Economy
MBAD 6246	Global Economy
PPPA 6003	Economics for Public Decision-Making
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6439	International Political Economy
International Health Policy and Programs	
Required	
Two from the following:	
PUBH 6002	Biostatistical Applications for Public Health

PUBH 6003	Principles and Practices of Epidemiology
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PUBH 6007	Social and Behavioral Approaches to Public Health
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Supporting courses:

A. Advanced Public Health Courses (non-global issues)

PUBH 6121	Environmental and Occupational Epidemiology
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PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
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PUBH 6126	Assessment and Control of Environmental Hazards
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PUBH 6130	Sustainable Energy and the Environment
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PUBH 6250	Epidemiology of HIV/AIDS
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PUBH 6252	Advanced Epidemiology Methods
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PUBH 6253	Issues in HIV Care and Treatment
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PUBH 6255	Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics
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PUBH 6262	Introduction to Geographic Information Systems
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PUBH 6263	Advanced GIS
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PUBH 6571	Social Marketing: Theory and Practice
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PUBH 6572	Marketing Research for Public Health
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PUBH 6573	Media Advocacy for Public Health
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PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
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B. Research Methods and Theory in Global Health

PUBH 6410	Global Health Study Design
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PUBH 6411	Global Health Qualitative Research Methods
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PUBH 6412	Global Health Quantitative Research Methods
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PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
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PUBH 6430	Theories for Global Health Communication Interventions
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PUBH 6435	Global Health Program Development and Implementation	IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
PUBH 6436	Global Health Program Management and Leadership	IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
C. Global Health		IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
PUBH 6128	Global Environmental and Occupational Health	IAFF 6186	Special Topics in Security Policy Studies (Methods for Defense Analysis)
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries	IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)
PUBH 6400	Global Health Frameworks	IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
PUBH 6441	Global Health Organizations and Regulations	IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)
PUBH 6442	Comparative Global Health Systems	IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
PUBH 6480	Public Health in Humanitarian Settings	IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)
PUBH 6481	Global Mental Health	IAFF 6186	Special Topics in Security Policy Studies (U.S. Grand Strategy)
PUBH 6487	Emerging Zoonotic Diseases and Global Food Production	IAFF 6338	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
PUBH 6563	Global Child Health	IAFF 6338	Special Topics in European and Eurasian Studies (Security in Russia and Eurasia)
International Security Policy		IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)
IAFF 6106	Nuclear Weapons	IAFF 6338	Special Topics in European and Eurasian Studies (Ukraine and Georgia between Russia and the West)
IAFF 6118	Special Topics in International Affairs (Issues in Contemporary Diplomacy and National Security)	PSC 6348	Politics of U.S. National Security Policy
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)	PSC 6467	Asian Security
IAFF 6148	Space and National Security	PSC 8452	Theories of International Security
IAFF 6160	Defense Policy and Program Analysis	Research Methods (professional specialization)	
IAFF 6163	Transnational Security	The course taken to fulfill the program requirement for a 3-credit research methods course cannot also be counted toward the research methods professional specialization. Students who choose to specialize in research methods must take a total of three methods courses, one to satisfy the methods requirement and two for the specialization.	
IAFF 6164	Environmental Security		
IAFF 6165	Fundamentals of Intelligence		
IAFF 6173	Security and Development	ANTH 6331	Research Methods in Development Anthropology
IAFF 6186	Special Topics in Security Policy Studies (Conflict Early Warning and Prevention)		
IAFF 6186	Special Topics in Security Policy Studies (Cyber Threats, Policy, and Strategy)		
IAFF 6186	Special Topics in Security Policy Studies (Illicit Finance and Security)		

EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education
EDUC 6114	Introduction to Quantitative Research
EDUC 8122	Qualitative Research Methods
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
GEOG 6304	Geographical Information Systems I
IAFF 6118	Special Topics in International Affairs (Qualitative Methods)
PPPA 6002	Research Methods and Applied Statistics
PPPA 6013	Econometrics for Policy Research I
PPPA 6014	Microeconomics for Public Policy II
PSC 8101	Introduction to Empirical Political Analysis
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6264	Quantitative Methods
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
SOC 6230	Sociological Research Methods
SOC 6231	Data Analysis
SOC 6232	Qualitative Methodology: Doing Field Research
Science, Technology, and International Affairs	
ANTH 6806	Technology
ECON 6255	Economics of Technological Change
EMSE 6030	Technological Forecasting and Management
EMSE 6992	Special Topics (International Technology)
EMSE 6992	Special Topics (International Technology Commercialization)

IAFF 6107	The Science of Nuclear Materials
IAFF 6142	Technology Creation/Diffusion
IAFF 6143	Science and Technology Policy Analysis
IAFF 6145	U.S. Space Policy
IAFF 6146	Space Law
IAFF 6148	Space and National Security
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Geospatial Law and Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Issues in U.S. Space Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Renewable Energy in a Decarbonizing World)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)

Research methods requirement (3 credits)

Code	Title	Credits
One course from the following: The course taken to fulfill this requirement cannot also be counted toward the research methods professional specialization or vice versa.		
ANTH 6331	Research Methods in Development Anthropology	
EDUC 6114	Introduction to Quantitative Research	
EDUC 8122	Qualitative Research Methods	
EDUC 8130	Survey Research Methods	
EDUC 8131	Case Study Research Methods	
GEOG 6201	Geographic Thought	
GEOG 6293	Special Topics (Qualitative Methods)	
GEOG 6304	Geographical Information Systems I	
GEOG 6305	Geospatial Statistics	

IAFF 6118	Special Topics in International Affairs (Qualitative Methods)
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
PPPA 6002	Research Methods and Applied Statistics
PPPA 6013	Econometrics for Policy Research I
PPPA 6014	Microeconomics for Public Policy II
PSC 8101	Introduction to Empirical Political Analysis
PUBH 6247	Design of Health Studies
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6264	Quantitative Methods
PUBH 6266	Biostatistical Methods
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6533	Design and Conduct of Community Health Surveys
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
SOC 6230	Sociological Research Methods
SOC 6231	Data Analysis
SOC 6232	Qualitative Methodology: Doing Field Research

*Only specific topics that are determined by the Program Director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the Program Director prior to enrollment. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may, with permission of the Program Director, be used to fulfill program requirements.

Additional information regarding skills courses, the capstone, and the thesis is available on the Elliott School website.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis

(<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

Foreign language proficiency requirement

Students in the Asian studies program are required to demonstrate proficiency in a modern language other than English by passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.

MASTER OF ARTS IN THE FIELD OF EUROPEAN AND EURASIAN STUDIES

Across Europe and Eurasia, powerful forces are pushing for political, social, and economic change. EU member states and their neighbors confront a host of domestic challenges ranging from economic reform and social diversity to terrorism and separatism. Russia and other members of the Commonwealth of Independent States stand at different points along the path of transition from communism to new political institutions. At the same time, a web of political, economic, security, and societal connections increasingly links the various parts of Europe and Eurasia with one another and other parts of the global community. In view of these dynamic interactions, it is essential to study Europe and Eurasia together.

The European and Eurasian studies graduate program at the Elliott School provides an interdisciplinary curriculum combining several required courses with a wide variety of additional courses and optional fields that can be selected to suit an individual student's professional goals and intellectual interests.

The European and Eurasian Studies program is supported by the Institute for European, Russian, and Eurasian Studies (IERES) and benefits from the expertise of its faculty members, who are prominent practitioners and scholars in disciplines including political science, economics, and history, with important representation from languages and literature, film studies, anthropology, sociology, and public policy.

Visit the program website (<https://elliott.gwu.edu/european-and-eurasian-studies/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 15 credits in core courses, a 3-credit cornerstone course, a 4-credit capstone sequence, a 3-credit course in

research methods or international economics, 9 credits in a professional specialization, and 6 credits in elective courses. In addition, all students must fulfill a language requirement (see below)

See note regarding special topics, professional skills, and LAW courses.¹

Code	Title	Credits
Required		
Cornerstone (3 credits)		
IAFF 6321	European and Eurasian Studies Cornerstone	
Capstone sequence (4 credits)		
Students complete a two-course capstone sequence that most closely matches the thematic area of their project. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.		
IAFF 6898	Capstone Workshop	
IAFF 6899	Capstone Course	
Core courses (15 credits)		
Five courses in at least three disciplines, including at least two courses from section A and two from section B.		
Section A: Western, Central, Southeastern and Eastern Europe		
EDUC 6100	Experimental Courses	
HIST 6042	Seminar: World War II	
HIST 6050	Modernization, Imperialism, Globalization	
HIST 6121	Reading and Research Seminar: Modern European History	
HIST 6135	British Imperialism	
HIST 6170	Eastern European History I	
HIST 6171	Eastern European History II	
IAFF 6338	Special Topics in European and Eurasian Studies (EU Foreign Relations)	
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)	

IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)
LAW 6534	Law of the European Union
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
Section B: Post-Soviet/post-communist countries	
GEOG 6265	Geography of Russia and Its Neighbors
HIST 6030	History and Its Uses in International Affairs (only section reserved for EES)
HIST 6051	Re-thinking Cold War History
HIST 6188	The Soviet Union and the World, 1917 to 1991
IAFF 6338	Special Topics in European and Eurasian Studies (Central Asia: Security Politics, Society)
IAFF 6338	Special Topics in European and Eurasian Studies (History and Politics of the Caucasus)
IAFF 6338	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (Politics of Post-Soviet Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (Security in Russia and Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (Ukraine and Georgia: Between Russia and the West)
PSC 6366	Government and Politics of Russia
Methods or economics (3 credits)	
One of the following courses:	
ANTH 6331	Research Methods in Development Anthropology
ECON 6217	Survey of Economics I
ECON 6250	Survey of Economic Development
ECON 6280	Survey of International Economics
ECON 6283	Survey of International Trade Theory and Policy

ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
EDUC 6114	Introduction to Quantitative Research
EDUC 8122	Qualitative Research Methods
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
GEOG 6201	Geographic Thought
GEOG 6293	Special Topics (Qualitative Methods)
GEOG 6304	Geographical Information Systems I
GEOG 6305	Geospatial Statistics
IAFF 6118	Special Topics in International Affairs (Qualitative Methods)
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
PPPA 6002	Research Methods and Applied Statistics
PPPA 6013	Econometrics for Policy Research I
PPPA 6014	Microeconomics for Public Policy II
PSC 8101	Introduction to Empirical Political Analysis
PUBH 6247	Design of Health Studies
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6264	Quantitative Methods
PUBH 6266	Biostatistical Methods
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6533	Design and Conduct of Community Health Surveys
SOC 6230	Sociological Research Methods
SOC 6231	Data Analysis
SOC 6232	Qualitative Methodology: Doing Field Research
Professional specialization (9 credits)	

At least three courses in a professional specialization. Students may design their own field with the approval of the Program Director, or select one of the specializations listed below.

Electives (6 credits)

6 credits of elective courses, which may include advanced, content-based courses in a foreign language with the approval of the Program Director. These courses must involve more than basic language acquisition. Up to 3 credits of professional skills courses (IAFF 6502, IAFF 6503, and/or IAFF 6504) may be counted toward elective credits.

Additional thesis option

Students who wish to complete a thesis do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum GPA of 3.5 and approval from the faculty member who will serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits are counted as elective or specialization credits with Program Director approval. The two 3-credit thesis courses must be taken consecutively.

IAFF 6998	Thesis
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IAFF 6999	Thesis
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Professional specialization options European and Eurasian Cultures

Code	Title	Credits
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At least three courses from the following. Most courses listed below are undergraduate courses and require extra work for graduate credit, to be arranged with the instructor and the Program Director

AH 6245	Seminar in European Art of the Nineteenth Century
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FREN 3020	Contemporary France
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FREN 3100W	Introduction to French Literature
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FREN 3210	Medieval and Early Modern French Literature in Context
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FREN 3220	Modern French Literature
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FREN 3530	The Age of Enlightenment
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FREN 3600	Special Topics in French Literature (taught in French)
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FREN 3700	History of French Cinema
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FREN 4600	Special Topics in French Literature (taught in French)
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GER 2161	German Culture-in English I
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GER 2162	German Culture-in English II
GER 3181	History of German Cinema--in English (in English)
GER 3183	Berlin Before and After the Wall (in English)
GER 4175	Literature of two Germanies (in German)
GER 4176	Contemporary German Literature
GER 4195	Special Topics
IAFF 6338	Special Topics in European and Eurasian Studies (Islam and Ethnicity in Central Asia)
IAFF 6338	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
ITAL 4183	History of Italian Film
ITAL 4184	Contemporary Italian Cinema
ITAL 4560	Modern Italian Novel (in Italian)
SLAV 2361	Russian Culture
SLAV 2362	Russian Culture
SLAV 2365	Twentieth-Century Russian Literature to World War II (in English)
SLAV 2366	Russian Literature from World War II to the Present (in English)
SLAV 2473	20th-Century Russian Prose (in Russian)
SLAV 2474	Twentieth-Century Russian Poetry (in Russian)
SLAV 2785	Introduction to Russian Cinema I (in English)
SLAV 2786	Introduction to Russian Cinema II (in English)
SPAN 3510	Heresy and the Other in Early Modern Iberia
SPAN 3530	Enlightenment Spain
SPAN 3600	Special Topics (in Spanish)
SPAN 4510	Cervantes Don Quixote
SPAN 4540	The Myth of the Two Spains (in Spanish)
SPAN 4550	1898 to 1998: Spain's First Century without Empire

SPAN 4600 Special Topics

SPAN 4700 Film as Text in Latin America

International Economics, Political Economy and Business

Code	Title	Credits
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At least three courses from the following:

ECON 6217	Survey of Economics I
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ECON 6237	Economics of the Environment and Natural Resources
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ECON 6250	Survey of Economic Development
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ECON 6255	Economics of Technological Change
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ECON 6283	Survey of International Trade Theory and Policy
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ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
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ECON 6293	Topics in International Finance
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ECON 6295	Special Topics (Economic Analysis of International Trade Law)
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ECON 6295	Special Topics (Energy Economics)
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FINA 6234	New Venture Financing: Due Diligence and Valuation Issues
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FINA 6271	Financial Modeling and Econometrics
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FINA 6274	Corporate Financial Management and Modeling
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FINA 6275	Investment Analysis and Global Portfolio Management
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FINA 6277	Comparative Financial Market Regulation and Development
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IAFF 6108	International Development Policy
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IAFF 6118	Special Topics in International Affairs (International Business Finance)
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IAFF 6118	Special Topics in International Affairs (Strategy, Global Markets, and Politics)
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IAFF 6198	Special Topics in International Economic Policy (Development and Trade Policy in Emerging Economies)
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IAFF 6198	Special Topics in International Economic Policy (International Entrepreneurship)
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IBUS 6201	International Marketing
IBUS 6202	Regional Strategy for Multinationals
IBUS 6301	International Business Finance
IBUS 6302	Seminar: International Banking
IBUS 6310	International Financial Reporting Standards
IBUS 6400	Oil: Industry, Economy, and Society
IBUS 6401	International Business Strategy
IBUS 6402	Managing in Developing Countries
MBAD 6233	Financial Markets
MBAD 6234	Financial Management
MBAD 6242	Microeconomics for the World Economy
MBAD 6246	Global Economy
MBAD 6281	Business Ethics
MBAD 6284	Business and Public Policy
MBAD 6285	Business Law
PPPA 6003	Economics for Public Decision-Making
PSC 6439	International Political Economy
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe

International Education

Code **Title** **Credits**

At least three courses from the following: ¹

EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education (Education and Development in Sub-Saharan Africa)
EDUC 6602	Regional Studies in International Education (Education and Equality in Latin America)
EDUC 6602	Regional Studies in International Education (Education and Tradition in the Middle East and North Africa)

EDUC 6610	Programs and Policies in International Education (International Higher Education)
EDUC 6610	Programs and Policies in International Education (Migration and Mobility: Education in a Global Era)
EDUC 6610	Programs and Policies in International Education (Policy Issues in International Education: Developing Countries)
EDUC 6631	Internship: International Education
EDUC 6640	Selected Topics in International Education (Comparative Perspectives on Language and International Education)
EDUC 6640	Selected Topics in International Education (Gender in International Education and Development)
EDUC 6640	Selected Topics in International Education (Education in Islamic Asia)
EDUC 6640	Selected Topics in International Education (Evaluation in International Education)
EDUC 6640	Selected Topics in International Education (Inequality of International Higher Education)
EDUC 6640	Selected Topics in International Education (Issues in Study Abroad)
EDUC 6640	Selected Topics in International Education (Scholars and Practitioners in International Higher Education)
EDUC 6640	Selected Topics in International Education (UNESCO: 21st Century Agenda Topics)
EDUC 6650	Education and National Development

International Health Policy and Programs

Code **Title** **Credits**

At least three courses from the following: ²

ANTH 6505	Medical Anthropology
ANTH 6506	Topics in Medical Anthropology (Food, Culture, and Globalization)
ANTH 6506	Topics in Medical Anthropology (The Social Life of Food)
GEOG 6223	Seminar: Population and Health

IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Youth and Development)
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6315	Introduction to Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6399	Topics in Health Policy (Global Health Diplomacy)
PUBH 6400	Global Health Frameworks
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6435	Global Health Program Development and Implementation
PUBH 6436	Global Health Program Management and Leadership
PUBH 6437	Global Health Program Evaluation
PUBH 6440	Global Health Economics and Finance
PUBH 6441	Global Health Organizations and Regulations
PUBH 6442	Comparative Global Health Systems
PUBH 6443	Global Health Agreements and Conventions
PUBH 6450	Global Health Diplomacy

PUBH 6480	Public Health in Humanitarian Settings
PUBH 6481	Global Mental Health
PUBH 6482	International Food and Nutrition Policy
PUBH 6484	Prevention and Control of Vector Borne Diseases
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6514	Preventing Health Disparities
PUBH 6532	Community Organization, Development, and Advocacy
PUBH 6536	Workplace Health Promotion
PUBH 6537	Health Promotion and Aging
PUBH 6552	Women's Health
PUBH 6553	Adolescent Health
PUBH 6571	Social Marketing: Theory and Practice

International Organization, Diplomacy and Globalization

Code	Title	Credits
At least three courses from the following:		
HIST 6050	Modernization, Imperialism, Globalization	
HIST 6330	Modern U.S. Foreign Policy	
IAFF 6118	Special Topics in International Affairs (Contemporary Issues in U.S. Diplomacy)	
IAFF 6118	Special Topics in International Affairs (Diplomacy, Technology, and Global Spaces)	
IAFF 6118	Special Topics in International Affairs (Emerging Powers and International Order)	
IAFF 6118	Special Topics in International Affairs (Public Diplomacy)	
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)	
IAFF 6118	Special Topics in International Affairs (U.S. Foreign Policy and International Organizations)	

IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
IAFF 6138	Special Topics in International Development Studies (Local Governance, Decentralization, and Development)
IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation for Foreign Assistance Programs)
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
IAFF 6186	Special Topics in Security Policy Studies (Military Power and Effectiveness)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)
IAFF 6338	Special Topics in European and Eurasian Studies (EU Foreign Relations)
IAFF 6338	Special Topics in European and Eurasian Studies (History and Politics of the Caucasus)
IAFF 6338	Special Topics in European and Eurasian Studies (Nationalism in Russia and Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (Politics of Post-Soviet Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)
IAFF 6338	Special Topics in European and Eurasian Studies (Ukraine and Georgia Between Russia and the West)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Migration, Remittances, and Development)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (OAS and Democracy in the Americas)
LAW 6350	Domestic Violence Law

LAW 6534	Law of the European Union
PSC 6346	The Politics of U.S. Foreign Policy
PSC 6347	U.S. Foreign Policy Traditions
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
PSC 6465	The International Politics of Central and Eastern Europe
PSC 8388	Selected Topics in Comparative Politics (Authoritarianism and Democratization)
PSC 8388	Selected Topics in Comparative Politics (Comparative Social Policy) *
PSC 8388	Selected Topics in Comparative Politics (Theories of Nationalism) *

International Security Policy

Code	Title	Credits
At least three courses from the following:		
EMSE 6300	Homeland Security: The National Challenge	
IAFF 6107	The Science of Nuclear Materials	
IAFF 6118	Special Topics in International Affairs (Nuclear Proliferation and Nonproliferation)	
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)	
IAFF 6146	Space Law	
IAFF 6148	Space and National Security	
IAFF 6153	Science, Technology, and National Security	
IAFF 6160	Defense Policy and Program Analysis (strongly recommended)	
IAFF 6163	Transnational Security	
IAFF 6169	Homeland Security	
IAFF 6173	Security and Development	
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)	
IAFF 6186	Special Topics in Security Policy Studies (Globalization and National Security)	

IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)
IAFF 6338	Special Topics in European and Eurasian Studies (Central Asia: Security, Politics, Society)
IAFF 6338	Special Topics in European and Eurasian Studies (EU Foreign Relations)
IAFF 6338	Special Topics in European and Eurasian Studies (Politics of Post-Soviet Eurasia)
IAFF 6338	Special Topics in European and Eurasian Studies (Security in Russia and Asia)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Security Issues in the 21st Century)
IAFF 6338	Special Topics in European and Eurasian Studies (Ukraine and Georgia Between Russia and the West)
IAFF 6378	Special Topics in Middle East Studies (U.S. Security Policy in the Middle East)
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
LAW 6870	National Security Law
LAW 6876	Homeland Security Law and Policy
LAW 6879	Cybersecurity Law and Policy
PSC 6465	The International Politics of Central and Eastern Europe
PSC 8452	Theories of International Security

Science, Technology, and International Affairs

Code	Title	Credits
At least three courses from the following:		
ANTH 6391	Anthropology and Contemporary Problems (Social Study of Science and Technology)	
ANTH 6806	Technology	
ECON 6255	Economics of Technological Change	
EMSE 6030	Technological Forecasting and Management	
EMSE 6260	Energy Management	

EMSE 6290	Climate Change: Policy, Impacts, and Response
EMSE 6310	Information Technology in Crisis and Emergency Management
EMSE 6573	Managing E-Commerce Technologies
IAFF 6106	Nuclear Weapons
IAFF 6107	The Science of Nuclear Materials
IAFF 6118	Special Topics in International Affairs (Diplomacy, Technology, and Global Spaces)
IAFF 6142	Technology Creation/Diffusion
IAFF 6143	Science and Technology Policy Analysis
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy (Cyber and Information Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Issues in Space Policy)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6198	Special Topics in International Economic Policy (Digital Trade and Global Governance)
IAFF 6198	Special Topics in International Economic Policy (International Climate Change Policy)
LAW 6879	Cybersecurity Law and Policy

¹ Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>) and the capstone (<https://elliott.gwu.edu/global-capstone/>) is available on the Elliott School website.

Law School courses—Students may, with permission of their advisor, include courses in the Law School (<http://>

www.law.gwu.edu/) in their major field. Enrolling in a LAW course also requires permission of the Law School dean of students. Students should consult the Elliott School Office of Academic Advising and Student Services (<http://elliott.gwu.edu/graduate-advising/>) office before enrolling in LAW courses.

² Consult the Graduate School of Education and Human Development (<https://gsehd.gwu.edu/>) for course availability and additional courses.

³ Consult the Milken Institute School of Public Health (<https://publichealth.gwu.edu/>) for course availability and additional courses.

Foreign language proficiency requirement

Students in the European and Eurasian studies program are required to demonstrate proficiency in a modern language other than English by passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.

MASTER OF ARTS IN THE FIELD OF GLOBAL COMMUNICATION

Offered jointly by GW's Elliott School of International Affairs and Columbian College of Arts and Sciences' School of Media and Public Affairs (SMPA), the MA in global communication combines the Elliott School's globally recognized academic excellence in international affairs with SMPA's strengths as a leading school of communication and journalism.

Students in the global communication program learn about the fascinating and rapidly evolving global information environment. As future or advancing professionals in the field, they learn how to work in this environment and communicate effectively with audiences worldwide.

Students take a rigorous academic program that prepares them both intellectually and professionally for exciting careers in the public, private, and non-profit sectors. A core curriculum focuses on communication, international politics, international economics, and research methods. Required skills courses on topics such as developing communication strategies, cross-cultural communication, public speaking, and editing prepare students for careers in global communication. Students also choose one of twelve specializations to build expertise on a major world region or global issue. In the final year, a capstone course tests students' ability to address a real-world problem

using the skills and knowledge acquired during their course of study.

Visit the program website (<https://elliott.gwu.edu/global-communication/>)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 15 credits in core field courses, a 4-credit capstone course sequence, 3 credits in skills courses, 9 credits in a specialization, and 9 credits in elective courses. In addition, all students must fulfill a foreign language proficiency requirement (see below).

See note regarding special topics and skills courses, the capstone, the additional thesis option, and LAW courses.*

Code	Title	Credits
Required		
Core field courses (15 credits)		
ECON 6280	Survey of International Economics	
or ECON 6250	Survey of Economic Development	
IAFF 6101	International Affairs Cornerstone	
SMPA 6210	Media and Foreign Policy	
SMPA 6241	Research Design	
And one course from the following:		
HIST 6030	History and Its Uses in International Affairs	
SMPA 6202	Media Effects, Public Opinion, and Persuasion	
SMPA 6204	Strategic Political Communication	
Capstone (4 credits)		
Students complete a two-course capstone sequence that most closely matches the thematic area of their project. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.		
IAFF 6898	Capstone Workshop	
IAFF 6899	Capstone Course	
Skills courses (3 credits)		
Three skills courses in any combination from the following:		

IAFF 6502	Professional Skills I	LAW 6414	Development in Telecommunications Law
IAFF 6503	Professional Skills II	PPPA 6018	Public Policy, Governance, and the Global Market
IAFF 6504	Intermediate Conversation	PSPR 6201	Strategic Public Relations: Principles and Practice
Students in the global communication program may choose to take skills courses in the School of Media and Public Affairs:		PSPR 6204	Media Relations in a Digital World
SMPA 6201	Strategic Communications Skills (Crisis Communication)	PSPR 6208	Integrated Marketing Communications
SMPA 6201	Strategic Communications Skills (Developing Digital PR Skills)	SMPA 6250	Topics in Media Processes and Institutions (Changing Media Technology)
SMPA 6201	Strategic Communications Skills (Public Speaking)	SMPA 6250	Topics in Media Processes and Institutions (Electronic Media Policy)
SMPA 6201	Strategic Communications Skills (Social Media)	SMPA 6250	Topics in Media Processes and Institutions (Information, Media and National Security)
SMPA 6201	Strategic Communications Skills (Speechwriting)	SMPA 6250	Topics in Media Processes and Institutions (International Communication)
SMPA 6201	Strategic Communications Skills (Web Essentials)	SMPA 6250	Topics in Media Processes and Institutions (Public Affairs and Government Information)
*SMPA skills courses are offered only in the spring semester and for 1.5 credits.		*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.	
Specialization (9 credits)		B. Conflict and conflict resolution	
Students must complete a specialization in either global issues or a regional focus in consultation with the Program Director.		ANTH 6507	
Global issues specializations		GEOG 6224	
A. Communication and information technology in international affairs		HIST 6822	
ECON 6255	Economics of Technological Change	IAFF 6118	
IAFF 6142	Technology Creation/Diffusion	IAFF 6118	
IAFF 6151	Environmental Policy	IAFF 6118	
IAFF 6153	Science, Technology, and National Security	IAFF 6118	
IAFF 6158	Special Topics in International Science and Technology Policy *	IAFF 6118	
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)	IAFF 6118	
IAFF 6501	Quantitative Analysis for International Affairs Practitioners	IAFF 6118	
LAW 6412	Communications Law	IAFF 6118	

IAFF 6186	Special Topics in Security Policy Studies (Food, Globalization, and Conflict)
IAFF 6186	Special Topics in Security Policy Studies (Military and Post-Conflict Intervention)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (War to Peace Transition)
MGT 6215	Conflict Management and Negotiations
PPSY 6103	Political Violence and Terrorism
PSC 6442	Politics and Practice of International Institutions
PSC 6444	Politics of International Law
PSC 6351	Civil-Military Relations
PSC 6476	The Arab-Israeli Conflict
PSC 8388	Selected Topics in Comparative Politics (Nationalism in Former Soviet Republics)
SMPA 6250	Topics in Media Processes and Institutions (Race, Media and Politics)
C. Global gender policy	
Students may take IAFF 2190W or IAFF 3183 for graduate credit as a supporting course with permission from the Program Director, academic advisor, and instructor, who must agree to assign additional work:	
ANTH 6501	Gender and Sexuality
IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 3183	Special Topics in Development Policy *
IAFF 6102	Global Gender Policy
IAFF 6108	International Development Policy
IAFF 6136	Gender and Development
PHIL 6238	Feminist Ethics and Policy Implications
PSYC 8275	Women and Health
SMPA 6205	Media, Development, and Globalization
SOC 6265	Women, Welfare, and Poverty
SOC 6268	Race, Gender, and Class
SOC 6271	Gender and Society

SOC 6273	The Sex Industry
WGSS 6225	Contemporary Feminist Theory
WGSS 6230	Global Feminisms
WGSS 6240	Gender and Public Policy
WGSS 6257	Gender and Sexuality
WGSS 6265	Women, Welfare, and Poverty
WGSS 6266	Gender and Criminal Justice
WGSS 6268	Race, Gender, and Class
WGSS 8275	Women and Health
*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.	
D. Global health	
ANTH 6302	Issues in Development *
ANTH 6505	Medical Anthropology
ANTH 6591	Topics in Sociocultural Anthropology (Refugees and Displaced Persons)
ECON 6248	Health Economics
GEOG 6223	Seminar: Population and Health
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6435	Global Health Program Development and Implementation
PUBH 6437	Global Health Program Evaluation
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing
*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.	
E. International development	
Anthropology	
ANTH 6301	The Anthropology of Development
ANTH 6302	Issues in Development *

ANTH 6331	Research Methods in Development Anthropology
ANTH 6391	Anthropology and Contemporary Problems
ANTH 6505	Medical Anthropology
ANTH 6507	Nationalism and Ethnicity
ANTH 6591	Topics in Sociocultural Anthropology (Refugees and Displaced Persons)
ECON 6291	Methods of Demographic Analysis
or GEOG 6291	Methods of Demographic Analysis
PPPA 6002	Research Methods and Applied Statistics
PPPA 6006	Policy Analysis
PPPA 6016	Public and Nonprofit Program Evaluation
PSPR 6204	Media Relations in a Digital World
PSPR 6208	Integrated Marketing Communications
SOC 6230	Sociological Research Methods
SOC 6232	Qualitative Methodology: Doing Field Research
STAT 6291	Methods of Demographic Analysis
Environment	
EMSE 6200	Policy Factors in Environmental and Energy Management
GEOG 6222	Seminar: Resources and the Environment
GEOG 6223	Seminar: Population and Health
GEOG 6230	Seminar: Environmental Issues in Development
GEOG 6250	Geographical Perspectives on Development
IAFF 6151	Environmental Policy
PPPA 6066	U.S. Environmental Policy
PHIL 6281	Environmental Philosophy and Policy
Humanitarian assistance	
EMSE 6305	Crisis and Emergency Management
EMSE 6320	International Disaster Management

GEOG 6224	Seminar: Political Geography
PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing
International development management	
IBUS 6402	Managing in Developing Countries
PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6018	Public Policy, Governance, and the Global Market
PPPA 6025	Ethics and Public Values
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
SMPA 6250	Topics in Media Processes and Institutions (Media in the Developing World)
International education	
EDUC 6100	Experimental Courses (Technology and Development in International Education)
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education *
EDUC 6650	Education and National Development
Global health	
ANTH 6505	Medical Anthropology

PUBH 6430	Theories for Global Health Communication Interventions
PUBH 6442	Comparative Global Health Systems
PUBH 6503	Introduction to Public Health Communication and Marketing
Political economy	
ECON 6250	Survey of Economic Development (if not taken as core course)
ECON 6269	Economy of China I
ECON 6285	Economic Development of Latin America
ECON 6295	Special Topics (Industrial and Technology Policy in Developing Countries)
IBUS 6403	International Business Negotiations
IBUS 6404	New Global Competitive Framework
PSC 6439	International Political Economy
PSC 6442	Politics and Practice of International Institutions
PSC 8388	Selected Topics in Comparative Politics (Politics of Development)
PSPR 6208	Integrated Marketing Communications
Women and development	
ANTH 6501	Gender and Sexuality
GEOG 6223	Seminar: Population and Health
ECON 6250	Survey of Economic Development (if not taken as core course)
SOC 6273	The Sex Industry
WGSS 6230	Global Feminisms
WGSS 6270	Seminar: Selected Topics (Global/Domestic Labor Studies)
WGSS 6270	Seminar: Selected Topics (Global Islamic Feminisms)
WGSS 6270	Seminar: Selected Topics (Women and Entrepreneurial Leadership)
WGSS 6270	Seminar: Selected Topics (Women, Development, and Rights)

*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.

F. International economic affairs	
ECON 6250	Survey of Economic Development (if not taken as core course)
ECON 6255	Economics of Technological Change
ECON 6269	Economy of China I
ECON 6271	Economy of Japan
ECON 6285	Economic Development of Latin America
ECON 6295	Special Topics (Economic Analysis of International Trade Law)
ECON 6295	Special Topics (Economics of the European Union)
ECON 6295	Special Topics (Economics of U.S. Trade Law)
ECON 6295	Special Topics (Economics of U.S. Trade Policy)
ECON 6295	Special Topics (Emerging Market Financial Crises)
ECON 6295	Special Topics (Industrial and Technology Policy in Developing Countries)
ECON 6295	Special Topics (International Economic Integration)
IAFF 6138	Special Topics in International Development Studies (U.S. Aid and Trade in the Developing World)
IAFF 6318	Special Topics in Asian Studies (Political Economy of South Asia)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Political Economy of Latin America)
IBUS 6301	International Business Finance
IBUS 6302	Seminar: International Banking
IBUS 6303	External Development Financing
IBUS 6404	New Global Competitive Framework
IBUS 6405	Legal Aspects of International and Multinational Business

PSC 6439	International Political Economy
G. International law and organizations	
ECON 6295	Special Topics (Economics of the European Union)
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
IAFF 6118	Special Topics in International Affairs (Theory and Practice of International Negotiations)
LAW 6520	International Law
LAW 6534	Law of the European Union
LAW 6870	National Security Law
PSC 6439	International Political Economy
PSC 6442	Politics and Practice of International Institutions
PSC 6444	Politics of International Law
PSC 8226	Politics and Organizations
SMPA 6250	Topics in Media Processes and Institutions (Media Law)
SMPA 6250	Topics in Media Processes and Institutions (Public Affairs and Government Information)
H. Public diplomacy	
Required:	
SMPA 6275	Public Diplomacy
Recommended Core Course:	
SMPA 6204	Strategic Political Communication
Recommended Elective Courses:	
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education *
IAFF 6138	Special Topics in International Development Studies *
IAFF 6186	Special Topics in Security Policy Studies *
IAFF 6208	Special Topics in Global Communication *

PPPA 6018	Public Policy, Governance, and the Global Market
PPPA 6058	International Development NGO Management
PSC 6345	Comparative Foreign Policy
PSC 6351	Civil-Military Relations
PSC 6442	Politics and Practice of International Institutions
PSC 8334	Democracy and Democratization in Comparative Perspective
PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6571	Social Marketing: Theory and Practice
SMPA 6205	Media, Development, and Globalization
SMPA 6270	Special Topics in Media and Public Affairs *
SMPA 6274	Media and War
*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.	
I. U.S. foreign policy	
ANTH 6391	Anthropology and Contemporary Problems
ANTH 6507	Nationalism and Ethnicity
ECON 6295	Special Topics (Economics of U.S. Trade Policy)
HIST 6001	Special Topics (History of International Economic System)
HIST 6032	Reading and Research Seminar: Strategy and Policy
HIST 6310	Readings in Nineteenth-Century American History
HIST 6320	Readings/Research Seminar: Recent U.S. History
HIST 6321	Readings/Research Seminar: Recent U.S. History
HIST 6330	Modern U.S. Foreign Policy
IAFF 6118	Special Topics in International Affairs (U.S. Public Diplomacy)

IAFF 6145	U.S. Space Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6186	Special Topics in Security Policy Studies (Covert Action and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Forward Engagement)
IAFF 6186	Special Topics in Security Policy Studies (Globalization and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Intelligence and National Security Policymaking)
IAFF 6186	Special Topics in Security Policy Studies (Military and Post Conflict Intervention)
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism and U.S. Foreign Policy)
IAFF 6186	Special Topics in Security Policy Studies (Transnational Security Issues)
IAFF 6302	Taiwan: Internal Development and Foreign Policy
IAFF 6305	U.S.-South Asia Relations
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations)
IAFF 6378	Special Topics in Middle East Studies (Mediterranean Region and U.S. Security)
IAFF 6505	Elliott School Seminars
IAFF 6521	U.S. Foreign Policy Summer Program
LAW 6870	National Security Law
PSC 6346	The Politics of U.S. Foreign Policy
PSC 6347	U.S. Foreign Policy Traditions
PSC 6348	Politics of U.S. National Security Policy
PSC 6372	Foreign Policy of China
PSC 6439	International Political Economy
PSC 8229	Politics and Public Policy
PSC 8388	Selected Topics in Comparative Politics (Theories of Democracy)

PSC 8489	Selected Topics in International Politics (Identity and Major Wars)
J. U.S. national security policy and process	
ANTH 6507	Nationalism and Ethnicity
ANTH 6391	Anthropology and Contemporary Problems
ECON 6239	Economics of Defense
HIST 6001	Special Topics *
HIST 6032	Reading and Research Seminar: Strategy and Policy
HIST 6330	Modern U.S. Foreign Policy
IAFF 6145	U.S. Space Policy
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6160	Defense Policy and Program Analysis
IAFF 6186	Special Topics in Security Policy Studies (Covert Action and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Forward Engagement)
IAFF 6186	Special Topics in Security Policy Studies (Health and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Intelligence and National Security Policymaking)
IAFF 6186	Special Topics in Security Policy Studies (Issues in International Criminal Law)
IAFF 6186	Special Topics in Security Policy Studies (Military and Post-Conflict Intervention)
IAFF 6186	Special Topics in Security Policy Studies (Military Geography)
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)
IAFF 6186	Special Topics in Security Policy Studies (Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Post-Conflict Development)
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)

IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism and U.S. Foreign Policy)
IAFF 6186	Special Topics in Security Policy Studies (Weapons Proliferation and Nonproliferation)
IAFF 6318	Special Topics in Asian Studies (Asian Regional Security)
IAFF 6318	Special Topics in Asian Studies (Transatlantic Security Issues)
IAFF 6338	Special Topics in European and Eurasian Studies (NATO and European Security)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Security Issues)
IAFF 6163	Transnational Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6167	Defense Policy and Program Analysis II
IAFF 6169	Homeland Security
IAFF 6171	Introduction to Conflict Resolution
IAFF 6362	Regional Security in Middle East
LAW 6552	Law of War
LAW 6870	National Security Law
MGT 6215	Conflict Management and Negotiations
PPSY 6101	Fundamentals of Political Psychology
PPSY 6102	Political Psychology Research Methods
PPSY 6103	Political Violence and Terrorism
PSC 6346	The Politics of U.S. Foreign Policy
PSC 6347	U.S. Foreign Policy Traditions
PSC 6348	Politics of U.S. National Security Policy
PSC 6442	Politics and Practice of International Institutions
PSC 6444	Politics of International Law
PSC 6457	Arms Control and Disarmament
PSC 6476	The Arab-Israeli Conflict

Regional Field Specialization Options	
A. Asian studies	
ECON 6269	Economy of China I
ECON 6271	Economy of Japan
HIST 6001	Special Topics (Central Asian History)
HIST 6610	Readings Seminar: Late Imperial China
HIST 6611	Readings Seminar: Twentieth-Century China
HIST 6621	Readings Seminar: Modern Japanese History
HIST 6630	Special Topics in Korean History *
HIST 6641	Modern Southeast Asia
IAFF 6302	Taiwan: Internal Development and Foreign Policy
IAFF 6305	U.S.-South Asia Relations
IAFF 6318	Special Topics in Asian Studies (Asian Regional Security)
IAFF 6318	Special Topics in Asian Studies (Force in Asian Politics)
IAFF 6318	Special Topics in Asian Studies (International Relations of South Asia)
PSC 6370	Politics of China I
PSC 6372	Foreign Policy of China
PSC 6475	International Politics of East Asia
PSC 8388	Selected Topics in Comparative Politics (Japanese Politics)
PSC 8388	Selected Topics in Comparative Politics (Political Economy of East and Southeast Asia)
PSC 8489	Selected Topics in International Politics (Japanese Foreign Policy)
PSC 8489	Selected Topics in International Politics (Politics of Asia Pacific Economic Integration)
PSC 8489	Selected Topics in International Politics (U.S.-China Relations)
PSPR 6201	Strategic Public Relations: Principles and Practice
PSPR 6204	Media Relations in a Digital World

PSPR 6208	Integrated Marketing Communications
SMPA 6250	Topics in Media Processes and Institutions (Media in the Developing World)

*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.

B. European and Asian studies

ECON 6295	Special Topics (East European Economies in Historical Perspective)
ECON 6295	Special Topics (Post-Communist Economic Analysis)
GEOG 6265	Geography of Russia and Its Neighbors
HIST 6001	Special Topics (Central Asian History)
HIST 6042	Seminar: World War II
HIST 6050	Modernization, Imperialism, Globalization
HIST 6051	Re-thinking Cold War History
HIST 6105	Seminar: European Intellectual History
HIST 6120	Seminar: Early Modern European History
HIST 6121	Reading and Research Seminar: Modern European History
HIST 6128	Europe and the World, 1500-Present
HIST 6133	English People and Institutions
HIST 6170	Eastern European History I
HIST 6171	Eastern European History II
HIST 6180	History of Modern Russia and the Soviet Union
HIST 6185	Seminar: Russian and Soviet Thought
HIST 6188	The Soviet Union and the World, 1917 to 1991
IAFF 6338	Special Topics in European and Eurasian Studies (Caucasus in the 20th Century)
IAFF 6338	Special Topics in European and Eurasian Studies (Central Asia: Issues and Challenges)

IAFF 6338	Special Topics in European and Eurasian Studies (Geopolitics of Ukraine)
IAFF 6338	Special Topics in European and Eurasian Studies (Mediterranean Region and U.S. Foreign Policy)
IAFF 6338	Special Topics in European and Eurasian Studies (Nationalism in Ukraine and Russia)
IAFF 6338	Special Topics in European and Eurasian Studies (NATO and European Security)
IAFF 6338	Special Topics in European and Eurasian Studies (Political Economy of the European Union)
IAFF 6338	Special Topics in European and Eurasian Studies (Scandinavia and Baltic States)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Security Relations)
IAFF 6338	Special Topics in European and Eurasian Studies (Turkey's Place in Europe)
PSC 6333	Comparative Politics of Russia and Eurasia
PSC 6360	Western European Politics
PSC 6361	Politics of European Integration
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
PSC 6465	The International Politics of Central and Eastern Europe
PSC 6366	Government and Politics of Russia
PSC 8388	Selected Topics in Comparative Politics (Government and Politics of Ukraine)
PSPR 6201	Strategic Public Relations: Principles and Practice
PSPR 6204	Media Relations in a Digital World
C. Latin American and hemispheric studies	
ANTH 6702	Issues in Latin American Anthropology *
HIST 6701	Topics in Latin American History (20th Century Latin American Revolutions)

ECON 6285	Economic Development of Latin America
GEOG 6261	Geographical Perspectives on Latin America
IAFF 6341	Latin American and Hemispheric Studies Cornerstone
IAFF 6342	Drug Trafficking in the Americas
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil Since Independence)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic Integration of the Americas)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Political and Economic Development of the Southern Cone)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Political Economy of Latin America)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Remittances in Latin America)
PSC 6383	Comparative Politics of Latin America
PSC 6484	International Relations of Latin America
SMPA 6250	Topics in Media Processes and Institutions (Media in the Developing World)

*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.

D. Middle East studies

HIST 6822	Nationalism in the Middle East
IAFF 6362	Regional Security in Middle East
IAFF 6363	Political Economy of the Middle East
IAFF 6364	Religion and Society in the Modern Middle East
IAFF 6378	Special Topics in Middle East Studies *

PSC 6377	Comparative Politics of the Middle East
PSC 6476	The Arab-Israeli Conflict
PSC 6478	International Relations of the Middle East
SMPA 6250	Topics in Media Processes and Institutions (Media in the Developing World)

*Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment.

Electives (9 credits)

9 credits in elective courses relating to international affairs or communication selected with approval of the Program Director. With Program Director approval, graduate students can apply a maximum of 6 credits of language courses toward the electives.

Additional thesis option

Students who wish to complete a thesis do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum GPA of 3.5 and approval from the faculty member who will serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credit is counted as elective or specialization credits with Program Director approval. The two 3-credit thesis courses must be taken consecutively.

IAFF 6998	Thesis
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IAFF 6999	Thesis
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*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

Law School courses—Students may, with permission of their advisor, include courses in the Law School (<http://www.law.gwu.edu/>) in their major field. Enrolling in a LAW course also requires permission of the Law School dean of students. Students should consult the Elliott School Office of Academic Advising and Student Services (<http://elliott.gwu.edu/graduate-advising/>) office before enrolling in LAW courses.

Foreign language proficiency requirement

Students in the master of arts in the field of global communication program are required to demonstrate proficiency in a modern language other than English. Students may fulfill this requirement in one of the following ways:

- Having earned a minimum grade of B in a sixth-semester university-level advanced language course completed no more than three years prior to matriculation in the Elliott School's master's degree program.
- Having earned a minimum grade of B in a sixth-semester university-level advanced language course at GW, or in an approved course taken at another institution of higher learning, including Elliott School exchange partner institutions, while enrolled in the Elliott School master's program.
- Passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.
- Achieving the required proficiency level in a reading and speaking examination administered by an Elliott School-approved foreign language assessment institution, at the student's expense, while enrolled in the Elliott School's Master's Degree Program.
- Demonstrating the required foreign language proficiency level in a foreign language professional skills course offered through the Elliott School. The instructor tests the student during the course (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>) to determine if the required proficiency level has been achieved.

As of fall 2018, the above policy applies to new and current students in the Elliott School's non-regional studies master's programs with a foreign language requirement. Consult the Program Director for more information.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS

The field of international affairs addresses the key challenges and opportunities that affect the lives of billions of our fellow human beings. Globalization of economic, political, social, and cultural activity has created new opportunities and challenges for tomorrow's leaders in international affairs. Rarely have we lived in such an uncertain world, one in which the need for increased international understanding and cooperation has become essential, not simply necessary.

Course offerings in the program draw heavily on the various academic departments of the university. Students in the MA in international affairs program begin with a core field of three to five courses in political science, economics, and history and move on to major fields focusing on global issues or regional areas. Skills courses and a capstone course on a contemporary policy issue connect academic coursework directly to practical applications.

The MA program in international affairs makes the most of the Elliott School's location within a few blocks of the White House, the U.S. Department of State, the World Bank, and the International Monetary Fund.

Visit the program website (<https://elliott.gwu.edu/international-affairs-masters/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 9 to 12 credits in core field courses, 3 credits in skills courses, 12 credits in a thematic or regional concentration, a 4-credit capstone course sequence, and 9 to 12 credits in elective courses. In addition, students must fulfill a foreign language proficiency requirement (see below).

See note regarding skills courses, the capstone, and the additional thesis option.*

Code	Title	Credits
Required		
Core field courses (9 to 12 credits)		
Three or four courses from the following:		
HIST 6030	History and Its Uses in International Affairs	
IAFF 6101	International Affairs Cornerstone	
ECON 6280	Survey of International Economics	
or		
ECON 6283 & ECON 6284	Survey of International Trade Theory and Policy and Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6280 is designed for students who have little background in economics. Those with a stronger prior background in economics may wish to substitute ECON 6280 with the ECON 6283 and ECON 6284 sequence for 6 credits. The ECON 6283 and ECON 6284 sequence is required for the international economic affairs concentration.		
Skills courses (3 credits)		

Three 1-credit professional skills courses in any combination from the following:

IAFF 6502	Professional Skills I
IAFF 6503	Professional Skills II
IAFF 6504	Intermediate Conversation

Concentration (12 credits)

Students must complete a thematic or regional concentration in consultation with the Program Director.

Capstone (4 credits)

Students complete a two-course capstone sequence that most closely matches the thematic area of their course work. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898	Capstone Workshop
IAFF 6899	Capstone Course

Additional thesis option

Students who wish to complete a thesis do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum GPA of 3.5 and approval from the faculty member who will serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits are counted as elective or concentration credits with Program Director approval. The two 3-credit thesis courses must be taken consecutively.

IAFF 6998	Thesis
IAFF 6999	Thesis

Electives (9 to 12 credits)

Three to four elective courses, which may include up to 6 credits of foreign language study, a second field of expertise, or other relevant coursework. Students are strongly encouraged to take a research methods course.

*Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

Concentrations

Students in the master of arts in the field of international affairs program must complete a concentration by taking at least four courses (12 credits) selected from one of thematic or regional concentrations listed below. Specific requirements are listed

under the "Concentrations" tab. Students are encouraged to discuss their course selections with their faculty adviser.

Thematic concentrations:

- Conflict and Conflict Resolution (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/conflict-and-conflict-resolution/>)
- Global Energy and Environmental Policy (GEEP) (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/global-energy-and-environmental-policy/>)
- Global Gender Policy (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/global-gender-policy/>)
- Global Health (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/global-health/>)
- International Affairs and Development (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/international-affairs-and-development/>)
- International Economic Affairs (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/international-economic-affairs/>)
- International Law and Organizations (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/international-law-and-organizations/>)
- International Security Studies (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/international-security-studies/>)
- Nuclear Policy (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/nuclear-policy/>)
- Technology and International Affairs (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/technology-and-international-affairs/>)
- U.S. Foreign Policy (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/us-foreign-policy/>)

Regional concentrations:

- Africa (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/africa/>)
- Asia (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/asia/>)
- Europe, Eurasia, and Russia (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/europe-eurasia-russia/>)
- Latin America (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/latin-america/>)
- Middle East (<http://bulletin.gwu.edu/international-affairs/graduate-programs/ma-international-affairs/middle-east/>)

Foreign language proficiency requirement

Students in the master of arts in the field of international affairs program are required to demonstrate proficiency in a modern language other than English. Students may fulfill this requirement in one of the following ways:

- Having earned a minimum grade of *B* in a sixth-semester university-level advanced language course completed no more than three years prior to matriculation in the Elliott School's master's degree program.
- Having earned a minimum grade of *B* in a sixth-semester university-level advanced language course at GW, or in an approved course taken at another institution of higher learning, including Elliott School exchange partner institutions, while enrolled in the Elliott School master's program.
- Passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency. (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>) The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.
- Achieving the required proficiency level in a reading and speaking examination administered by an Elliott School-approved foreign language assessment institution, at the student's expense, while enrolled in the Elliott School's Master's Degree Program.
- Demonstrating the required foreign language proficiency level in a foreign language professional skills course offered through the Elliott School. The instructor tests the student during the course (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>) to determine if the required proficiency level has been achieved.

As of fall 2018, the above policy applies to new and current students in the Elliott School's non-regional studies master's programs with a foreign language requirement. Consult the Program Director for more information.

CONCENTRATIONS

Concentrations

Thematic concentrations

- Conflict and Conflict Resolution (p. 974)
- Global Energy and Environmental Policy (p. 975)
- Global Gender Policy (p. 975)
- Global Health (p. 976)
- International Affairs and Development (p. 977)
- International Economic Affairs (p. 979)

- International Law and Organizations (p. 980)
- International Security Studies (p. 981)
- Nuclear Policy (p. 984)
- Technology and International Affairs (p. 984)
- U.S. Foreign Policy (p. 985)

Regional concentrations

- Africa (p. 972)
- Asia (p. 973)
- Europe, Eurasia, and Russia (p. 974)
- Latin America (p. 983)
- Middle East (p. 984)

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, AFRICA CONCENTRATION

See note regarding special topics courses*.

Code	Title	Credits
Required courses (6 credits)		
At least two courses from the following. Any courses not taken to fulfill this requirement can be used as supporting coursework.		
IAFF 6138	Special Topics in International Development Studies (those regionally relevant)	
IAFF 6186	Special Topics in Security Policy Studies (Peace and Conflict in Africa)	
IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)	
IAFF 6385	Special Topics in African Studies (Power, Politics, and Development in Africa)	
IAFF 6385	Special Topics in African Studies (Rising China in Africa)	
Supporting courses (6 credits)		
Two courses from the following:		
ANTH 6301	The Anthropology of Development	
ANTH 6591	Topics in Sociocultural Anthropology (Displacement and Diaspora)	
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6250	Survey of Economic Development	

IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
IAFF 6138	Special Topics in International Development Studies (Foundations of Humanitarian Assistance)
IAFF 6138	Special Topics in International Development Studies (Gender and Development)
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
IBUS 6402	Managing in Developing Countries
PUBH 6480	Public Health in Humanitarian Settings

Students are encouraged to explore relevant courses offered by other member schools of the Consortium of Universities of the Washington Metropolitan Area, such as Howard, Georgetown and American Universities. Students should consult with the faculty advisor regarding such opportunities.

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, ASIA CONCENTRATION

See note regarding special topics* and LAW** courses.

Code	Title	Credits
12 credits selected from at least three of the following groupings:		
Group A: History of modern Asia		
HIST 6601	Topics: Asian History (Geography and Politics of Afghanistan and South & Central Asia)	
HIST 6602	Asia: History, Memory, and Violence	

HIST 6611 Readings Seminar: Twentieth-Century China

HIST 6630 Special Topics in Korean History (Modern Korea)

HIST 6641 Modern Southeast Asia

Group B: Politics and Policy in Asia

1. Domestic politics, foreign policy, and law

ENGL 6560 Postcolonialism

IAFF 6302 Taiwan: Internal Development and Foreign Policy

LAW 6543 Chinese Law and Legal Institutions *

PSC 6336 The Political Economy of China, India, and Beyond

PSC 6368 Japanese Politics and Foreign Policy

PSC 6370 Politics of China I

PSC 6374 Korean Politics

2. Security and military policy

IAFF 6186 Special Topics in Security Policy Studies (The Chinese Military)

Group C: International relations of Asia

HIST 6301 Topics: U.S. History (U.S.-Asia Relations)

IAFF 6302 Taiwan: Internal Development and Foreign Policy

IAFF 6308 International Relations of South Asia

PSC 6372 Foreign Policy of China

PSC 6475 International Politics of East Asia

Group D: Asian business and development

ECON 6269 Economy of China I

PSC 6336 The Political Economy of China, India, and Beyond

PSC 6373 Political Economy of Industrializing Asia

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, CONFLICT AND CONFLICT RESOLUTION CONCENTRATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits)		
IAFF 6171	Introduction to Conflict Resolution	
Supporting courses (9 credits)		
IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)	
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)	
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster, and Development)	
IAFF 6138	Special Topics in International Development Studies (Rule of Law and Anti-Corruption)	
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)	
IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)	
IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)	

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, EUROPE, EURASIA, AND RUSSIA CONCENTRATION

See note regarding special topics and LAW courses*.

Code Title Credits

12 credits from the following

At least one course must be from Group A and one from Group B. The remaining two courses may be taken from either group.

Group A. Western, Central and Eastern Europe

HIST 6051	Re-thinking Cold War History
HIST 6101	Topics: Europe (Europe, Readings and Research: Modern European History)
HIST 6121	Reading and Research Seminar: Modern European History
HIST 6170	Eastern European History I
HIST 6171	Eastern European History II
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
PSC 6465	The International Politics of Central and Eastern Europe
PSC 8388	Selected Topics in Comparative Politics (Authoritarianism and Democratization)
PSC 8388	Selected Topics in Comparative Politics (Nationalism and Nation Building)

Group B. Russia and Eurasia

HIST 6188	The Soviet Union and the World, 1917 to 1991
IAFF 6138	Special Topics in International Development Studies (Post-Soviet Democracy Development)
IAFF 6338	Special Topics in European and Eurasian Studies (Central Asia Between East and West)
IAFF 6338	Special Topics in European and Eurasian Studies (History and Politics of the Caucasus)
IAFF 6338	Special Topics in European and Eurasian Studies (Politics of Russia)
IAFF 6338	Special Topics in European and Eurasian Studies (U.S.-Russia Relations in the 21st Century)

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes

for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, GLOBAL ENERGY AND ENVIRONMENTAL POLICY CONCENTRATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
Required—two from the following (6 credits)		
ECON 6295	Special Topics (Applied Environmental Economics)	
IAFF 6151	Environmental Policy	
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)	
PPPA 6066	U.S. Environmental Policy	
Supporting courses (6 credits)		
EMSE 6260	Energy Management	
EMSE 6290	Climate Change: Policy, Impacts, and Response	
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)	
IAFF 6141	International Science and Technology Policy Cornerstone	
IAFF 6164	Environmental Security	
IAFF 6186	Special Topics in Security Policy Studies (Energy Security)	
IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, Society)	
IAFF 6501	Quantitative Analysis for International Affairs Practitioners	
IBUS 4404	Global Energy	
IBUS 6400	Oil: Industry, Economy, and Society	
LAW 6454	International Environmental Law **	
LAW 6455	International Climate Change Law **	

LAW 6460	Environment and Energy Policy Practicum **
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6130	Sustainable Energy and the Environment

*Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

Suggested skills courses (credits count toward the skills course requirement for the master's program)	
IAFF 6503	Professional Skills II (1 credit)
PUBH 6262	Introduction to Geographic Information Systems (1 credit)
PUBH 6263	Advanced GIS (1 credit)

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, GLOBAL GENDER POLICY CONCENTRATION

See note regarding special topics and LAW courses*

Code	Title	Credits
Required course (3 credits)		
IAFF 6102	Global Gender Policy	
Supporting courses (9 credits)		
IAFF 6118	Special Topics in International Affairs (Gender and Security)	
IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)	
IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues)	

IAFF 6136	Gender and Development
IAFF 6138	Special Topics in International Development Studies (Gender and Development)
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster, and Development)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
One course from the following may be used as a supporting course:	
ANTH 6501	Gender and Sexuality
ANTH 6505	Medical Anthropology
EDUC 6640	Selected Topics in International Education (Gender in International Education and Development)
IAFF 6138	Special Topics in International Development Studies (Care of Women and Children in Complex Emergencies)
MGT 6290	Special Topics (Research - Women's Entrepreneurial Leadership)
PHIL 6238	Feminist Ethics and Policy Implications
PUBH 6099	Topics in Public Health (Sexual and Reproductive Health)
SOC 6265	Women, Welfare, and Poverty
SOC 6268	Race, Gender, and Class
WGSS 6220	Fundamentals of Feminist Theory
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies
WGSS 6230	Global Feminisms
WGSS 6240	Gender and Public Policy
WGSS 6241	Gender, Law, and Politics
WGSS 6268	Race, Gender, and Class
WGSS 6270	Seminar: Selected Topics (Black Feminist Theory)
WGSS 6270	Seminar: Selected Topics (Global Islamic Feminisms)

WGSS 6270	Seminar: Selected Topics (Gender, Power, and Sexuality in East Asia)
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Students may take IAFF 2190W or IAFF 3183 for graduate credit as a supporting course with permission from the Program Director, academic advisor, and instructor, who must agree to assign additional work.

IAFF 2190W	Special Topics (Women in Global Politics)
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IAFF 3183	Special Topics in Development Policy (Human Trafficking)
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Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, GLOBAL HEALTH CONCENTRATION

See notes regarding special topics* and PUBH** courses.

Code	Title	Credits
Required course (2 credits)		
PUBH 6400	Global Health Frameworks (fall semester only)	
Supporting courses (10 credits)		
ANTH 6505	Medical Anthropology (3 credits)	
Research methods in global health:		
PUBH 6410	Global Health Study Design (2 credits)	
PUBH 6411	Global Health Qualitative Research Methods (2 credits)	
PUBH 6412	Global Health Quantitative Research Methods (3 credits)	
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs (1 credit)	
Theory and methods courses in global health:		
PUBH 6435	Global Health Program Development and Implementation (2 credits)	

PUBH 6436	Global Health Program Management and Leadership (2 credits)
Global health content courses:	
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries (1 credit)
PUBH 6440	Global Health Economics and Finance (2 credits)
PUBH 6441	Global Health Organizations and Regulations (2 credits)
PUBH 6442	Comparative Global Health Systems (2 credits)
PUBH 6480	Public Health in Humanitarian Settings (Public Health in Complex Emergencies (2 credits)
PUBH 6481	Global Mental Health (2 credits)
PUBH 6482	International Food and Nutrition Policy (2 credits)
PUBH 6499	Topics in Global Health (Public Health Systems)

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

** Most Public Health (PUBH) courses are offered for 2 instead of 3 credits. Students pursuing the global health concentration should consult their academic advisor with questions regarding course selection.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, INTERNATIONAL AFFAIRS AND DEVELOPMENT CONCENTRATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
Required course (3 credits)		
One of the following. Any course not taken to fulfill this requirement may be used as supporting courses.		
ECON 6250	Survey of Economic Development	

IAFF 6108	International Development Policy
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
IAFF 6138	Special Topics in International Development Studies (Poverty Alleviation and Bottom Up Development)

Supporting courses (9 credits)

The following courses are grouped into subcategories to help guide students in choosing appropriate coursework. Students should use this guidance to develop a coherent and logical narrative for their program of study. Students may choose courses from different subcategories to construct a concentration around their area of focus.

9 credits from among the groupings listed below:

Group A: Culture, society and development

ANTH 6301	The Anthropology of Development
ANTH 6391	Anthropology and Contemporary Problems (Capitalism/Neoliberalism)
ANTH 6501	Gender and Sexuality
ANTH 6505	Medical Anthropology
ANTH 6508	Ethics and Cultural Property
ANTH 6591	Topics in Sociocultural Anthropology (Displacement and Diaspora)
IAFF 6138	Special Topics in International Development Studies (Gender and Development)
IAFF 6138	Special Topics in International Development Studies (Indigenous People and Development)

Group B: Economic development policy

ECON 6237	Economics of the Environment and Natural Resources
ECON 6250	Survey of Economic Development
ECON 6269	Economy of China I
ECON 6283	Survey of International Trade Theory and Policy

ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	EMSE 6325	Medical and Public Health Emergency Management
ECON 8358	Urban Economics	IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6198	Special Topics in International Economic Policy (Development and Trade Policy in LDCs)	IAFF 6138	Special Topics in International Development Studies (Violence, Gender, Humanitarian Assistance)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)	LAW 6540	Refugee and Asylum Law **
PSC 6373	Political Economy of Industrializing Asia	Group F: Institutions and politics	
Group C: Gender and development		IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
ANTH 6501	Gender and Sexuality	PSC 6336	The Political Economy of China, India, and Beyond
IAFF 6136	Gender and Development	PSC 6373	Political Economy of Industrializing Asia
IAFF 6138	Special Topics in International Development Studies (Gender and Development)	PSC 6383	Comparative Politics of Latin America
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster, and Development)	PSC 6439	International Political Economy
WGSS 6230	Global Feminisms	PSC 8337	Theories of Political Development
WGSS 6270	Seminar: Selected Topics (Gender, Power, and Sexuality in East Asia)	PSC 8388	Selected Topics in Comparative Politics (Authoritarianism and Democratization)
Group D: Global health		Group G: International business	
ANTH 6505	Medical Anthropology	IBUS 6301	International Business Finance
ANTH 6591	Topics in Sociocultural Anthropology (Illness and Stigma)	IBUS 6400	Oil: Industry, Economy, and Society
PUBH 6400	Global Health Frameworks (strongly recommended)	IBUS 6401	International Business Strategy
PUBH 6411	Global Health Qualitative Research Methods	IBUS 6402	Managing in Developing Countries
PUBH 6440	Global Health Economics and Finance	MBAD 6241	Global Perspectives
PUBH 6442	Comparative Global Health Systems	Group H: International development management	
PUBH 6480	Public Health in Humanitarian Settings	PPPA 6016	Public and Nonprofit Program Evaluation
PUBH 6482	International Food and Nutrition Policy	PPPA 6057	International Development Administration
Group E: Humanitarian assistance		PPPA 6058	International Development NGO Management
ANTH 6505	Medical Anthropology	PPPA 6059	International Development Management Processes and Tools
EMSE 6305	Crisis and Emergency Management	Group I: International education	
EMSE 6320	International Disaster Management	EDUC 6601	International and Comparative Education

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, INTERNATIONAL ECONOMIC AFFAIRS CONCENTRATION

See notes regarding special topics* and MBAD courses**.

Code	Title	Credits
Students pursuing this concentration must take ECON 6283 and ECON 6284 as part of the core field requirement for the master's degree program. These courses do not count toward the concentration.		
Students also must demonstrate proficiency in introductory statistics. Means of demonstrating proficiency include, but are not limited to, prior satisfactory completion of undergraduate statistics coursework, or STAT 1051, 1053, 1111 or IAFF 6501 at GW. Students should consult the Program Director as soon as possible following matriculation into the program regarding additional ways in which this requirement may be fulfilled.		
Required—at least 6 credits from the following:		
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6250	Survey of Economic Development	
ECON 6255	Economics of Technological Change	
ECON 6269	Economy of China I	
ECON 6293	Topics in International Finance *	
ECON 6295	Special Topics (Applied Behavioral Economics)	
ECON 6295	Special Topics (Economic Analysis of International Trade Law)	
ECON 6335	Applied Financial Derivatives	
ECON 6340	Applied Labor Economics and Public Policy	
ECON 6344	Applied Industrial Organization	
PPPA 6014	Microeconomics for Public Policy II	
PPPA 6015	Benefit-Cost Analysis	
Supporting courses (6 credits)		
IAFF 6142	Technology Creation/Diffusion	
IAFF 6198	Special Topics in International Economic Policy (21st Century Trade Policies: Issues and Strategy)	

EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education (Education in Emergencies)
EDUC 6640	Selected Topics in International Education (Evaluation in International Education)
EDUC 6640	Selected Topics in International Education (International Higher Education for Development)
EDUC 6650	Education and National Development
Group J: Natural resources and the environment	
ECON 6237	Economics of the Environment and Natural Resources
EMSE 6220	Environmental Management
GEOG 6244	Urban Sustainability
GEOG 6293	Special Topics (Geography of Latin America)
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)
IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6151	Environmental Policy
IAFF 6164	Environmental Security
LAW 6454	International Environmental Law **
PPPA 6066	U.S. Environmental Policy
SMPP 6210	Strategic Environmental Management

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, INTERNATIONAL LAW AND ORGANIZATIONS CONCENTRATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
12 credits from the following:		
IAFF 6118	Special Topics in International Affairs (Global Justice)	
IAFF 6118	Special Topics in International Affairs (International Law)	
IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)	
IAFF 6118	Special Topics in International Affairs (Leadership in International Affairs)	
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)	
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)	
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)	
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)	
IAFF 6138	Special Topics in International Development Studies (Global Food Security)	
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)	
IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation for Foreign Assistance Programs)	
IAFF 6146	Space Law	
IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)	
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)	

IAFF 6198	Special Topics in International Economic Policy (Advanced Quantitative Analysis)
IAFF 6198	Special Topics in International Economic Policy (Development and Trade Policy in LDCs)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, and Society)
IAFF 6378	Special Topics in Middle East Studies (Political Economy of the Middle East)
IBUS 6202	Regional Strategy for Multinationals
IBUS 6297	International Management Experience
IBUS 6301	International Business Finance
PSC 6439	International Political Economy
Recommended skills courses	
IAFF 6502	Professional Skills I (Analyzing International Economic Data)
IAFF 6502	Professional Skills I (Financial Statement Analysis)
IAFF 6503	Professional Skills II (Analyzing International Economic Data)
IAFF 6503	Professional Skills II (Intro to Gaming and Simulations)
IAFF 6503	Professional Skills II (Negotiating Skills)
MBAD 6211	Financial Accounting **
MBAD 6234	Financial Management **

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Only specific topics that are determined by the Program Director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the Program Director prior to enrollment. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

**Only one MBAD skills course can be used within the International Affairs degree.

IAFF 6186	Special Topics in Security Policy Studies (Illicit Finance and Security)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
IAFF 6338	Special Topics in European and Eurasian Studies (European Union Foreign Relations)
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)
LAW 6520	International Law **
LAW 6534	Law of the European Union **
LAW 6870	National Security Law **
PSC 6439	International Political Economy

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, INTERNATIONAL SECURITY STUDIES CONCENTRATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
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12 credits from the following:

Courses in international security studies concentration are grouped into issues subcategories to help guide students in choosing appropriate coursework. Students do not necessarily need to select one subcategory; however, what is important is that there is a logic and believable narrative to their course choices. Students should consult their faculty advisor to help with this determination.

Group A: Transnational security issues

IAFF 6148	Space and National Security
IAFF 6163	Transnational Security
IAFF 6164	Environmental Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6169	Homeland Security
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Non-Proliferation)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
LAW 6552	Law of War **

Group B: Intelligence

IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6163	Transnational Security
IAFF 6164	Environmental Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)

Group C: U.S. national security policy and process

HIST 6330	Modern U.S. Foreign Policy
IAFF 6106	Nuclear Weapons
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)
IAFF 6165	Fundamentals of Intelligence
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)

IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
IAFF 6521	U.S. Foreign Policy Summer Program
PSC 6346	The Politics of U.S. Foreign Policy
PSC 6349	International Security Politics
Group D: Conflict and conflict resolution	
IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
IAFF 6164	Environmental Security
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)
IAFF 6186	Special Topics in Security Policy Studies (Peace and Conflict in Africa)
Group E: Homeland security	
IAFF 6163	Transnational Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6169	Homeland Security
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
Group F: Strategic concepts and military history	
HIST 6051	Re-thinking Cold War History
HIST 6330	Modern U.S. Foreign Policy

IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
PSC 6478	International Relations of the Middle East
PSC 8489	Selected Topics in International Politics (Civil Wars)
Group G: Science, technology, and national security policy	
IAFF 6106	Nuclear Weapons
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6145	U.S. Space Policy
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Space and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Nonproliferation)
Group H: Security and development	
IAFF 6118	Special Topics in International Affairs (Gender and Security)
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)

IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Peace and Conflict in Africa)
Group I: Weapons of mass destruction	
IAFF 6106	Nuclear Weapons
IAFF 6107	The Science of Nuclear Materials
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Nonproliferation)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)
IAFF 6186	Special Topics in Security Policy Studies (Space and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Weapons of Mass Destruction and Arms Control)
Group J: Regional Security	
Four courses that focus on the security issues within a region; general policy courses are not applicable. Please consult with the program director/advisor to develop a regional security field.	

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, LATIN AMERICA CONCENTRATION

See notes regarding special topics and LAW courses* and enrollment requirements**.

Code	Title	Credits
Required—at least two of the following (6 credits)		
ANTH – Any 6000-level Anthropology course approved by the Program Director		
IAFF 6341	Latin American and Hemispheric Studies Cornerstone **	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Governments and Politics of Latin America)	
PSC 6383	Comparative Politics of Latin America	
PSC 6484	International Relations of Latin America	
Supporting courses (6 credits)		
Students may take IAFF 3187 for graduate credit as a supporting course with permission from the Program Director, academic advisor, and instructor, who must agree to assign additional work:		
IAFF 3187	Special Topics in Latin American and Hemispheric Studies	
IAFF 6341	Latin American and Hemispheric Studies Cornerstone **	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Conflict and Contestation in Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Governments and Politics of Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (OAS & Democracy in the Americas)	

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be

taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

**Permission of the instructor required prior to enrollment.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, MIDDLE EAST CONCENTRATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits)		
At least one from the following:		
IAFF 6378	Special Topics in Middle East Studies (Political Economy of the Middle East)	
PSC 6377	Comparative Politics of the Middle East	
PSC 6478	International Relations of the Middle East	
Supporting courses (9 credits)		
ANTH 6707	Issues in Middle East Anthropology (Citizenship and Displacement in the Middle East)	
IAFF 6364	Religion and Society in the Modern Middle East	
IAFF 6378	Special Topics in Middle East Studies (Lebanon and Syria)	
IAFF 6378	Special Topics in Middle East Studies (Neighbors and Rivals: Iran and the Arab World)	
IAFF 6378	Special Topics in Middle East Studies (U.S. Policy in the Gulf)	
A full listing of Middle East courses is posted in advance of each semester on the Institute for Middle East Studies website.		

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, NUCLEAR POLICY CONCENTRATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
12 credits from the following:		
IAFF 6106	Nuclear Weapons	
IAFF 6107	The Science of Nuclear Materials	
IAFF 6118	Special Topics in International Affairs (Nuclear Proliferation and Nonproliferation)	
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)	
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)	
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)	
IAFF 6186	Special Topics in Security Policy Studies (Weapons of Mass Destruction and Arms Control)	

Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, TECHNOLOGY AND INTERNATIONAL AFFAIRS CONCENTRATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits):		
IAFF 6141	International Science and Technology Policy Cornerstone	
Supporting courses (9 credits):		

ECON 6255	Economics of Technological Change
IAFF 6142	Technology Creation/Diffusion
IAFF 6143	Science and Technology Policy Analysis
IAFF 6145	U.S. Space Policy
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Economics of Space)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6501	Quantitative Analysis for International Affairs Practitioners

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL AFFAIRS, U.S. FOREIGN POLICY CONCENTRATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits):		
At least one course from the following. Courses not taken as the required course can be used as supporting courses.		
HIST 6330	Modern U.S. Foreign Policy	
IAFF 6521	U.S. Foreign Policy Summer Program	
PSC 6346	The Politics of U.S. Foreign Policy	
Supporting courses (9 credits):		
HIST 6032	Reading and Research Seminar: Strategy and Policy	
HIST 6320	Readings/Research Seminar: Recent U.S. History	
IAFF 6145	U.S. Space Policy	
IAFF 6148	Space and National Security	

IAFF 6163	Transnational Security
IAFF 6165	Fundamentals of Intelligence
IAFF 6186	Special Topics in Security Policy Studies (Coercion and Deterrence in Peace & War)
IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
IAFF 6186	Special Topics in Security Policy Studies (Homeland Security)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency & Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Military Power and Effectiveness)
IAFF 6186	Special Topics in Security Policy Studies (Military Technology Assessment)
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Security Policy)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
IAFF 6186	Special Topics in Security Policy Studies (U.S. Grand Strategy)
IAFF 6186	Special Topics in Security Policy Studies (U.S. National Security)
IAFF 6198	Special Topics in International Economic Policy
IAFF 6208	Special Topics in Global Communication (Public Diplomacy)
IAFF 6378	Special Topics in Middle East Studies (U.S. Foreign Policy in the Gulf)
IAFF 6378	Special Topics in Middle East Studies (U.S. Security Policy in the Middle East)
PSC 6439	International Political Economy

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be

taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL DEVELOPMENT STUDIES

Steps from the World Bank and the International Monetary Fund, the Elliott School engages the Washington and global policy communities in meaningful discussions of development policy. The international development studies (IDS) graduate program is the fastest-growing program in the Elliott School of International Affairs. The program trains the next generation of development practitioners, exposing them to the latest research, best practices from the field, and experiential learning opportunities.

The MA in international development studies provides a broad understanding and appreciation of current development theories and issues, as well as the processes involved in formulating policies and implementing development projects. Students prepare for professional careers in the field of international development through interdisciplinary coursework that includes the study of economics, research methods, policy analysis, and management. In their final year, IDS students complete capstone projects, working with Elliott School faculty mentors in partnership with aid organizations around the world.

Visit the program website (<http://elliott.gwu.edu/international-development-studies/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 6 credits in core field courses, a 4-credit capstone course sequence, 12 credits in analytical courses, 18 credits in an area of specialization. In addition, all students must fulfill a foreign language proficiency requirement (see below).

See notes regarding special topics and professional skills courses, the capstone, and the thesis option.*

Code	Title	Credits
Required		
Core courses (6 credits)		
Taken in the following sequence:		
IAFF 6121	International Development Studies Cornerstone (3 credits, taken in the first semester)	
IAFF 6122	Development Policy and Practice (3 credits, taken in the second semester)	

Analytical courses (12 credits—see below for course areas and options)

Area of specialization (18 credits—see below for potential areas of specialization and associated courses)

Capstone (4 credits)

Students are required to complete a two-semester capstone sequence that involves securing a sponsoring client outside the University and fulfilling a project with that client of mutual interest and research in international development. The capstone sequence includes a 1-credit pre-capstone course that must be taken in the fall of the student's second or third year and a 3-credit capstone course that must be taken in the spring of the student's second or third year. Both courses in the capstone sequence must be taken consecutively.

IAFF 6137	Development Studies Pre-Capstone Workshop
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IAFF 6139	International Development Studies Capstone
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Professional skills courses

The Elliott School offers a series of one-credit workshops on a variety of topics. Students are encouraged to consider taking up to three of these skills courses. Up to 3 credits of professional skills courses can be applied to one's specialization in the IDS program.

Additional thesis option

Students who wish to complete a thesis do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum GPA of 3.5 and approval from the faculty member who will serve as their thesis director. Thesis students also need to complete at least one research methods course prior to enrolling in thesis courses. Thesis credits are counted as specialization credits with Program Director approval. The two 3-credit thesis courses must be taken consecutively.

IAFF 6998	Thesis
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IAFF 6999	Thesis
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Analytical courses (12 credits)

Code	Title	Credits
Students must take one course in each of the four following areas to fulfill this requirement. All courses for this requirement must be completed by the end of the third semester to fully prepare students for the capstone project in their final semester. In addition to the courses listed under each requirement, other appropriate courses may count towards requirements with the approval of the Program Director.		

Economics (taken during the first semester)

Management	
Research methods	
A choice between policy analysis or a second course in research methods	
Economics (3 credits)	
Required:	
ECON 6250	Survey of Economic Development *
*Students with a strong economics background may substitute a more advanced development economics course with Program Director approval.	
Management (3 credits)	
One of the following:	
EDUC 6381	Program Evaluation: Theory and Practice
EDUC 6620	Strategies and Analysis in International Education (Managing Study Abroad and International Students)
EDUC 6620	Strategies and Analysis in International Education (Planning for Education Reform)
EMSE 6001	The Management of Technical Organizations
EMSE 6260	Energy Management
EMSE 6285	Analytical Tools for Energy Management
EMSE 6305	Crisis and Emergency Management
EMSE 6310	Information Technology in Crisis and Emergency Management
EMSE 6320	International Disaster Management
EMSE 6325	Medical and Public Health Emergency Management
EMSE 6330	Management of Terrorism Preparedness and Response
EMSE 6350	Hazard Mitigation in Disaster Management
EMSE 6820	Program and Project Management
IBUS 6402	Managing in Developing Countries
MGT 6281	Small Business Management

PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6031	Governing and Managing Nonprofit Organizations
PPPA 6032	Managing Fund Raising and Philanthropy
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
PPPA 6062	Community Development Policy and Management
PUBH 6006	
PUBH 6435	Global Health Program Development and Implementation
PUBH 6436	Global Health Program Management and Leadership
PUBH 6513	Community Health Management
SMPP 6210	Strategic Environmental Management
Research Methods (3 credits)	
At least one of the following courses:	
ANTH 6331	Research Methods in Development Anthropology
ANTH 6531	Methods in Sociocultural Anthropology
EDUC 6114	Introduction to Quantitative Research
EDUC 6116	Introduction to Educational Statistics
EDUC 8122	Qualitative Research Methods
GEOG 6201	Geographic Thought
GEOG 6293	Special Topics (Qualitative Methods)
GEOG 6305	Geospatial Statistics
IAFF 6118	Special Topics in International Affairs (Applied Qualitative Methods)
IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues)

IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation for Foreign Assistance) **
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
PPPA 6002	Research Methods and Applied Statistics
PPPA 6013	Econometrics for Policy Research I
PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 8022	Econometrics for Policy Research II
PUBH 6247	Design of Health Studies
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6264	Quantitative Methods
PUBH 6266	Biostatistical Methods
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6502	Practical Data Analysis for Prevention and Community Health
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
Students who wish to take a public health course not listed above to fulfill their research methods requirement should consult their advisor before enrolling in the course.	
SOC 6230	Sociological Research Methods
SOC 6232	Qualitative Methodology: Doing Field Research
Policy Analysis (3 credits)	
One of the following courses. In lieu of a policy analysis course, students may opt to take a second research methods course.	
EDUC 6371	Education Policy (Policy Making in Education)
EDUC 6388	Analysis of Education Policy Issues

EDUC 6610	Programs and Policies in International Education (Political Issues and International Education in Developing Countries)
IAFF 6102	Global Gender Policy
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil Development Policy 21st Century)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil in the Global Arena)
IAFF 6378	Special Topics in Middle East Studies (U.S. Policy in the Gulf)
PPPA 6006	Policy Analysis
PPPA 6013	Econometrics for Policy Research I
PPPA 6014	Microeconomics for Public Policy II
PPPA 6049	Urban and Regional Policy Analysis
PPPA 6066	U.S. Environmental Policy
PPPA 6077	Case Studies in Public Policy
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6315	Introduction to Health Policy Analysis
PUBH 6320	Advanced Health Policy Analysis
PUBH 6325	Federal Policymaking and Policy Advocacy
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies
WGSS 6240	Gender and Public Policy

Areas of specialization (18 credits)

In consultation with the program director, students design their own area of specialization based on their interests and career goals. The list of specializations below is illustrative, and students' field of specialization may include a combination of more than one of these popular thematic areas in international development or may involve other issues not covered below. Courses listed, likewise, should be treated as illustrative examples, not requirements. Up to 3 credits of professional skills courses can be applied to the specialization. Students are strongly encouraged to select courses offered by schools throughout the University as well as approved courses offered

by other institutions through the Consortium of Universities of the Washington Metropolitan Area.”

Code	Title	Credits
Conflict and Development		
EMSE 6305	Crisis and Emergency Management	
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	
EMSE 6330	Management of Terrorism Preparedness and Response	
IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)	
IAFF 6118	Special Topics in International Affairs (International Law and Use of Force)	
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)	
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)	
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)	
IAFF 6163	Transnational Security	
IAFF 6171	Introduction to Conflict Resolution	
IAFF 6186	Special Topics in Security Policy Studies (Conflict Prevention and Early Warning)	
IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)	
IAFF 6186	Special Topics in Security Policy Studies (Energy Security)	
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)	
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)	
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)	
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)	
IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)	
IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)	

IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)
IAFF 6378	Special Topics in Middle East Studies (U.S. Security Policy in the Middle East)
IAFF 6385	Special Topics in African Studies (Power, Politics, and Development in Africa)
IAFF 6502	Professional Skills I (Building Resilient Communities)
IAFF 6502	Professional Skills I (Conflict and Corruption: the Resource Curse)
IAFF 6502	Professional Skills I (Project Management and Evaluation for Security)
IAFF 6502	Professional Skills I (Technology for International Crisis Response)
MGT 6215	Conflict Management and Negotiations
SMPA 6274	Media and War
Culture, Society, and Development	
ANTH 6301	The Anthropology of Development
ANTH 6331	Research Methods in Development Anthropology
ANTH 6391	Anthropology and Contemporary Problems (Capitalism and Neoliberalism)
ANTH 6391	Anthropology and Contemporary Problems (Globally Shared Heritage)
ANTH 6391	Anthropology and Contemporary Problems (War and Memory)
ANTH 6505	Medical Anthropology
ANTH 6508	Ethics and Cultural Property
GEOG 6208	Land Use and Urban Transportation Planning
GEOG 6224	Seminar: Political Geography
GEOG 6232	Migration and Development
GEOG 6243	Seminar: Urban Geography
GEOG 6244	Urban Sustainability
IAFF 6118	Special Topics in International Affairs (Human Rights Successes)

IAFF 6136	Gender and Development
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)
IAFF 6138	Special Topics in International Development Studies (Gender and Development)
IAFF 6138	Special Topics in International Development Studies (Gender and Economic Development)
IAFF 6138	Special Topics in International Development Studies (Local Government, Decentralization, and Development)
IAFF 6138	Special Topics in International Development Studies (Poverty Alleviation and Bottom-Up Development)
IAFF 6138	Special Topics in International Development Studies (Youth and Development)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (OAS and Democracy in the Americas)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 6385	Special Topics in African Studies (Power, Politics, and Development in Africa)
IAFF 6502	Professional Skills I (Cross Cultural Communications)
IAFF 6502	Professional Skills I (Participatory Planning)
PHIL 6290	Special Topics in Public Policy (Human Rights, Ethics, and Public Policy)
SOC 6245	Race Relations
SOC 6248	Race and Urban Redevelopment
Democracy and Governance	
GEOG 6224	Seminar: Political Geography

HIST 6050	Modernization, Imperialism, Globalization
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
IAFF 6138	Special Topics in International Development Studies (Local Government, Decentralization and Development)
IAFF 6138	Special Topics in International Development Studies (Poverty and Bottom-Up Development)
IAFF 6138	Special Topics in International Development Studies (Rule of Law and Anticorruption)
IAFF 6186	Special Topics in Security Policy Studies (Gangs and Youth Violence)
IAFF 6208	Special Topics in Global Communication (Communication in Modern Diplomacy)
IAFF 6502	Professional Skills I (Restorative Justice)
PPPA 6048	Financing State and Local Government
PPPA 6085	Special Topics in Public Policy (Innovation in the Public Sector)
PPPA 6085	Special Topics in Public Policy (Nonprofit Cross-boundary Leadership)
PMGT 6401	Fundamentals of Political Management
PMGT 6410	Grassroots Engagement
PMGT 6422	State and Intergovernmental Politics
PMGT 6490	Special Topics (Assessing Political Risk)
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe
PSC 6370	Politics of China I
PSC 6377	Comparative Politics of the Middle East
PSC 6379	Government and Politics of Africa
PSC 6383	Comparative Politics of Latin America

PSC 6388	Topics in Comparative Politics (Nationalism and Nation Building)	ECON 6295	Special Topics (Economic Forecasting)
PSC 6388	Topics in Comparative Politics (Politics and Policy in Asia)	IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
PSC 6388	Topics in Comparative Politics (State and Society in East Asia)	IAFF 6138	Special Topics in International Development Studies (Gender and Economic Development)
PSC 6388	Topics in Comparative Politics (Theories of Political Development)	IAFF 6138	Special Topics in International Development Studies (Poverty and Bottom-up Development)
PSC 6465	The International Politics of Central and Eastern Europe	IAFF 6138	Special Topics in International Development Studies (Private Sector Development)
PSC 6478	International Relations of the Middle East	IAFF 6138	Special Topics in International Development Studies (Social Enterprise and Development)
PSC 6484	International Relations of Latin America	IAFF 6198	Special Topics in International Economic Policy (Development and Trade Policy in LDCs)
PSC 8334	Democracy and Democratization in Comparative Perspective	IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
SMPA 6204	Strategic Political Communication	IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, Society)
SMPA 6208	Politics and Public Relations Fundamentals	IAFF 6378	Special Topics in Middle East Studies (Political Economy of the Middle East)
SMPA 6270	Special Topics in Media and Public Affairs (Communication in Modern Diplomacy)	IAFF 6502	Professional Skills I (Analyzing International Economic Data)
SMPA 6270	Special Topics in Media and Public Affairs (Media in Developing World)	IAFF 6502	Professional Skills I (Art and Practice of Global Investing)
WGSS 6240	Gender and Public Policy	IAFF 6502	Professional Skills I (Mobile Phones for International Development)
WGSS 6241	Gender, Law, and Politics	SMPP 6290	Special Topics (Public Private Partnerships)
Economic Development		SMPP 6290	Special Topics (Strategy and Management of Countries in Economic Transitions)
ECON 6217	Survey of Economics I	SMPP 6290	Special Topics (Strategy, Global Markets and Politics)
ECON 6219	Managerial Economics	SMPP 6290	Special Topics (Sustainable and Responsible Investment in Today's Market)
ECON 6237	Economics of the Environment and Natural Resources	Gender and Development	
ECON 6255	Economics of Technological Change		
ECON 6280	Survey of International Economics		
ECON 6283	Survey of International Trade Theory and Policy		
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy		
ECON 6295	Special Topics (Applied Behavioral Economics)		
ECON 6295	Special Topics (Econ Analysis International Trade Law)		

ANTH 6506	Topics in Medical Anthropology (Women, Health, and Development)
EDUC 6640	Selected Topics in International Education (Gender in International Education and Development)
EDUC 6640	Selected Topics in International Education (Inequality in International Higher Education)
EDUC 6640	Selected Topics in International Education (UNESCO: 21st Century Agenda Topics)
IAFF 6102	Global Gender Policy
IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)
IAFF 6118	Special Topics in International Affairs (Global Gender Research Methods for Practitioners)
IAFF 6136	Gender and Development
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Gender and Development)
IAFF 6138	Special Topics in International Development Studies (Gender and Economic Development)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender and Humanitarian Assistance)
IAFF 6186	Special Topics in Security Policy Studies (Identity and CVE)
IAFF 6502	Professional Skills I (Feminist Research Methods in Post-Conflict Settings)
IAFF 6503	Professional Skills II (Gender Advisor: Roles and Skills)
MGT 6290	Special Topics (Women's Entrepreneurial Leadership)
WGSS 6220	Fundamentals of Feminist Theory
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies

WGSS 6230	Global Feminisms
WGSS 6238	Feminist Ethics and Policy Implications
WGSS 6240	Gender and Public Policy
WGSS 6241	Gender, Law, and Politics
WGSS 6268	Race, Gender, and Class
WGSS 6270	Seminar: Selected Topics (Global Islamic Feminisms)
WGSS 6270	Seminar: Selected Topics (Women and Gender in International Perspectives)
Global Health	
Required course:	
PUBH 6400	Global Health Frameworks
Supporting courses:	
ANTH 6505	Medical Anthropology
EMSE 6325	Medical and Public Health Emergency Management
PUBH 6002	Biostatistical Applications for Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6007	Social and Behavioral Approaches to Public Health
PUBH 6054	Community Engagement and Advocacy
PUBH 6058	Researching Violence Against Women and Girls
PUBH 6099	Topics in Public Health (Sexual and Reproductive Health Monitoring)
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6130	Sustainable Energy and the Environment
PUBH 6241	Nutritional Epidemiology
PUBH 6247	Design of Health Studies

PUBH 6250	Epidemiology of HIV/AIDS	PUBH 6450	Global Health Diplomacy
PUBH 6252	Advanced Epidemiology Methods	PUBH 6461	Ethics and Accountability in Humanitarian Settings
PUBH 6253	Issues in HIV Care and Treatment	PUBH 6462	Nutrition and Food in Large Humanitarian Emergencies
PUBH 6259	Epidemiology Surveillance in Public Health	PUBH 6463	Communication Strategies and Planning in Humanitarian Settings
PUBH 6262	Introduction to Geographic Information Systems	PUBH 6464	Mental Health in Humanitarian Settings
PUBH 6263	Advanced GIS	PUBH 6465	Reproductive Health and Gender-Based Violence in Humanitarian Settings
PUBH 6264	Quantitative Methods	PUBH 6469	Humanitarian Aid Seminar Series
PUBH 6266	Biostatistical Methods	PUBH 6480	Public Health in Humanitarian Settings
PUBH 6305	Fundamentals for Health Policy: Public Health and Health Care	PUBH 6481	Global Mental Health
PUBH 6310	Statistical Analysis in Health Policy	PUBH 6499	Topics in Global Health (Population and Sustainable Development)
PUBH 6315	Introduction to Health Policy Analysis	PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6320	Advanced Health Policy Analysis	PUBH 6501	Program Evaluation
PUBH 6340	Health Economics and Finance	PUBH 6502	Practical Data Analysis for Prevention and Community Health
PUBH 6355	Comparative Health Policy	PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6359	Reproductive Health Policy	PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6367	Population Health, Public Health, and Health Reform	PUBH 6510	Community-Oriented Primary Care Principles and Practice
PUBH 6390	Prescription Drugs: Policy and Public Health	PUBH 6512	Community-Oriented Primary Care Policy and Issues
PUBH 6399	Topics in Health Policy (Cost-Benefit Analysis in Healthcare)	PUBH 6513	Community Health Management
PUBH 6410	Global Health Study Design	PUBH 6514	Preventing Health Disparities
PUBH 6411	Global Health Qualitative Research Methods	PUBH 6516	Community Health Information Resources
PUBH 6412	Global Health Quantitative Research Methods	PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs	PUBH 6532	Community Organization, Development, and Advocacy
PUBH 6435	Global Health Program Development and Implementation	PUBH 6535	Promotion of Mental Health
PUBH 6436	Global Health Program Management and Leadership	PUBH 6550	Maternal and Child Health I
PUBH 6441	Global Health Organizations and Regulations	PUBH 6551	Maternal and Child Health II
PUBH 6442	Comparative Global Health Systems		

PUBH 6552	Women's Health	IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
PUBH 6553	Adolescent Health	IAFF 6138	Special Topics in International Development Studies (Humanitarian Action in Conflict)
PUBH 6571	Social Marketing: Theory and Practice	IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
PUBH 6572	Marketing Research for Public Health	IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
PUBH 6573	Media Advocacy for Public Health	IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
PUBH 6599	Topics in Prevention and Community Health (Economic Evaluation for Health Professionals)	IAFF 6186	Special Topics in Security Policy Studies (Responses to Terrorism)
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis	IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)
Humanitarian Assistance		IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today (Online))
ANTH 6707	Issues in Middle East Anthropology	IAFF 6502	Professional Skills I (Participatory Monitoring and Evaluation for Development)
EMSE 6305	Crisis and Emergency Management	IAFF 6502	Professional Skills I (Technology for International Crisis Response)
EMSE 6310	Information Technology in Crisis and Emergency Management	PUBH 6461	Ethics and Accountability in Humanitarian Settings
EMSE 6315	Management of Risk and Vulnerability for Hazards and Terrorism	PUBH 6462	Nutrition and Food in Large Humanitarian Emergencies
EMSE 6320	International Disaster Management	PUBH 6463	Communication Strategies and Planning in Humanitarian Settings
EMSE 6325	Medical and Public Health Emergency Management	PUBH 6464	Mental Health in Humanitarian Settings
EMSE 6330	Management of Terrorism Preparedness and Response	PUBH 6465	Reproductive Health and Gender-Based Violence in Humanitarian Settings
EMSE 6345	Disaster Recovery and Organizational Continuity	PUBH 6469	Humanitarian Aid Seminar Series
EMSE 6350	Hazard Mitigation in Disaster Management	PUBH 6480	Public Health in Humanitarian Settings
EMSE 6992	Special Topics (Next Generation Environmental Self-Governance)	International Development Management	
EMSE 6992	Special Topics (Research Methods)	EMSE 6001	The Management of Technical Organizations
EMSE 6992	Special Topics (Systems Engineering in an Enterprise Context)	EMSE 6200	Policy Factors in Environmental and Energy Management
GEOG 6309	GIS for Emergency Management	EMSE 6220	Environmental Management
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)	EMSE 6260	Energy Management
IAFF 6138	Special Topics in International Development Studies (Care of Children in Humanitarian Emergencies)		

EMSE 6285	Analytical Tools for Energy Management	PUBH 6436	Global Health Program Management and Leadership
EMSE 6305	Crisis and Emergency Management	PUBH 6513	Community Health Management
EMSE 6310	Information Technology in Crisis and Emergency Management	SMPP 6210	Strategic Environmental Management
EMSE 6320	International Disaster Management	International Education	
EMSE 6325	Medical and Public Health Emergency Management	EDUC 6100	Experimental Courses (Business Development: International Exchange)
EMSE 6330	Management of Terrorism Preparedness and Response	EDUC 6100	Experimental Courses (Higher Education in Europe)
EMSE 6350	Hazard Mitigation in Disaster Management	EDUC 6100	Experimental Courses (International Education)
EMSE 6820	Program and Project Management	EDUC 6100	Experimental Courses (International Student Advising)
GEOG 6293	Special Topics (Water Resources Policy and Management)	EDUC 6112	Foundations of Assessment, Testing, and Measurement in Education
GEOG 6309	GIS for Emergency Management	EDUC 6114	Introduction to Quantitative Research
IAFF 6118	Special Topics in International Affairs (Managing the World's Waters)	EDUC 6116	Introduction to Educational Statistics
IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation for Foreign Assistance Programs)	EDUC 6368	Leadership and Education
IBUS 6402	Managing in Developing Countries	EDUC 6371	Education Policy
PPPA 6016	Public and Nonprofit Program Evaluation	EDUC 6381	Program Evaluation: Theory and Practice
PPPA 6031	Governing and Managing Nonprofit Organizations	EDUC 6388	Analysis of Education Policy Issues
PPPA 6032	Managing Fund Raising and Philanthropy	EDUC 6555	Higher Education Policy
PPPA 6057	International Development Administration	EDUC 6602	Regional Studies in International Education (Education and Development in Africa)
PPPA 6058	International Development NGO Management	EDUC 6602	Regional Studies in International Education (Education and Equality in Latin America and the Caribbean)
PPPA 6059	International Development Management Processes and Tools	EDUC 6602	Regional Studies in International Education (Education and Tradition in the Middle East and North Africa)
PPPA 6062	Community Development Policy and Management	EDUC 6610	Programs and Policies in International Education (International Education Policy Issues in Developing Countries)
PPPA 6077	Case Studies in Public Policy	EDUC 6610	Programs and Policies in International Education (International Higher Education)
PUBH 6435	Global Health Program Development and Implementation	EDUC 6610	Programs and Policies in International Education (Migration and Mobilization: Education in a Global Era)

EDUC 6620	Strategies and Analysis in International Education (Managing Study Abroad and International Students)
EDUC 6620	Strategies and Analysis in International Education (Planning Education Reform)
EDUC 6640	Selected Topics in International Education (Comparative Perspectives in Language and International Education)
EDUC 6640	Selected Topics in International Education (Design and Implementing Cross Cultural Training Programs)
EDUC 6640	Selected Topics in International Education (Evaluation in International Education)
EDUC 6640	Selected Topics in International Education (Gender in International Education and Development)
EDUC 6640	Selected Topics in International Education (Inequality in International Higher Education)
EDUC 6640	Selected Topics in International Education (Issues in Study Abroad)
EDUC 6640	Selected Topics in International Education (Scholars and Practitioners in International Higher Education)
EDUC 6640	Selected Topics in International Education (Topics in Evaluation in International Education Development)
EDUC 6640	Selected Topics in International Education (UNESCO: 21st Century Agenda Topics)
The Environment, Natural Resources, Climate Change, and Sustainable Development	
ECON 6237	Economics of the Environment and Natural Resources
EMSE 6200	Policy Factors in Environmental and Energy Management
EMSE 6225	Air Quality Management
EMSE 6235	Water Quality Management
EMSE 6240	Environmental Hazard Management
EMSE 6245	Analytical Tools for Environmental Management
EMSE 6260	Energy Management

EMSE 6290	Climate Change: Policy, Impacts, and Response
ENRP 6101	Environmental Sciences I: Physical Sciences
ENRP 6102	Environmental Sciences II: Life Sciences
GEOG 6208	Land Use and Urban Transportation Planning
GEOG 6244	Urban Sustainability
GEOG 6293	Special Topics (Arctic Systems)
GEOG 6293	Special Topics (Geovisualization and Cartography)
GEOG 6293	Special Topics (Open Source GIS)
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)
IAFF 6138	Special Topics in International Development Studies (Agriculture and Sustainable Development)
IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6138	Special Topics in International Development Studies (Development in the Age of Climate Change)
IAFF 6143	Science and Technology Policy Analysis
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Renewable Energy in a Decarbonizing World)
IAFF 6164	Environmental Security
IAFF 6186	Special Topics in Security Policy Studies (Energy Security)
PPPA 6066	U.S. Environmental Policy
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6124	Risk Management and Communication

PUBH 6126	Assessment and Control of Environmental Hazards	FINA 6271	Financial Modeling and Econometrics
PUBH 6130	Sustainable Energy and the Environment	FINA 6277	Comparative Financial Market Regulation and Development
PUBH 6133	Social Dimensions in Climate Change and Health	IAFF 6118	Special Topics in International Affairs (International Business Finance)
SMPP 6210	Strategic Environmental Management	IAFF 6118	Special Topics in International Affairs (Strategy, Global Markets and Politics)
TSTD 6249	Sustainable Destination Development	IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation for Foreign Assistance Programs)
Courses offered at the Arlington Graduate Education Center:		IAFF 6138	Special Topics in International Development Studies (Private Sector Development)
PSUS 6201	Principles of Sustainable Urban and Regional Planning	IAFF 6138	Special Topics in International Development Studies (Social Enterprise and Development)
PSUS 6202	Urban and Environmental Economics	IAFF 6186	Special Topics in Security Policy Studies (Illicit Finance and Security)
PSUS 6203	Research Methods: Geospatial and Econometric Analysis	IAFF 6198	Special Topics in International Economic Policy (International Entrepreneurship)
PSUS 6212	Sustainable Communities I: Housing and Design	IAFF 6502	Professional Skills I (Analyzing International Economic Data)
PSUS 6222	Climate Change Economics	IAFF 6502	Professional Skills I (Art and Practice of Global Investing)
PSUS 6224	Sustainable Energy for Cities and the Environment	IAFF 6502	Professional Skills I (Mobile Phones for International Development)
Social Enterprise and Private Sector Development		IBUS 6201	International Marketing
ACCY 6101	Financial Accounting	IBUS 6290	Special Topics (Institutional and Economic Development: the Case of Rwanda)
ACCY 6106	Financial Statement Analysis	IBUS 6290	Special Topics (Microfinance: Developing Markets)
ACCY 6201	Accounting for Internal Decision Making	IBUS 6301	International Business Finance
ACCY 6202	Advanced Strategic Cost Management	IBUS 6310	International Financial Reporting Standards
ACCY 6601	Business Law: Contracts, Torts, and Property	IBUS 6401	International Business Strategy
ACCY 6602	Business Law: Enterprise Organization	IBUS 6402	Managing in Developing Countries
ACCY 6900	Special Topics (Macroeconomics for the Global Economy)	ISTM 6223	Technology Entrepreneurship
ACCY 6900	Special Topics (Nonprofit Accounting)	ISTM 6224	Management of Technology and Innovation
ACCY 6900	Special Topics (Taxation of Financial Instruments)		
FINA 6223	Investment Analysis and Portfolio Management		
FINA 6224	Financial Management		
FINA 6234	New Venture Financing: Due Diligence and Valuation Issues		

ISTM 6234	New Venture Financing
PPPA 6003	Economics for Public Decision-Making
PPPA 6049	Urban and Regional Policy Analysis
Note Many MBA program courses require instructor approval for students not enrolled in an MBA program.	
MBAD 6211	Financial Accounting
MBAD 6241	Global Perspectives
MBAD 6242	Microeconomics for the World Economy
MBAD 6244	International Management
MBAD 6245	Global Perspectives
MBAD 6284	Business and Public Policy
MGT 6252	Strategic Human Resource Management
MGT 6282	New Venture Initiation
MGT 6283	Strategic Entrepreneurship
MGT 6285	Social Entrepreneurship
MGT 6290	Special Topics (Leadership Perspective and Practice I (1.5 credits))
MGT 6290	Special Topics (People Analytics)
MGT 6290	Special Topics (Women's Entrepreneurial Leadership)
MKTG 6290	Special Topics (Global Brand Strategy)
SMPP 6250	Topics in Media Processes and Institutions (Entrepreneurship New Media Industry)
SMPP 6241	Global Corporate Responsibility
SMPP 6290	Special Topics (Business and Society)
SMPP 6290	Special Topics (Public Private Partnerships (1.5 credits))
SMPP 6290	Special Topics (Strategy, Global Markets, and Politics)
SMPP 6290	Special Topics (Sustainable and Responsible Investment in Today's Market (1.5 credits))
TSTD 6249	Sustainable Destination Development
Technology and Development	

ANTH 6806	Technology
ECON 6255	Economics of Technological Change
EMSE 6070	Management of Research and Development
EMSE 6992	Special Topics (International Technology)
GEOG 6304	Geographical Information Systems I
GEOG 6307	Digital Image Processing
GEOG 6309	GIS for Emergency Management
IAFF 6138	Special Topics in International Development Studies (Technology and Development)
IAFF 6142	Technology Creation/Diffusion
IAFF 6143	Science and Technology Policy Analysis
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Latin America in Motion: Indigenous Media and Social Movements)
IAFF 6502	Professional Skills I (Technology for International Crisis Response)
IAFF 6503	Professional Skills II (Mobile Phones for International Development)
ISTM 6204	Information Technology Project Management
ISTM 6207	Information Resources Management
ISTM 6223	Technology Entrepreneurship
ISTM 6224	Management of Technology and Innovation
ISTM 6233	Emerging Technologies

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

**IAFF 6138 (Monitoring and Evaluation for Foreign Assistance) may be used as the second research methods course only in cases where a student has opted to take two research methods courses instead of one research methods and one policy analysis course.

Foreign language proficiency requirement

Students in the master of arts in the field of international development studies program are required to demonstrate proficiency in a modern language other than English. Students may fulfill this requirement in one of the following ways:

- Having earned a minimum grade of B in a sixth-semester university-level advanced language course completed no more than three years prior to matriculation in the Elliott School's master's degree program.
- Having earned a minimum grade of B in a sixth-semester university-level advanced language course at GW, or in an approved course taken at another institution of higher learning, including Elliott School exchange partner institutions, while enrolled in the Elliott School master's program.
- Passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.
- Achieving the required proficiency level in a reading and speaking examination administered by an Elliott School-approved foreign-language assessment institution, at the student's expense, while enrolled in the Elliott School's Master's Degree Program.
- Demonstrating the required foreign language proficiency level in a foreign language professional skills course (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>) offered through the Elliott School. The instructor tests the student during the course to determine if the required proficiency level has been achieved.

As of fall 2018, the above policy applies to new and current students in the Elliott School's non-regional studies master's programs with a foreign language requirement. Consult the Program Director for more information

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL ECONOMIC POLICY

The Elliott School's master of arts in international economic policy (MIEP) is an interdisciplinary program that provides a strong foundation for understanding new challenges in the global economic system. The program provides analytical rigor and tailored professional specializations to help students pursue challenging careers in the private sector, public sector and non-profit organizations.

Evening classes accommodate the busy schedules of working professionals and open pathways through which full-time students can explore internships in international organizations, consulting firms and government agencies in Washington DC. The MIEP alumni network provides professional internship and job opportunities for students from all over the world.

Visit the program (<https://elliott.gwu.edu/international-economic-policy/>) website for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 15 credits in core courses, a 3-credit quantitative analysis course, a 4-credit capstone sequence, and 18 credits in a self-designed professional specialization.

Students admitted to the MA in international economic policy (MIEP) program must demonstrate proficiency in intermediate microeconomics and macroeconomics before taking any Economics (ECON) course, including required economics coursework. Admitted students without this demonstrated proficiency may take courses in other departments, including those with an IAFF designation. For more details, visit the intermediate theory requirement page (<https://elliott.gwu.edu/miep-intermediate-theory-requirement/>) or contact miep@gwu.edu.

Code	Title	Credits
Required (22 credits)		
Core courses (15 credits)		
ECON 6250	Survey of Economic Development	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
IAFF 6191	Financial Accounting **	
IAFF 6193	Finance **	
Quantitative analysis course (3 credits)		

IAFF 6501	Quantitative Analysis for International Affairs Practitioners
or ECON 6374	Probability and Statistics for Economics
or PPPA 6002	Research Methods and Applied Statistics

Capstone sequence (4 credits)

Students complete a two-course capstone sequence that most closely matches the thematic area of their course work. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898	Capstone Workshop
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IAFF 6899	Capstone Course
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Self-designed professional specialization (18 Credits)

In addition to the required curriculum, students work with the program director to develop a self-designed professional specialization that includes at least six additional courses (18 credits). Up to 3 of these credits may be taken in professional skills courses (IAFF 6502, IAFF 6503, and/or IAFF 6504).

*Students may demonstrate proficiency in one of the following ways:

1. Completion within two years prior to matriculation of an intermediate microeconomics and intermediate macroeconomics course with a minimum grade of B- at an accredited university or college.
2. Successful completion of the Elliott School (non-credit) online intermediate economics program. This program is offered during the summer by the Institute for International Economic Policy. Each program lasts about eight weeks. See the MIEP Intermediate Theory Programs (<https://iiep.gwu.edu/intermediate-theory-programs/>) page for additional information, including fees.
3. Passing a proficiency exam administered by the MIEP program, normally scheduled in the week prior to the beginning of the fall and spring semesters.

For additional information, visit the intermediate theory requirement (<https://elliott.gwu.edu/miep-intermediate-theory-requirement/>) page or contact miep@gwu.edu.

**Students who desire more rigorous quantitative methods coursework may substitute more advanced econometrics or mathematical economics courses for IAFF 6191 and IAFF 6193 with program director approval.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL ECONOMIC POLICY, STEM TRACK

The master of arts in international economic policy (MIEP) STEM Track program provides students with a firm understanding of international trade, international finance, and development economics. Students pursuing the STEM track complete a more quantitatively oriented program of study, culminating in a two-semester capstone sequence utilizing econometric and mathematical economic models under the direction of the MIEP program director.

Once admitted to the MIEP program, students may petition the program director to pursue the STEM track, which focuses on econometrics and quantitative methods. Students pursuing this track must have completed at least one semester of calculus, intermediate microeconomics, and intermediate macroeconomics within two academic years before beginning the STEM track.

Visit the Elliott School website (<https://elliott.gwu.edu/master-arts-programs/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 21 credits in core courses, a 4-credit capstone course sequence, and 15 credits in elective courses.

Students in the MA in international economic policy (MIEP) and the MIEP STEM Track programs must demonstrate proficiency in intermediate microeconomics and macroeconomics before taking any Economics (ECON) course, including required economics coursework*. Students admitted without this proficiency may take courses in other departments, including those with an IAFF designation.

Code	Title	Credits
Required (25 credits)		
Core courses (21 credits)		
ECON 6250	Survey of Economic Development	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6300	Mathematical Methods for Economics	
ECON 6374	Probability and Statistics for Economics	
ECON 6375	Applied Econometrics	
ECON 6376	Time Series Analysis	

Capstone sequence (4 credits)

Students complete a two-course capstone project using econometric or mathematical economic models under the direction of the MIEP program director. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898	Capstone Workshop
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IAFF 6899	Capstone Course
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Electives (15 Credits)

In addition to the required curriculum, students work with the program director to select 15 credits of further course work. Up to 3 of these credits may be taken in professional skills courses (IAFF 6502 and/or IAFF 6503).

*Students may demonstrate proficiency in one of the following ways:

1. Completion within two years prior to matriculation of an intermediate microeconomics and intermediate macroeconomics course with a minimum grade of B- at an accredited university or college.
2. Successful completion of the Elliott School (non-credit) online intermediate economics program. This program is offered during the summer by the Institute for International Economic Policy. Each program lasts about eight weeks. See the MIEP Intermediate Theory Programs (<https://iiep.gwu.edu/intermediate-theory-programs/>) page for additional information, including fees.
3. Passing a proficiency exam administered by the MIEP program, normally scheduled in the week prior to the beginning of the fall and spring semesters.

For additional information, visit the intermediate theory requirement (<https://elliott.gwu.edu/miep-intermediate-theory-requirement/>) page or contact miep@gwu.edu.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL SCIENCE AND TECHNOLOGY POLICY

Scientific and technological advances provide the basis of international competitiveness and account for the bulk of national growth and the improvement of the quality of life around the world. The ability to create, adapt, and adopt new technologies defines modern societies. In today's global environment, the need for innovation is essential for solving societal problems and staying ahead of competition. Developments in information technology, space exploration, genetic modification, and advances in material science are governed and shaped by institutions that set science and

technology policy. The Master of Arts in international science and technology policy prepares students to understand and respond to these important dynamics.

The multidisciplinary 40-credit M.A. program includes a core field in science technology and international affairs, which allows students to concentrate on areas of particular interest; an analytical competency requirement, which provides career-enhancing, marketable skills in policy analysis, economic theory, or statistics; and an elective field which reflects individual interests and career goals.

Recent graduates often work in research, analysis, or management positions with titles such as research analyst, program or policy analyst, legislative analyst, or more specialized areas. Analysts are often employed with government agencies, advocacy groups, think tanks, science and technology-oriented publications, and other organizations.

Visit the program website (<https://elliott.gwu.edu/international-science-and-technology-policy/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 6 credits in core field courses, a 4-credit capstone course sequence, 15 credits in a concentration, 6 credits in analytical competency courses, and 9 credits in elective courses.

See note regarding special topics and skills courses, the capstone, and LAW courses.*

Code	Title	Credits
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Required

Core field courses (6 credits)

IAFF 6141	International Science and Technology Policy Cornerstone
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IAFF 6143	Science and Technology Policy Analysis
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Capstone (4 credits)

Students complete a two-course capstone sequence that most closely matches the thematic area of their project. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898	Capstone Workshop
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IAFF 6899	Capstone Course
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Concentration (15 credits)

At least five courses in one concentration. Students may choose from the following concentrations or they may design a personalized concentration in consultation with the Program Director.

A. Space Policy

EHS 6227 Introduction to Human Health in Space

IAFF 6145 U.S. Space Policy

IAFF 6146 Space Law

IAFF 6148 Space and National Security

IAFF 6153 Science, Technology, and National Security

IAFF 6158 Special Topics in International Science and Technology Policy (Issues in Space Policy)

B. Energy Policy

EMSE 6260 Energy Management

EMSE 6290 Climate Change: Policy, Impacts, and Response

IAFF 6151 Environmental Policy

IAFF 6158 Special Topics in International Science and Technology Policy (Energy Policy)

IAFF 6158 Special Topics in International Science and Technology Policy (Renewable Energy in a Decarbonizing World)

IAFF 6186 Special Topics in Security Policy Studies (Energy Security)

IAFF 6198 Special Topics in International Economic Policy (International Climate Change Policy)

IBUS 4900 Special Topics (Global Energy)

IBUS 6400 Oil: Industry, Economy, and Society

LAW 6460 Environment and Energy Policy Practicum

PUBH 6130 Sustainable Energy and the Environment

C. National Security

IAFF 6106 Nuclear Weapons

IAFF 6107 The Science of Nuclear Materials

IAFF 6118 Special Topics in International Affairs (U.S. Foreign Policy and International Organizations)

IAFF 6153 Science, Technology, and National Security

IAFF 6186 Special Topics in Security Policy Studies (Cybersecurity)

IAFF 6186 Special Topics in Security Policy Studies (Cyber Threats, Policy, and Strategy)

IAFF 6186 Special Topics in Security Policy Studies (Methods for Defense Analysis)

IAFF 6186 Special Topics in Security Policy Studies (Military Technology Assessment)

IAFF 6186 Special Topics in Security Policy Studies (Nuclear Security)

PSC 6348 Politics of U.S. National Security Policy (U.S. National Security Policy Making)

D. Environmental Policy

EMSE 6200 Policy Factors in Environmental and Energy Management

EMSE 6220 Environmental Management

EMSE 6240 Environmental Hazard Management

EMSE 6290 Climate Change: Policy, Impacts, and Response

GEOG 6219 Seminar: Climatology

GEOG 6220 Seminar: Climatic Change

GEOG 6222 Seminar: Resources and the Environment

GEOG 6230 Seminar: Environmental Issues in Development

IAFF 6118 Special Topics in International Affairs (Managing the World's Water)

IAFF 6151 Environmental Policy

IAFF 6164 Environmental Security

IAFF 6198 Special Topics in International Economic Policy (International Climate Change Policy)

LAW 6454 International Environmental Law

LAW 6460 Environment and Energy Policy Practicum

PUBH 6130	Sustainable Energy and the Environment
E. Nuclear Policy	
IAFF 6106	Nuclear Weapons
IAFF 6107	The Science of Nuclear Materials
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Security)
F. Technology Innovation Management and Policy	
ECON 6255	Economics of Technological Change
IAFF 6142	Technology Creation/Diffusion
IAFF 6186	Special Topics in Security Policy Studies (Military Technology Assessment)
IAFF 6198	Special Topics in International Economic Policy (Digital Trade and Global Governance)
IAFF 6198	Special Topics in International Economic Policy (International Entrepreneurship)
IBUS 4900	Special Topics (Emerging Technologies)
Analytical competency (6 credits)	
Two courses from the following:	
ECON 6237	Economics of the Environment and Natural Resources
ECON 6250	Survey of Economic Development
ECON 6255	Economics of Technological Change
ECON 6280	Survey of International Economics
ECON 6295	Special Topics (Energy Economics)
ECON 6301	Applied Microeconomic Theory
ECON 6305	Applied Macroeconomic Theory
IAFF 6118	Special Topics in International Affairs (Applied Qualitative Methods)
IAFF 6118	Special Topics in International Affairs (Data Analytics for International Affairs)

IAFF 6198	Special Topics in International Economic Policy (Advanced Quantitative Analysis)
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IAFF 6501	Quantitative Analysis for International Affairs Practitioners
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PPPA 6002	Research Methods and Applied Statistics
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PPPA 6003	Economics for Public Decision-Making
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PPPA 6005	Public Budgeting, Revenue, and Expenditure Analysis
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PPPA 6007	Microeconomics for Public Policy I
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PPPA 6015	Benefit-Cost Analysis
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PPPA 6020	Decision Modeling for Public Policy
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PPPA 6085	Special Topics in Public Policy (Quantitative Modeling for Public Policy Analysis)
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Other relevant courses not listed above may be substituted with the approval of the Program Director.

Electives (9 credits)

9 credits in elective courses. Elective courses may include graduate-level courses offered through other Elliott School programs, departments in other GW schools, or a combination of the two. Up to 3 credits may be taken as professional skills courses (IAFF 6502 or IAFF 6503).

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>) and the capstone (<https://elliott.gwu.edu/global-capstone/>) (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

Law School courses—Students may, with permission of their advisor, include courses in the Law School (<http://www.law.gwu.edu/>) in their major field. Enrolling in a LAW course also requires permission of the Law School dean of students. Students should consult the Elliott School Office of Academic Advising and Student Services (<http://elliott.gwu.edu/graduate-advising/>) office before enrolling in LAW courses.

MASTER OF ARTS IN THE FIELD OF INTERNATIONAL TRADE AND INVESTMENT POLICY

The master of arts (MA) in international trade and investment policy (ITIP) degree program trains students in critical areas of the economics, politics, and history of international trade as well as econometrics. The program provides additional specialized training in international economics or international business. Course work in these fields focuses on U.S. trade policy, the effects of international trade on developing countries, emerging market financial crises, and managing firms in developing countries. The program culminates in a one-semester capstone project in which students work in small teams on a contemporary policy problem.

Visit the program website (<https://elliott.gwu.edu/international-trade-and-investment-policy/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 12 credits in core field courses, a 1-credit capstone course, 15 credits in elective courses, and 12 credits in a concentration. In addition, students must satisfy the program's intermediate economics theory requirement.

Intermediate economic theory requirement

Students in the international trade and investment policy program must complete a course in both intermediate micro- and macroeconomics theory with a minimum grade of *B*. This requirement may be fulfilled in one of the following ways:

- Using a course completed at the undergraduate intermediate level with a minimum grade of *B* within 5 years of matriculation in the program. Such courses typically have titles that include microeconomics, price theory, or macroeconomics. Course titles with "principles of" or "introduction to" will not be at the required level of instruction.
- Completing ECON 6217 (<https://www.gwu.edu/~bulletin/grad/econ.html#6217>) or PPPA 6014 (<http://bulletin.gwu.edu/arts-sciences/public-policy-administration/#coursestext>), and ECON 6218 (<http://bulletin.gwu.edu/arts-sciences/economics/#coursestext>) at GW.
- Passing the intermediate proficiency examinations offered during the Elliott School's fall orientation.

Ideally, students complete intermediate microeconomics before taking ECON 6283 (<https://www.gwu.edu/~bulletin/grad/econ.html#6283>) and intermediate macroeconomics before taking ECON 6284 (<https://www.gwu.edu/~bulletin/grad/econ.html#6284>).

See notes regarding special topics courses and the capstone.*

Code	Title	Credits
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Required

Core field (12 credits)

Students must take the following courses in their first year with their cohort:

ECON 6283	Survey of International Trade Theory and Policy
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
PSC 6439	International Political Economy

And one quantitative methods course from the following options:

DNSC 6209	Forecasting for Analytics
DNSC 6274	Statistical Modeling and Analysis
ECON 2123	Introduction to Econometrics
IAFF 6198	Special Topics in International Economic Policy (Advanced Quantitative Methods)

PPPA 6013	Econometrics for Policy Research I
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Capstone (1 credit)

IAFF 6199	International Trade and Investment Policy Capstone
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Electives (15 credits)

15 credits in elective coursework in areas such as accounting and finance, economic analysis, regionally-focused history and political science courses, foreign language study (up to 6 credits), or 1-credit skills courses (up to 3 credits).

Concentration (12 credits)

At least four courses from one of the following concentrations:

A. Development Economics

ECON 6237	Economics of the Environment and Natural Resources
ECON 6250	Survey of Economic Development
ECON 6269	Economy of China I
ECON 6285	Economic Development of Latin America

ECON 6292	Topics in International Trade
ECON 6293	Topics in International Finance
ECON 6295	Special Topics (Economic Conditions Analysis and Forecasting)
ECON 6295	Special Topics (Economic Analysis of International Trade Law)
ECON 6295	Special Topics (Energy Economics)
ECON 6295	Special Topics (Economics of Middle East and North Africa)
IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6138	Special Topics in International Development Studies (Private Sector Development)
IAFF 6138	Special Topics in International Development Studies (Poverty in all its Dimensions)
IAFF 6142	Technology Creation/Diffusion
IAFF 6198	Special Topics in International Economic Policy (21st Century Trade Policies: Issues and Strategy)
IAFF 6198	Special Topics in International Economic Policy (Corruption, Development and Governance)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Migration, Remittances, and Development)
IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, and Society)
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6085	Special Topics in Public Policy (Poverty and Social Poverty)
PUBH 6340	Health Economics and Finance
PUBH 6443	Global Health Agreements and Conventions
B. Finance	
ECON 6293	Topics in International Finance (Emerging Markets Capital Flows and Crises)

FINA 6221	Financial Decision Making
FINA 6222	Capital Formation
FINA 6223	Investment Analysis and Portfolio Management
FINA 6224	Financial Management
FINA 6239	Applied Portfolio Management
IBUS 6301	International Business Finance
IBUS 6304	Financial Crises and the Global Economy
MBAD 6211	Financial Accounting
MBAD 6235	Finance
C. International Business	
ECON 6237	Economics of the Environment and Natural Resources
ECON 6293	Topics in International Finance (Emerging Markets Capital Flows and Crises)
ECON 6295	Special Topics (Economic Conditions Analysis and Forecasting)
FINA 6221	Financial Decision Making
FINA 6223	Investment Analysis and Portfolio Management
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6198	Special Topics in International Economic Policy (Strategies and International Political Economy)
IBUS 6201	International Marketing
IBUS 6202	Regional Strategy for Multinationals
IBUS 6297	International Management Experience
IBUS 6301	International Business Finance
IBUS 6304	Financial Crises and the Global Economy
IBUS 6400	Oil: Industry, Economy, and Society
IBUS 6401	International Business Strategy
IBUS 6402	Managing in Developing Countries
D. International Economic Policy Analysis	

ECON 6237	Economics of the Environment and Natural Resources	IBUS 6304	Financial Crises and the Global Economy
ECON 6250	Survey of Economic Development	PPPA 6006	Policy Analysis
ECON 6255	Economics of Technological Change	PPPA 6014	Microeconomics for Public Policy II
ECON 6269	Economy of China I	PPPA 6015	Benefit-Cost Analysis
ECON 6271	Economy of Japan	PPPA 6052	Tax Policy Analysis
ECON 6285	Economic Development of Latin America	PPPA 6085	Special Topics in Public Policy
ECON 6292	Topics in International Trade (Economics of U.S. Trade Policy)	PUBH 6340	Health Economics and Finance
ECON 6292	Topics in International Trade (International Migration and Labor Markets)	PUBH 6443	Global Health Agreements and Conventions
ECON 6293	Topics in International Finance (Emerging Markets Capital Flows and Crises)		
ECON 6295	Special Topics (Economic Conditions Analysis and Forecasting)		
ECON 6295	Special Topics (Economic Analysis of International Trade Law)		
ECON 6295	Special Topics (Energy Economics)		
ECON 6295	Special Topics (Economics of Middle East and North Africa)		
IAFF 6142	Technology Creation/Diffusion		
IAFF 6198	Special Topics in International Economic Policy (21st Century Trade Policies: Issues and Strategy)		
IAFF 6198	Special Topics in International Economic Policy (Digital Trade and Global Governance)		
IAFF 6198	Special Topics in International Economic Policy (Corruption, Development and Governance)		
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Migration, Remittances, and Development)		
IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, and Society)		
IAFF 6378	Special Topics in Middle East Studies (Political Economy of the Middle East)		
IBUS 6301	International Business Finance		

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding the capstone (<https://elliott.gwu.edu/global-capstone/>) is available on the Elliott School website.

MASTER OF ARTS IN THE FIELD OF LATIN AMERICAN AND HEMISPHERIC STUDIES

Latin America's proximity, shared history, and increasingly intertwined demography make it a key region for the United States. Yet, despite impressive democratization in the region in recent decades, serious problems – poverty, inequality, ethnic cleavage, crime, political violence, and illicit drug flows – persist. Future hemispheric leaders will grapple with an often contradictory blend of political and economic successes and failures. To develop innovative approaches to the enduring problems of the hemisphere, tomorrow's leaders need a broad and deep knowledge of the region.

The master of arts in Latin American and hemispheric studies program prepares students for careers throughout the Western Hemisphere. The program's faculty members are internationally recognized authorities. Outstanding part-time professors are drawn primarily from the Washington policy community and provide insiders' perspectives on key institutions and policies. The program coordinates a dynamic series of special events that brings leading policymakers from Washington and all over the world to engage with students and faculty on issues facing the hemisphere.

The program's location in the heart of Washington, D.C., facilitates employment at a broad spectrum of organizations. Students and alumni are employed at leading organizations that are only a few blocks from the GW campus, including

multilateral organizations like the Organization of American States and the World Bank, policy institutes like the Inter-American Dialogue and the Washington Office on Latin America, government agencies like the Departments of State and Commerce, and many more.

Visit the program website (<https://elliott.gwu.edu/latin-american-studies/>)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including a 3-credit cornerstone course, 9 credits in core field courses, a 3-credit research methods course, a 4-credit capstone sequence, 12 credits in specialized field courses, and 9 credits in electives. In addition, all students must fulfill a foreign language proficiency requirement (see below).

See note regarding special topics courses, the capstone sequence, and the additional thesis option*.

Code	Title	Credits
Required		
See notes regarding special topics courses, the capstone sequence, and the additional thesis option*.		
Cornerstone (3 credits)		
IAFF 6341	Latin American and Hemispheric Studies Cornerstone (taken in the fall semester of the first year)	
Core field (9 credits)		
Three courses, each in a different field, selected from the following groups:		
A. Anthropology		
ANTH 6702	Issues in Latin American Anthropology **	
B. Economics and Political Economy		
ECON 6285	Economic Development of Latin America	
IAFF 3177	Political Economy of Latin America	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)	
ECON 1011 and ECON 1012 or equivalent courses are prerequisites for ECON 6285.		
If the Economic and Social Development section of IAFF 6358 is chosen as the required course, it cannot also count as supporting coursework. Students may take IAFF 6358 courses with other titles as supporting coursework.		

C. Geography	
GEOG 6261	Geographical Perspectives on Latin America
GEOG 6232	Migration and Development
D. History	
Any HIST course numbered in the 3700 or above approved by the Program Director.	
E. International Affairs	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (International Relations of Latin America)
or PSC 6484	International Relations of Latin America
F. Political Science	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Government and Politics of Latin America)
or PSC 6383	Comparative Politics of Latin America
G. Spanish Literature	
Any SPAN course numbered in the 3400s, 3500s, 4400s, or 4500s that focuses on the literature of Latin America.	
Research methods (3 credits)	
ANTH 6331	Research Methods in Development Anthropology
EDUC 6114	Introduction to Quantitative Research
EDUC 8122	Qualitative Research Methods
EDUC 8130	Survey Research Methods
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
IAFF 6118	Special Topics in International Affairs (Qualitative Methods)
IAFF 6198	Special Topics in International Economic Policy **
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
PPPA 6002	Research Methods and Applied Statistics
PPPA 6013	Econometrics for Policy Research I

PSC 8101	Introduction to Empirical Political Analysis
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6264	Quantitative Methods
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
SOC 6230	Sociological Research Methods
SOC 6231	Data Analysis
SOC 6232	Qualitative Methodology: Doing Field Research

Capstone (4 credits)

Students are required to complete a two-course capstone sequence that involves collaboration on a project of mutual interest and research in Latin America or the United States with sponsoring institutions outside the University. The capstone sequence includes a 2-credit pre-capstone course that must be taken in the fall of the student's second or third year and a 2-credit capstone course that must be taken in the spring of the student's second or third year.

IAFF 6357	Latin American and Hemispheric Studies Pre-Capstone Workshop
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IAFF 6359	Latin American and Hemispheric Studies Capstone
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Specialized fields (12 credits)

Students select two specialized fields from the following and take at least two courses in each, for a total of 12 credits.

Anthropology

Required course

One ANTH course at the 6000-level approved by the advisor.

Supporting courses

ANTH 2750W	Latinos in the United States
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ANTH 3814	Ancient Mexican Civilizations
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IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Indigenous Social Movements)
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Art History, Literature, and Culture

SPAN 3410	Latin American Short Fiction
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SPAN 3420	The Essay in Spain and Latin America
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SPAN 3430	Afro-Latin America in the Diaspora
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SPAN 3570	Women Writers of Spain and Latin America
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SPAN 3600	Special Topics (Spanish and Spanish-American Literature)
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SPAN 3700	Cinema of Spain and Latin America (Film as Text)
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SPAN 4410	Contemporary Narrative in Latin America (Film as Text)
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SPAN 4460	Southern Cone Literature and Culture
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SPAN 4560	Modern Poetry of Spain and Latin America
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Economic Development

Required

One from the following:

ECON 6285	Economic Development of Latin America
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IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
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Supporting courses

ECON 6280	Survey of International Economics
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ECON 6283	Survey of International Trade Theory and Policy
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ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
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ECON 6295	Special Topics (Applied Industrial Organization)
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ECON 6295	Special Topics (Economic Analysis of International Trade Law)
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ECON 6295	Special Topics (Labor Economics and Public Policy)
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IAFF 3183	Special Topics in Development Policy (Post-Disaster Development: Haiti in Comparative Perspective)
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IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Political Economy of Latin America)
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IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation of Foreign Assistance Programs)
IAFF 6138	Special Topics in International Development Studies (Poverty Alleviation and Bottom-up Development)
IAFF 6138	Special Topics in International Development Studies (Poverty in all its Dimensions)
IAFF 6138	Special Topics in International Development Studies (Private Sector Development)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil Development Policy in the 21st Century)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (History and Praxis of U.S.-Mexico Relations)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States: Central America)
Geography	
Required course:	
GEOG 6232	Migration and Development
Supporting courses:	
GEOG 6224	Seminar: Political Geography
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil Development Policy in the 21st Century)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States: The Case of Central America)
Global Public Health	

Courses:	
PUBH 6400	Global Health Frameworks
PUBH 6441	Global Health Organizations and Regulations
PUBH 6442	Comparative Global Health Systems
PUBH 6563	Global Child Health
History	
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Cuba in the Global Arena)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)
HIST 3710	History of Latin America I
HIST 3711	History of Latin America II
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Argentina in Global Context)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil in the Global Arena)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (History and Praxis of U.S.-Mexico Relations)
HIST 6701	Topics in Latin American History (Law and Society in Latin America)
International Business	
Courses:	
IBUS 4900	Special Topics (Global Energy)
IBUS 6201	International Marketing
IBUS 6202	Regional Strategy for Multinationals
IBUS 6290	Special Topics (Microfinance: Developing Markets)
IBUS 6301	International Business Finance
IBUS 6401	International Business Strategy
IBUS 6402	Managing in Developing Countries
Migration	
Required course (one from the following):	

ECON 6290	Principles of Demography
or GEOG 6290	Principles of Demography
or SOC 6290	Principles of Demography
ECON 6291	Methods of Demographic Analysis
or GEOG 6291	Methods of Demographic Analysis
or STAT 6291	Methods of Demographic Analysis
GEOG 6232	Migration and Development
Supporting courses:	
ECON 6295	Special Topics (International Migration and Labor Markets)
GEOG 6261	Geographical Perspectives on Latin America
GEOG 6293	Special Topics (Migration and Development)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Latin American Migration)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Internal Displacement)
IAFF 6138	Special Topics in International Development Studies (International Migration)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States: The Central American Case)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Mexico in the Global Arena)
SOC 6252	Selected Topics (Immigration and American Cities)
Political Science	
Courses:	
IAFF 3177	Political Economy of Latin America
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Cuba in the Global Arena)

IAFF 3187	Special Topics in Latin American and Hemispheric Studies (Mexico Since Independence)
IAFF 3187	Special Topics in Latin American and Hemispheric Studies (OAS and Democracy in the Americas)
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)
IAFF 6138	Special Topics in International Development Studies (Local Governance, Decentralization, and Development)
IAFF 6138	Special Topics in International Development Studies (Poverty Alleviation and Bottom-up Development)
IAFF 6138	Special Topics in International Development Studies (Poverty in all its Dimensions)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Argentina in Global Context)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Brazil in the Global Arena)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (History and Praxis of U.S.-Mexico Relations)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States: The Central American Case)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (The UN and Regional Human Rights Systems: The Americas and Europe)
PSC 6383	Comparative Politics of Latin America
PSC 6484	International Relations of Latin America
Security	
Required course:	

IAFF 6358 Special Topics in Latin American and Hemispheric Studies (Security in the Americas)

Supporting courses:

IAFF 6138 Special Topics in International Development Studies (Care for Children in Complex Emergencies)

IAFF 6138 Special Topics in International Development Studies (Global Food Security)

IAFF 6138 Special Topics in International Development Studies (Human Trafficking)

IAFF 6138 Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)

IAFF 6163 Transnational Security

IAFF 6164 Environmental Security

IAFF 6186 Special Topics in Security Policy Studies (Conflict Early Warning and Prevention)

IAFF 6186 Special Topics in Security Policy Studies (Energy Security)

IAFF 6186 Special Topics in Security Policy Studies (Illicit Finance and Security)

IAFF 6186 Special Topics in Security Policy Studies (International Organized Crime)

IAFF 6186 Special Topics in Security Policy Studies (International Peacekeeping)

IAFF 6186 Special Topics in Security Policy Studies (Military Power and Effectiveness)

IAFF 6186 Special Topics in Security Policy Studies (Political Risk Analysis)

IAFF 6186 Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)

IAFF 6358 Special Topics in Latin American and Hemispheric Studies (The UN and Regional Human Rights Systems: The Americas and Europe)

IAFF 6358 Special Topics in Latin American and Hemispheric Studies (History and Praxis of U.S.-Mexico Relations)

IAFF 6358 Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States: The Central American Case)

Electives (9 credits)

9 credits in elective courses, which may include up to 6 credits of Spanish language coursework (other foreign languages spoken in Latin America will be considered on a case-by-case basis) and up to 4 credits of 1-credit skills courses (IAFF 6502, IAFF 6503, and/or IAFF 6504). Additional electives may be selected from any of the specialized fields or in other relevant areas or disciplines. Elective courses must be approved in advance by the Program Director.

Additional thesis option

Students who wish to complete a thesis do so in addition to the capstone requirement. Students pursuing a thesis must have a minimum GPA of 3.5 and approval from the faculty member who will serve as their thesis director. Thesis students also need to complete at least one research methods course. Thesis credits are counted as elective or specialization credits with Program Director approval. The two 3-credit thesis courses must be taken consecutively.

IAFF 6998 Thesis

IAFF 6999 Thesis

*Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

**Only specific topics that are determined by the Program Director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the Program Director prior to enrollment. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may, with permission of the Program Director, be used to fulfill program requirements.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

Foreign language proficiency requirement

Students in the Latin American and hemispheric studies program are required to demonstrate proficiency in Spanish or Portuguese by passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once

in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.

MASTER OF ARTS IN THE FIELD OF MIDDLE EAST STUDIES

The Middle East is one of the world's most important and challenging regions, where conflict seems chronic but peace elusive, resources are abundant but sustainable development difficult, and where the roots of major religions and global terrorism can be found. There are few issues in international affairs that do not involve the Middle East. The master of arts curriculum includes a range of courses covering the history, politics, economics, international relations, and cultures of the societies and nations of the Middle East.

In consultation with the program director, each student will develop a program of study that combines a broad overview of the region through a set of core courses, along with a more specialized field based on the student's specific academic and career interests. In addition, completion of the MA in Middle East studies requires demonstrated oral and reading proficiency in a language of the Middle East region.

The MA program in Middle East studies is supported by the Elliott School's Institute for Middle East Studies. Its Director is Professor Marc Lynch, a prominent scholar whose blog is featured on ForeignPolicy.com, and its core faculty includes both established leaders in their fields such as Nathan Brown (Political Science) and Dina Khoury (History), and outstanding junior faculty spanning a wide range of academic disciplines. The Institute's programming is enhanced by a million dollar gift from the Amir of Kuwait and by a partnership with the Middle East Policy Forum, run by former Ambassador Edward "Skip" Gnehm.

Visit the program website (<https://elliott.gwu.edu/middle-east-studies/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including a 3-credit cornerstone course, 9 credits in core field courses, 3 credits in skills courses, a 4-credit capstone sequence, 12 credits in one professional specialization, and 9 credits in elective courses. In addition, students must fulfill a foreign language proficiency requirement (see below).

See note regarding special topics and skills courses, the capstone sequence, and LAW courses*.

Code	Title	Credits
Required		
Cornerstone (3 credits)		
IAFF 6361	Middle East Studies Cornerstone	
Core field courses (9 credits)		
One course in each of the following disciplines for a total of three courses: ANTH/GEOG, HIST, and PSC.		
ANTH 6707	Issues in Middle East Anthropology	
GEOG 6262	Geographical Perspectives on the Middle East	
HIST 6801	Topics in Middle Eastern History (History of the Modern Middle East)	
HIST 6801	Topics in Middle Eastern History (Middle East in the World)	
PSC 6377	Comparative Politics of the Middle East	
PSC 6478	International Relations of the Middle East	
Professional skills courses (3 credits)		
Three 1-credit professional skills courses in any combination from the following:		
IAFF 6502	Professional Skills I	
IAFF 6503	Professional Skills II	
IAFF 6504	Intermediate Conversation	
Capstone sequence (4 credits)		
Students are required to complete a two-semester capstone sequence that involves collaboration on a project of mutual interest and research related to the Middle East. The capstone sequence includes a 1-credit course that must be taken in the fall of the student's final year and a 3-credit course that must be taken in the spring of the student's final year. Both courses in the capstone sequence must be taken consecutively.		
IAFF 6377	Middle East Studies Program Capstone Workshop	
IAFF 6379	Middle East Studies Capstone	

Code	Title	Credits
Professional specialization (12 credits)		
12 credits in one of the professional specializations listed below. At least one 3-credit course must cover content on the Middle East. Students may construct an individualized professional specialization in consultation with, and with the approval of, the Program Director.		

Specializations

Thematic specializations

- Conflict and Conflict Resolution (p. 1015)
- Global Energy and Environmental Policy (p. 1016)
- Global Gender Policy (p. 1017)
- Global Health (p. 1018)
- International Affairs and Development (p. 1019)
- International Economic Affairs (p. 1021)
- International Law and Organizations (p. 1022)
- International Security Studies (p. 1022)
- Nuclear Policy (p. 1026)
- Technology and International Affairs (p. 1026)
- U.S. Foreign Policy (p. 1026)

Regional specializations

- Africa (p. 1014)
- Asia (p. 1015)
- Europe, Eurasia, and Russia (p. 1016)
- Latin America (p. 1025)
- Middle East (p. 1025)

Code	Title	Credits
Middle East electives (9 credits)		
Three elective courses (9 credits) related to the Middle East, selected in consultation with the Program Director. Students may include up to 6 credits of content-based language study (i.e. not basic language acquisition) toward this requirement. All offerings under ANTH 6707, IAFF 6378, HIST 6801, and REL 6460 may be used for elective requirements and repeated for credit provided the topic differs.		
ANTH 6707	Issues in Middle East Anthropology	
ECON 6295	Special Topics *	
IAFF 6364	Religion and Society in the Modern Middle East	
IAFF 6378	Special Topics in Middle East Studies	
GEOG 6262	Geographical Perspectives on the Middle East	

HIST 6801	Topics in Middle Eastern History
PSC 6377	Comparative Politics of the Middle East **
PSC 6478	International Relations of the Middle East **
REL 6401	Islamic Historiographies
REL 6402	Qur'an and Hadith
REL 6441	Islamic Law
REL 6460	Topics in the Study of Islam

*Only specific topics that are determined by the Program Director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the Program Director prior to enrollment.

**If not taken as core course.

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>) and the capstone (<https://elliott.gwu.edu/global-capstone/>) is available on the Elliott School website.

Law School courses—Students may, with permission of their advisor, include courses in the Law School (<http://www.law.gwu.edu/>) in their major field. Enrolling in a LAW course also requires permission of the Law School dean of students. Students should consult the Elliott School Office of Academic Advising and Student Services (<http://elliott.gwu.edu/graduate-advising/>) office before enrolling in LAW courses.

Specializations

Thematic specializations

- Conflict and Conflict Resolution (p. 1015)
- Global Energy and Environmental Policy (p. 1016)
- Global Gender Policy (p. 1017)
- Global Health (p. 1018)
- International Affairs and Development (p. 1019)
- International Economic Affairs (p. 1021)
- International Law and Organizations (p. 1022)
- International Security Studies (p. 1022)
- Nuclear Policy (p. 1026)

- Technology and International Affairs (p. 1026)
- U.S. Foreign Policy (p. 1026)

Regional specializations

- Africa (p. 1014)
- Asia (p. 1015)
- Europe, Eurasia, and Russia (p. 1016)
- Latin America (p. 1025)
- Middle East (p. 1025)

Foreign language proficiency requirement

Students in the Middle East studies program are required to demonstrate the currently-required level of proficiency in one of the following languages by passing a reading and speaking proficiency examination administered by the Elliott School: Modern Standard Arabic (taught at GW); Persian; Hebrew (taught at GW); Kurdish; or Turkish. The Elliott School administers foreign language proficiency examinations (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>) once in the fall and once in the spring semesters. Students may take the examination at any point during their academic program. Students have three opportunities to pass the examination. Consult the Program Director for more information

SPECIALIZATIONS

Specializations

Thematic specializations

- Conflict and Conflict Resolution (p. 1015)
- Global Energy and Environmental Policy (p. 1016)
- Global Gender Policy (p. 1017)
- Global Health (p. 1018)
- International Affairs and Development (p. 1019)
- International Economic Affairs (p. 1021)
- International Law and Organizations (p. 1022)
- International Security Studies (p. 1022)
- Nuclear Policy (p. 1026)
- Technology and International Affairs (p. 1026)
- U.S. Foreign Policy (p. 1026)

Regional specializations

- Africa (p. 1014)
- Asia (p. 1015)
- Europe, Eurasia, and Russia (p. 1016)
- Latin America (p. 1025)
- Middle East (p. 1025)

AFRICA SPECIALIZATION

See note regarding special topics courses*.

Code	Title	Credits
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Required courses (6 credits)

At least two courses from the following. Any courses not taken to fulfill this requirement can be used as supporting coursework.

IAFF 6138	Special Topics in International Development Studies (those regionally relevant)
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IAFF 6186	Special Topics in Security Policy Studies (Peace and Conflict in Africa)
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IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)
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IAFF 6385	Special Topics in African Studies (Power, Politics, and Development in Africa)
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IAFF 6385	Special Topics in African Studies (Rising China in Africa)
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Supporting courses (6 credits)

Two courses from the following:

ANTH 6301	The Anthropology of Development
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ANTH 6591	Topics in Sociocultural Anthropology (Displacement and Diaspora)
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ECON 6237	Economics of the Environment and Natural Resources
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ECON 6250	Survey of Economic Development
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IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
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IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
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IAFF 6138	Special Topics in International Development Studies (Foundations of Humanitarian Assistance)
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IAFF 6138	Special Topics in International Development Studies (Gender and Development)
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IAFF 6171	Introduction to Conflict Resolution
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IAFF 6173	Security and Development
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IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
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IBUS 6402	Managing in Developing Countries
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PUBH 6480	Public Health in Humanitarian Settings
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Students are encouraged to explore relevant courses offered by other member schools of the Consortium of Universities of the Washington Metropolitan Area, such as Howard, Georgetown and American Universities. Students should consult with the faculty advisor regarding such opportunities.

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

ASIA SPECIALIZATION

See note regarding special topics* and LAW** courses.

Code	Title	Credits
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12 credits selected from at least three of the following groupings:

Group A: History of modern Asia

HIST 6601	Topics: Asian History (Geography and Politics of Afghanistan and South & Central Asia)
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HIST 6602	Asia: History, Memory, and Violence
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HIST 6611	Readings Seminar: Twentieth-Century China
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HIST 6630	Special Topics in Korean History (Modern Korea)
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HIST 6641	Modern Southeast Asia
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Group B: Politics and Policy in Asia

1. Domestic politics, foreign policy, and law

ENGL 6560	Postcolonialism
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IAFF 6302	Taiwan: Internal Development and Foreign Policy
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LAW 6543	Chinese Law and Legal Institutions *
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PSC 6336	The Political Economy of China, India, and Beyond
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PSC 6368	Japanese Politics and Foreign Policy
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PSC 6370	Politics of China I
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PSC 6374	Korean Politics
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2. Security and military policy

IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)
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Group C: International relations of Asia

HIST 6301	Topics: U.S. History (U.S.-Asia Relations)
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IAFF 6302	Taiwan: Internal Development and Foreign Policy
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IAFF 6308	International Relations of South Asia
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PSC 6372	Foreign Policy of China
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PSC 6475	International Politics of East Asia
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Group D: Asian business and development

ECON 6269	Economy of China I
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PSC 6336	The Political Economy of China, India, and Beyond
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PSC 6373	Political Economy of Industrializing Asia
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*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

CONFLICT AND CONFLICT RESOLUTION SPECIALIZATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
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Required course (3 credits)

IAFF 6171	Introduction to Conflict Resolution
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Supporting courses (9 credits)

IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)
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IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
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IAFF 6138	Special Topics in International Development Studies (Gender, Disaster, and Development)
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IAFF 6138	Special Topics in International Development Studies (Rule of Law and Anti-Corruption)
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IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)
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IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)
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IAFF 6186	Special Topics in Security Policy Studies (Stabilization and Peacebuilding)
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*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

EUROPE, EURASIA, AND RUSSIA SPECIALIZATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
12 credits from the following		
At least one course must be from Group A and one from Group B. The remaining two courses may be taken from either group.		
Group A. Western, Central and Eastern Europe		
HIST 6051	Re-thinking Cold War History	
HIST 6101	Topics: Europe (Europe, Readings and Research: Modern European History)	
HIST 6121	Reading and Research Seminar: Modern European History	
HIST 6170	Eastern European History I	
HIST 6171	Eastern European History II	
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)	
PSC 6364	Comparative Governments and Politics of Central And Eastern Europe	
PSC 6465	The International Politics of Central and Eastern Europe	
PSC 8388	Selected Topics in Comparative Politics (Authoritarianism and Democratization)	

PSC 8388	Selected Topics in Comparative Politics (Nationalism and Nation Building)
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Group B. Russia and Eurasia	
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HIST 6188	The Soviet Union and the World, 1917 to 1991
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IAFF 6138	Special Topics in International Development Studies (Post-Soviet Democracy Development)
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IAFF 6338	Special Topics in European and Eurasian Studies (Central Asia Between East and West)
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IAFF 6338	Special Topics in European and Eurasian Studies (History and Politics of the Caucasus)
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IAFF 6338	Special Topics in European and Eurasian Studies (Politics of Russia)
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IAFF 6338	Special Topics in European and Eurasian Studies (U.S.-Russia Relations in the 21st Century)
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*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

GLOBAL ENERGY AND ENVIRONMENTAL POLICY SPECIALIZATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
Required—two from the following (6 credits)		
ECON 6295	Special Topics (Applied Environmental Economics)	
IAFF 6151	Environmental Policy	
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)	
PPPA 6066	U.S. Environmental Policy	
Supporting courses (6 credits)		
EMSE 6260	Energy Management	

GLOBAL GENDER POLICY SPECIALIZATION

See note regarding special topics and LAW courses*

Code	Title	Credits
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Required course (3 credits)

IAFF 6102	Global Gender Policy	
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Supporting courses (9 credits)

IAFF 6118	Special Topics in International Affairs (Gender and Security)	
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IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)	
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IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues)	
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IAFF 6136	Gender and Development	
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IAFF 6138	Special Topics in International Development Studies (Gender and Development)	
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IAFF 6138	Special Topics in International Development Studies (Gender, Disaster, and Development)	
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IAFF 6138	Special Topics in International Development Studies (Human Trafficking)	
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IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)	
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One course from the following may be used as a supporting course:

ANTH 6501	Gender and Sexuality	
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ANTH 6505	Medical Anthropology	
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EDUC 6640	Selected Topics in International Education (Gender in International Education and Development)	
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IAFF 6138	Special Topics in International Development Studies (Care of Women and Children in Complex Emergencies)	
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MGT 6290	Special Topics (Research - Women's Entrepreneurial Leadership)	
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PHIL 6238	Feminist Ethics and Policy Implications	
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EMSE 6290	Climate Change: Policy, Impacts, and Response	
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IAFF 6118	Special Topics in International Affairs (Managing the World's Water)	
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IAFF 6141	International Science and Technology Policy Cornerstone	
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IAFF 6164	Environmental Security	
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IAFF 6186	Special Topics in Security Policy Studies (Energy Security)	
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IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, Society)	
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IAFF 6501	Quantitative Analysis for International Affairs Practitioners	
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IBUS 4404	Global Energy	
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IBUS 6400	Oil: Industry, Economy, and Society	
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LAW 6454	International Environmental Law **	
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LAW 6455	International Climate Change Law **	
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LAW 6460	Environment and Energy Policy Practicum **	
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PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs	
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PUBH 6130	Sustainable Energy and the Environment	
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*Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

Suggested skills courses (credits count toward the skills course requirement for the master's program)

IAFF 6503	Professional Skills II (1 credit)	
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PUBH 6262	Introduction to Geographic Information Systems (1 credit)	
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PUBH 6263	Advanced GIS (1 credit)	
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*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

PUBH 6099	Topics in Public Health (Sexual and Reproductive Health)
SOC 6265	Women, Welfare, and Poverty
SOC 6268	Race, Gender, and Class
WGSS 6220	Fundamentals of Feminist Theory
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies
WGSS 6230	Global Feminisms
WGSS 6240	Gender and Public Policy
WGSS 6241	Gender, Law, and Politics
WGSS 6268	Race, Gender, and Class
WGSS 6270	Seminar: Selected Topics (Black Feminist Theory)
WGSS 6270	Seminar: Selected Topics (Global Islamic Feminisms)
WGSS 6270	Seminar: Selected Topics (Gender, Power, and Sexuality in East Asia)

Students may take IAFF 2190W or IAFF 3183 for graduate credit as a supporting course with permission from the Program Director, academic advisor, and instructor, who must agree to assign additional work.

IAFF 2190W	Special Topics (Women in Global Politics)
IAFF 3183	Special Topics in Development Policy (Human Trafficking)

Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

GLOBAL HEALTH SPECIALIZATION

See notes regarding special topics* and PUBH** courses.

Code	Title	Credits
Required course (2 credits)		
PUBH 6400	Global Health Frameworks (fall semester only)	
Supporting courses (10 credits)		

ANTH 6505	Medical Anthropology (3 credits)
Research methods in global health:	
PUBH 6410	Global Health Study Design (2 credits)
PUBH 6411	Global Health Qualitative Research Methods (2 credits)
PUBH 6412	Global Health Quantitative Research Methods (3 credits)
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs (1 credit)
Theory and methods courses in global health:	
PUBH 6435	Global Health Program Development and Implementation (2 credits)
PUBH 6436	Global Health Program Management and Leadership (2 credits)
Global health content courses:	
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries (1 credit)
PUBH 6440	Global Health Economics and Finance (2 credits)
PUBH 6441	Global Health Organizations and Regulations (2 credits)
PUBH 6442	Comparative Global Health Systems (2 credits)
PUBH 6480	Public Health in Humanitarian Settings (Public Health in Complex Emergencies (2 credits)
PUBH 6481	Global Mental Health (2 credits)
PUBH 6482	International Food and Nutrition Policy (2 credits)
PUBH 6499	Topics in Global Health (Public Health Systems)

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

** Most Public Health (PUBH) courses are offered for 2 instead of 3 credits. Students pursuing the global health concentration

should consult their academic advisor with questions regarding course selection.

INTERNATIONAL AFFAIRS AND DEVELOPMENT SPECIALIZATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
Required course (3 credits)		
One of the following. Any course not taken to fulfill this requirement may be used as supporting courses.		
ECON 6250	Survey of Economic Development	
IAFF 6108	International Development Policy	
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)	
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)	
IAFF 6138	Special Topics in International Development Studies (Poverty Alleviation and Bottom Up Development)	
Supporting courses (9 credits)		
The following courses are grouped into subcategories to help guide students in choosing appropriate coursework. Students should use this guidance to develop a coherent and logical narrative for their program of study. Students may choose courses from different subcategories to construct a concentration around their area of focus.		
9 credits from among the groupings listed below:		
Group A: Culture, society and development		
ANTH 6301	The Anthropology of Development	
ANTH 6391	Anthropology and Contemporary Problems (Capitalism/Neoliberalism)	
ANTH 6501	Gender and Sexuality	
ANTH 6505	Medical Anthropology	
ANTH 6508	Ethics and Cultural Property	
ANTH 6591	Topics in Sociocultural Anthropology (Displacement and Diaspora)	
IAFF 6138	Special Topics in International Development Studies (Gender and Development)	

IAFF 6138 Special Topics in International Development Studies (Indigenous People and Development)

Group B: Economic development policy

ECON 6237 Economics of the Environment and Natural Resources

ECON 6250 Survey of Economic Development

ECON 6269 Economy of China I

ECON 6283 Survey of International Trade Theory and Policy

ECON 6284 Survey of International Macroeconomics and Finance Theory and Policy

ECON 8358 Urban Economics

IAFF 6198 Special Topics in International Economic Policy (Development and Trade Policy in LDCs)

IAFF 6358 Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)

PSC 6373 Political Economy of Industrializing Asia

Group C: Gender and development

ANTH 6501 Gender and Sexuality

IAFF 6136 Gender and Development

IAFF 6138 Special Topics in International Development Studies (Gender and Development)

IAFF 6138 Special Topics in International Development Studies (Gender, Disaster, and Development)

WGSS 6230 Global Feminisms

WGSS 6270 Seminar: Selected Topics (Gender, Power, and Sexuality in East Asia)

Group D: Global health

ANTH 6505 Medical Anthropology

ANTH 6591 Topics in Sociocultural Anthropology (Illness and Stigma)

PUBH 6400 Global Health Frameworks (strongly recommended)

PUBH 6411 Global Health Qualitative Research Methods

PUBH 6440	Global Health Economics and Finance
PUBH 6442	Comparative Global Health Systems
PUBH 6480	Public Health in Humanitarian Settings
PUBH 6482	International Food and Nutrition Policy
Group E: Humanitarian assistance	
ANTH 6505	Medical Anthropology
EMSE 6305	Crisis and Emergency Management
EMSE 6320	International Disaster Management
EMSE 6325	Medical and Public Health Emergency Management
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, Humanitarian Assistance)
LAW 6540	Refugee and Asylum Law **
Group F: Institutions and politics	
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)
PSC 6336	The Political Economy of China, India, and Beyond
PSC 6373	Political Economy of Industrializing Asia
PSC 6383	Comparative Politics of Latin America
PSC 6439	International Political Economy
PSC 8337	Theories of Political Development
PSC 8388	Selected Topics in Comparative Politics (Authoritarianism and Democratization)
Group G: International business	
IBUS 6301	International Business Finance
IBUS 6400	Oil: Industry, Economy, and Society
IBUS 6401	International Business Strategy
IBUS 6402	Managing in Developing Countries
MBAD 6241	Global Perspectives
Group H: International development management	

PPPA 6016	Public and Nonprofit Program Evaluation
PPPA 6057	International Development Administration
PPPA 6058	International Development NGO Management
PPPA 6059	International Development Management Processes and Tools
Group I: International education	
EDUC 6601	International and Comparative Education
EDUC 6602	Regional Studies in International Education
EDUC 6610	Programs and Policies in International Education
EDUC 6620	Strategies and Analysis in International Education
EDUC 6640	Selected Topics in International Education (Education in Emergencies)
EDUC 6640	Selected Topics in International Education (Evaluation in International Education)
EDUC 6640	Selected Topics in International Education (International Higher Education for Development)
EDUC 6650	Education and National Development
Group J: Natural resources and the environment	
ECON 6237	Economics of the Environment and Natural Resources
EMSE 6220	Environmental Management
GEOG 6244	Urban Sustainability
GEOG 6293	Special Topics (Geography of Latin America)
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)
IAFF 6138	Special Topics in International Development Studies (Climate Change and Sustainable Development)
IAFF 6151	Environmental Policy
IAFF 6164	Environmental Security
LAW 6454	International Environmental Law **

PPPA 6066	U.S. Environmental Policy
SMPP 6210	Strategic Environmental Management

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

INTERNATIONAL ECONOMIC AFFAIRS SPECIALIZATION

See notes regarding special topics* and MBAD courses**.

Code	Title	Credits
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Students pursuing this concentration must take ECON 6283 and ECON 6284 as part of the core field requirement for the master's degree program. These courses do not count toward the concentration.

Students also must demonstrate proficiency in introductory statistics. Means of demonstrating proficiency include, but are not limited to, prior satisfactory completion of undergraduate statistics coursework, or STAT 1051, 1053, 1111 or IAFF 6501 at GW. Students should consult the Program Director as soon as possible following matriculation into the program regarding additional ways in which this requirement may be fulfilled.

Required—at least 6 credits from the following:

ECON 6237	Economics of the Environment and Natural Resources
ECON 6250	Survey of Economic Development
ECON 6255	Economics of Technological Change
ECON 6269	Economy of China I
ECON 6293	Topics in International Finance *
ECON 6295	Special Topics (Applied Behavioral Economics)
ECON 6295	Special Topics (Economic Analysis of International Trade Law)
ECON 6335	Applied Financial Derivatives
ECON 6340	Applied Labor Economics and Public Policy
ECON 6344	Applied Industrial Organization

PPPA 6014	Microeconomics for Public Policy II
PPPA 6015	Benefit-Cost Analysis

Supporting courses (6 credits)

IAFF 6142	Technology Creation/Diffusion
IAFF 6198	Special Topics in International Economic Policy (21st Century Trade Policies: Issues and Strategy)
IAFF 6198	Special Topics in International Economic Policy (Advanced Quantitative Analysis)
IAFF 6198	Special Topics in International Economic Policy (Development and Trade Policy in LDCs)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)
IAFF 6378	Special Topics in Middle East Studies (Oil: Industry, Economy, and Society)
IAFF 6378	Special Topics in Middle East Studies (Political Economy of the Middle East)
IBUS 6202	Regional Strategy for Multinationals
IBUS 6297	International Management Experience
IBUS 6301	International Business Finance
PSC 6439	International Political Economy
Recommended skills courses	
IAFF 6502	Professional Skills I (Analyzing International Economic Data)
IAFF 6502	Professional Skills I (Financial Statement Analysis)
IAFF 6503	Professional Skills II (Analyzing International Economic Data)
IAFF 6503	Professional Skills II (Intro to Gaming and Simulations)
IAFF 6503	Professional Skills II (Negotiating Skills)
MBAD 6211	Financial Accounting **
MBAD 6234	Financial Management **

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Only specific topics that are determined by the Program Director to be relevant to the student's program of study may be used to fulfill

this requirement. Any topic intended to be used for this requirement must be approved by the Program Director prior to enrollment. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

****Only one MBAD skills course can be used within the International Affairs degree.**

INTERNATIONAL LAW AND ORGANIZATIONS SPECIALIZATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits
12 credits from the following:		
IAFF 6118	Special Topics in International Affairs (Global Justice)	
IAFF 6118	Special Topics in International Affairs (International Law)	
IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)	
IAFF 6118	Special Topics in International Affairs (Leadership in International Affairs)	
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)	
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)	
IAFF 6138	Special Topics in International Development Studies (Civil Society and Development)	
IAFF 6138	Special Topics in International Development Studies (Democracy and Governance Development)	
IAFF 6138	Special Topics in International Development Studies (Global Food Security)	
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)	
IAFF 6138	Special Topics in International Development Studies (Monitoring and Evaluation for Foreign Assistance Programs)	
IAFF 6146	Space Law	

IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (Illicit Finance and Security)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
IAFF 6338	Special Topics in European and Eurasian Studies (European Union Foreign Relations)
IAFF 6338	Special Topics in European and Eurasian Studies (The European Union)
IAFF 6338	Special Topics in European and Eurasian Studies (Transatlantic Relations in the 21st Century)
LAW 6520	International Law **
LAW 6534	Law of the European Union **
LAW 6870	National Security Law **
PSC 6439	International Political Economy

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

****Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.**

INTERNATIONAL SECURITY STUDIES SPECIALIZATION

See notes regarding special topics* and LAW** courses.

Code	Title	Credits		
12 credits from the following:			IAFF 6106	Nuclear Weapons
<p>Courses in international security studies concentration are grouped into issues subcategories to help guide students in choosing appropriate coursework. Students do not necessarily need to select one subcategory; however, what is important is that there is a logic and believable narrative to their course choices. Students should consult their faculty advisor to help with this determination.</p> <p>Group A: Transnational security issues</p>			IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)
			IAFF 6165	Fundamentals of Intelligence
			IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
			IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
			IAFF 6521	U.S. Foreign Policy Summer Program
			PSC 6346	The Politics of U.S. Foreign Policy
			PSC 6349	International Security Politics
			Group D: Conflict and conflict resolution	
			IAFF 6118	Special Topics in International Affairs (International Law and the Use of Force)
			IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
			IAFF 6164	Environmental Security
			IAFF 6171	Introduction to Conflict Resolution
			IAFF 6173	Security and Development
			IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)
			IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
			IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)
			IAFF 6186	Special Topics in Security Policy Studies (Security Challenges in Africa)
			IAFF 6186	Special Topics in Security Policy Studies (Peace and Conflict in Africa)
Group B: Intelligence			Group E: Homeland security	
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)		IAFF 6163	Transnational Security
IAFF 6163	Transnational Security		IAFF 6165	Fundamentals of Intelligence
IAFF 6164	Environmental Security		IAFF 6169	Homeland Security
IAFF 6165	Fundamentals of Intelligence		IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)		IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)			
Group C: U.S. national security policy and process				
HIST 6330	Modern U.S. Foreign Policy			

IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
Group F: Strategic concepts and military history	
HIST 6051	Re-thinking Cold War History
HIST 6330	Modern U.S. Foreign Policy
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
PSC 6478	International Relations of the Middle East
PSC 8489	Selected Topics in International Politics (Civil Wars)
Group G: Science, technology, and national security policy	
IAFF 6106	Nuclear Weapons
IAFF 6141	International Science and Technology Policy Cornerstone
IAFF 6145	U.S. Space Policy
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Space and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Nonproliferation)
Group H: Security and development	
IAFF 6118	Special Topics in International Affairs (Gender and Security)
IAFF 6138	Special Topics in International Development Studies (Care of Children in Complex Emergencies)
IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)

IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Conflict Prevention)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Peace and Conflict in Africa)
Group I: Weapons of mass destruction	
IAFF 6106	Nuclear Weapons
IAFF 6107	The Science of Nuclear Materials
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Nonproliferation)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)
IAFF 6186	Special Topics in Security Policy Studies (Space and National Security)
IAFF 6186	Special Topics in Security Policy Studies (Weapons of Mass Destruction and Arms Control)
Group J: Regional Security	
Four courses that focus on the security issues within a region; general policy courses are not applicable. Please consult with the program director/advisor to develop a regional security field.	

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

**Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

LATIN AMERICA SPECIALIZATION

See notes regarding special topics and LAW courses* and enrollment requirements**.

Code	Title	Credits
Required—at least two of the following (6 credits)		
ANTH – Any 6000-level Anthropology course approved by the Program Director		
IAFF 6341	Latin American and Hemispheric Studies Cornerstone **	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Governments and Politics of Latin America)	
PSC 6383	Comparative Politics of Latin America	
PSC 6484	International Relations of Latin America	
Supporting courses (6 credits)		
Students may take IAFF 3187 for graduate credit as a supporting course with permission from the Program Director, academic advisor, and instructor, who must agree to assign additional work:		
IAFF 3187	Special Topics in Latin American and Hemispheric Studies	
IAFF 6341	Latin American and Hemispheric Studies Cornerstone **	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Conflict and Contestation in Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Economic and Social Development of Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Governments and Politics of Latin America)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Immigration and Weak States)	
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (OAS & Democracy in the Americas)	

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes

for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

**Permission of the instructor required prior to enrollment.

MIDDLE EAST SPECIALIZATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits)		
At least one from the following:		
IAFF 6378	Special Topics in Middle East Studies (Political Economy of the Middle East)	
PSC 6377	Comparative Politics of the Middle East	
PSC 6478	International Relations of the Middle East	
Supporting courses (9 credits)		
ANTH 6707	Issues in Middle East Anthropology (Citizenship and Displacement in the Middle East)	
IAFF 6364	Religion and Society in the Modern Middle East	
IAFF 6378	Special Topics in Middle East Studies (Lebanon and Syria)	
IAFF 6378	Special Topics in Middle East Studies (Neighbors and Rivals: Iran and the Arab World)	
IAFF 6378	Special Topics in Middle East Studies (U.S. Policy in the Gulf)	
A full listing of Middle East courses is posted in advance of each semester on the Institute for Middle East Studies website.		

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

NUCLEAR POLICY SPECIALIZATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
12 credits from the following:		
IAFF 6106	Nuclear Weapons	
IAFF 6107	The Science of Nuclear Materials	
IAFF 6118	Special Topics in International Affairs (Nuclear Proliferation and Nonproliferation)	
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)	
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)	
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)	
IAFF 6186	Special Topics in Security Policy Studies (Weapons of Mass Destruction and Arms Control)	

Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

TECHNOLOGY AND INTERNATIONAL AFFAIRS SPECIALIZATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits):		
IAFF 6141	International Science and Technology Policy Cornerstone	
Supporting courses (9 credits):		
ECON 6255	Economics of Technological Change	
IAFF 6142	Technology Creation/Diffusion	
IAFF 6143	Science and Technology Policy Analysis	

IAFF 6145	U.S. Space Policy
IAFF 6151	Environmental Policy
IAFF 6158	Special Topics in International Science and Technology Policy (Economics of Space)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6501	Quantitative Analysis for International Affairs Practitioners

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

U.S. FOREIGN POLICY SPECIALIZATION

See note regarding special topics and LAW courses*.

Code	Title	Credits
Required course (3 credits):		
At least one course from the following. Courses not taken as the required course can be used as supporting courses.		
HIST 6330	Modern U.S. Foreign Policy	
IAFF 6521	U.S. Foreign Policy Summer Program	
PSC 6346	The Politics of U.S. Foreign Policy	
Supporting courses (9 credits):		
HIST 6032	Reading and Research Seminar: Strategy and Policy	
HIST 6320	Readings/Research Seminar: Recent U.S. History	
IAFF 6145	U.S. Space Policy	
IAFF 6148	Space and National Security	
IAFF 6163	Transnational Security	
IAFF 6165	Fundamentals of Intelligence	
IAFF 6186	Special Topics in Security Policy Studies (Coercion and Deterrence in Peace & War)	

IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
IAFF 6186	Special Topics in Security Policy Studies (Homeland Security)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency & Counterinsurgency)
IAFF 6186	Special Topics in Security Policy Studies (Military Power and Effectiveness)
IAFF 6186	Special Topics in Security Policy Studies (Military Technology Assessment)
IAFF 6186	Special Topics in Security Policy Studies (National Security Resources)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Security Policy)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
IAFF 6186	Special Topics in Security Policy Studies (U.S. Grand Strategy)
IAFF 6186	Special Topics in Security Policy Studies (U.S. National Security)
IAFF 6198	Special Topics in International Economic Policy
IAFF 6208	Special Topics in Global Communication (Public Diplomacy)
IAFF 6378	Special Topics in Middle East Studies (U.S. Foreign Policy in the Gulf)
IAFF 6378	Special Topics in Middle East Studies (U.S. Security Policy in the Middle East)
PSC 6439	International Political Economy

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director. Up to two relevant LAW courses may be taken with the permission of the Law School Dean of Students and the Elliott School academic advisor.

MASTER OF ARTS IN THE FIELD OF SECURITY POLICY STUDIES

A master's degree in security policy studies can open doors to future employment in the security policy institutions of the federal government, in the private sector, in international

organizations such as NATO, and in the many non-profit institutions engaged in security policy work. Security policy studies is a policy-oriented program focusing on international security issues and the policy responses to those issues, with particular emphasis on emerging transnational threats. These threats include but are not limited to weapons of mass destruction, terrorism, regional and ethnic conflicts, international crime, and the security implications of a globalized economy.

It also examines the national and international policy responses to these problems, including the operations of the intelligence community, the military, diplomats, and international economic policymakers. The curriculum provides strong grounding in the national security and defense policymaking process. Students choose two specific concentrations – which can range from transnational security issues to conflict resolution to U.S. national security policymaking.

Students also have the option of emphasizing a particular geographic region – such as East Asia, the Middle East, or Latin America – by selecting a regional field as one of their two concentrations. The program's faculty includes internationally recognized authorities in defense policy and resources, foreign policy, the national security policy process, and regional and transnational security issues. The faculty includes leading scholars at GW as well as an outstanding array of adjunct faculty drawn from the many research institutions and policy organizations in the nation's capital.

Visit the program website (<https://elliott.gwu.edu/academics/graduate/sps/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 40 credits, including 6 credits in core field courses, a 4-credit capstone sequence, 0 to 3 credits in research tool courses, 15 credits in a specialization, 3 credits in professional skills courses, and 9 to 12 credits in elective courses. Students may choose to fulfill requirements that demonstrate proficiency in a foreign language (see below).

See notes regarding special topics and skills courses, the capstone sequence, and the thesis option*.

Code	Title	Credits
Required		
Core field courses (6 credits)		
IAFF 6161	International Security	
IAFF 6162	Security Policy Analysis	
Capstone (4 credits)		

Students complete a two-course capstone sequence that most closely matches the thematic area of their project. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. Students must have completed at least 18 credits of coursework prior to starting the capstone sequence. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898 Capstone Workshop

IAFF 6899 Capstone Course

Research tool courses (0 to 3 credits)

Students may choose either a language or a statistical skills option to fulfill the tool requirement.

Language option—This option may be fulfilled by any of ESIA's non-regional programs language proficiency requirements**. Students should contact their academic advisors for more information about the language proficiency requirements. Students who test out of a language have three extra credits to apply to their electives.

Statistics option—This option may be fulfilled by demonstrating proficiency with a minimum grade of B in a graduate-level statistics course. It may be met by taking one of the following:

IAFF 6501 Quantitative Analysis for International Affairs Practitioners

IAFF 6198 Special Topics in International Economic Policy (Advanced Quantitative Analysis)

Specialization (15 credits)

Five courses in one of the following specializations:

U.S. national security

Required

IAFF 6186 Special Topics in Security Policy Studies (U.S. National Security)

Specialization courses

HIST 6032 Reading and Research Seminar: Strategy and Policy

HIST 6042 Seminar: World War II

HIST 6051 Re-thinking Cold War History

HIST 6330 Modern U.S. Foreign Policy

IAFF 6106 Nuclear Weapons

IAFF 6118 Special Topics in International Affairs (Gender and Security)

IAFF 6118 Special Topics in International Affairs (International Law and the Use of Force)

IAFF 6118 Special Topics in International Affairs (Nuclear Security Policy)

IAFF 6145 U.S. Space Policy

IAFF 6148 Space and National Security

IAFF 6160 Defense Policy and Program Analysis

IAFF 6163 Transnational Security

IAFF 6165 Fundamentals of Intelligence

IAFF 6169 Homeland Security

IAFF 6186 Special Topics in Security Policy Studies (Civil-Military Relations)

IAFF 6186 Special Topics in Security Policy Studies (Civil Wars in World Politics)

IAFF 6186 Special Topics in Security Policy Studies (Coercion and Deterrence in Peace and War)

IAFF 6186 Special Topics in Security Policy Studies (Counter-Terrorism)

IAFF 6186 Special Topics in Security Policy Studies (Countering Violent Extremism)

IAFF 6186 Special Topics in Security Policy Studies (Cyber and Security)

IAFF 6186 Special Topics in Security Policy Studies (Cyber Threats and Policy)

IAFF 6186 Special Topics in Security Policy Studies (Defense Contracting in Practice)

IAFF 6186 Special Topics in Security Policy Studies (Heroes and Villains in the Global Arena: Intelligence and Assessment of World Leaders)

IAFF 6186 Special Topics in Security Policy Studies (Identity and CVE)

IAFF 6186 Special Topics in Security Policy Studies (Insurgency and Counter-Insurgency)

IAFF 6186 Special Topics in Security Policy Studies (Maritime Security and Threats)

IAFF 6186 Special Topics in Security Policy Studies (Military Power and Effectiveness)

IAFF 6186 Special Topics in Security Policy Studies (NATO's Strategic Challenges)

IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Nonproliferation)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)
IAFF 6186	Special Topics in Security Policy Studies (Piracy and Irregular Threats)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Political Violence and Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Russia and International Security)
IAFF 6186	Special Topics in Security Policy Studies (Security Implications of AI)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning for the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (The Chinese Military)
IAFF 6186	Special Topics in Security Policy Studies (Understanding U.S. Special Operations)
IAFF 6186	Special Topics in Security Policy Studies (U.S. Grand Strategy)
IAFF 6186	Special Topics in Security Policy Studies (WMD and Arms Control)
IAFF 6186	Special Topics in Security Policy Studies (Who Will Rule the 21st Century? Implications for U.S. National Security)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)
IAFF 6521	U.S. Foreign Policy Summer Program
LAW 6552	Law of War *
PSC 6467	Asian Security
*3 credit course only. Course has prerequisites which may not count for credit toward SPS program requirements.	
Other courses may count toward specialization requirements with approval of the Program Director.	
Transnational security	
Required course	
IAFF 6163	Transnational Security

Specialization courses

IAFF 6118	Special Topics in International Affairs (Gender and Security)
IAFF 6118	Special Topics in International Affairs (Gender, Peace, and Security in Africa)
IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)
IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
IAFF 6164	Environmental Security
IAFF 6169	Homeland Security
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Civil-Military Relations)
IAFF 6186	Special Topics in Security Policy Studies (Coercion and Deterrence in Peace and War)
IAFF 6186	Special Topics in Security Policy Studies (Counter-terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
IAFF 6186	Special Topics in Security Policy Studies (Cyber Threats and Policy)
IAFF 6186	Special Topics in Security Policy Studies (Identity and CVE)
IAFF 6186	Special Topics in Security Policy Studies (Illicit Finance and Security)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counter-Insurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Organized Crime)
IAFF 6186	Special Topics in Security Policy Studies (Maritime Security and Threats)
IAFF 6186	Special Topics in Security Policy Studies (NATO's Strategic Challenges)

IAFF 6186	Special Topics in Security Policy Studies (Non-State Actors)
IAFF 6186	Special Topics in Security Policy Studies (Piracy and Irregular Threats)
IAFF 6186	Special Topics in Security Policy Studies (Political Risk Analysis)
IAFF 6186	Special Topics in Security Policy Studies (Political Violence and Terrorism)
IAFF 6186	Special Topics in Security Policy Studies (Security Implications of AI)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning in the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Transitional Justice)
IAFF 6186	Special Topics in Security Policy Studies (Understanding U.S. Special Operations)
IAFF 6358	Special Topics in Latin American and Hemispheric Studies (Security in the Americas)
IAFF 6385	Special Topics in African Studies (Transnational Threats in Africa)
LAW 6552	Law of War *
PSC 6467	Asian Security
*3 credit course only. Course has prerequisites which may not count for credit toward SPS program requirements.	
Other courses may count toward specialization requirements with approval of the Program Director.	
Science and technology	
Required course	
IAFF 6186	Special Topics in Security Policy Studies (Emerging Threats)
Specialization courses	
IAFF 6106	Nuclear Weapons
IAFF 6107	The Science of Nuclear Materials
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)
IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)

IAFF 6138	Special Topics in International Development Studies (Global Food Security)
IAFF 6143	Science and Technology Policy Analysis
IAFF 6145	U.S. Space Policy
IAFF 6148	Space and National Security
IAFF 6164	Environmental Security
IAFF 6186	Special Topics in Security Policy Studies (Coercion and Deterrence in Peace and War)
IAFF 6186	Special Topics in Security Policy Studies (Cyber and Security)
IAFF 6186	Special Topics in Security Policy Studies (Cyber Security)
IAFF 6186	Special Topics in Security Policy Studies (Cyber Security and Governance)
IAFF 6186	Special Topics in Security Policy Studies (Cyber Threats and Policy)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Proliferation and Nonproliferation)
IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)
IAFF 6186	Special Topics in Security Policy Studies (Security Implications of AI)
IAFF 6186	Special Topics in Security Policy Studies (Strategic Planning in the 21st Century)
IAFF 6186	Special Topics in Security Policy Studies (Understanding U.S. Special Operations)
IAFF 6186	Special Topics in Security Policy Studies (WMD and Arms Control)
IAFF 6186	Special Topics in Security Policy Studies (Who Will Rule the 21st Century? Implications for U.S. National Security)
LAW 6877	Nuclear Nonproliferation Law and Policy (3 credit course only)
PSC 6467	Asian Security
Other courses may count toward specialization requirements with approval of the Program Director.	
Conflict resolution	
Required course	

IAFF 6171	Introduction to Conflict Resolution
Specialization courses	
IAFF 6118	Special Topics in International Affairs (Foundations of Humanitarian Action)
IAFF 6118	Special Topics in International Affairs (Gender and Security)
IAFF 6118	Special Topics in International Affairs (Gender, Peace, and Security in Africa)
IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)
IAFF 6118	Special Topics in International Affairs (International Law)
IAFF 6118	Special Topics in International Affairs (International Law and Use of Force)
IAFF 6118	Special Topics in International Affairs (Managing the World's Water)
IAFF 6118	Special Topics in International Affairs (Reinventing the United Nations)
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance)
IAFF 6164	Environmental Security
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Civil-Military Relations)
IAFF 6186	Special Topics in Security Policy Studies (Civil Wars in World Politics)
IAFF 6186	Special Topics in Security Policy Studies (Countering Violent Extremism)
IAFF 6186	Special Topics in Security Policy Studies (Early Warning and Prevention)
IAFF 6186	Special Topics in Security Policy Studies (Heroes and Villains in the Global Arena: Intelligence and the Assessment of World Leaders)
IAFF 6186	Special Topics in Security Policy Studies (Insurgency and Counter-Insurgency)
IAFF 6186	Special Topics in Security Policy Studies (International Peacekeeping)

IAFF 6186 Special Topics in Security Policy Studies (Political Risk Analysis)

IAFF 6186 Special Topics in Security Policy Studies (Stabilization and Peacebuilding)

IAFF 6186 Special Topics in Security Policy Studies (Transitional Justice)

IAFF 6358 Special Topics in Latin American and Hemispheric Studies (Security in the Americas)

LAW 6534 Law of the European Union (3 credit course only)

LAW 6552 Law of War *

*3 credit course only. Course has prerequisites which may not count for credit toward SPS program requirements.

Other courses may count toward specialization requirements with approval of the Program Director.

Professional skills courses (3 credits)

Three 1-credit skills courses from the following:

IAFF 6502 Professional Skills I

IAFF 6503 Professional Skills II

IAFF 6504 Intermediate Conversation

Electives (9 to 12 credits)

At least three substantive 3-credit courses. Students that have tested out of the tools requirement through fulfilling the language proficiency requirement will have to take a fourth 3-credit elective course.

Additional thesis option

Students wishing to continue to a PhD program or pursue a research-oriented job may consider writing a thesis, which is an independent, in-depth research project that takes a year or more to complete. Those students who wish to complete a thesis must do so in addition to the capstone requirement. Thesis credits will be counted as elective or specialization credits with Program Director approval. Students pursuing a thesis need a minimum 3.5 GPA and approval from the faculty member they wish to serve as their thesis director. Thesis students also need to complete at least one research methods course.

IAFF 6998 Thesis

IAFF 6999 Thesis

*Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings.

Topics courses not listed here may, with permission of the Program Director, be used to fulfill program requirements.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>), the capstone (<https://elliott.gwu.edu/global-capstone/>), and the thesis (<https://elliott.gwu.edu/thesis/>) is available on the Elliott School website.

**** Foreign language proficiency requirement**

Students may fulfill this requirement in one of the following ways:

- Having earned a minimum grade of *B* in a sixth-semester university-level advanced language course completed no more than three years prior to matriculation in the Elliott School's master's degree program.
- Having earned a minimum grade of *B* in a sixth-semester university-level advanced language course at GW, or in an approved course taken at another institution of higher learning, including Elliott School exchange partner institutions, while enrolled in the Elliott School master's program.
- Passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.
- Achieving the required proficiency level in a reading and speaking examination administered by an Elliott School-approved foreign language assessment institution, at the student's expense, while enrolled in the Elliott School's Master's Degree Program.
- Demonstrating the required foreign language proficiency level in a foreign language professional skills course offered through the Elliott School. The instructor tests the student during the course (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>) to determine if the required proficiency level has been achieved.

MASTER OF INTERNATIONAL POLICY AND PRACTICE

The demands of globalization are dramatically changing career and employment practices for individuals and organizations in international affairs. Professionals who want to excel in the international arena must have knowledge of international economic, political, and social trends. They must possess the analytical and management skills necessary to formulate

and advocate policies on key international issues, as well as the ability to negotiate and work effectively in cross-cultural settings.

The master of international policy and practice (MIPP) program enhances the capacities of mid-career students to lead change and take on the challenges of the twenty-first century by providing them with the tools and insights of cutting-edge scholarship.

The program's interdisciplinary curriculum combines three foundation courses with a wide variety of course options selected to suit the student's professional goals and intellectual interests. Most courses are offered in the late afternoon and early evening to accommodate student work schedules, making it ideal for working professionals. Cohort events throughout the year provide additional venues for professional networking with other students, faculty, and guest speakers.

Students in the MIPP program also benefit from the events and programs sponsored by the Elliott School's exceptional research centers and institutes. The Elliott School's active calendar of lectures, conferences, and workshops feature leading scholars and practitioners from the national and international policy communities.

Visit the program website (<https://elliott.gwu.edu/international-policy-and-practice/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 27 credits, including 9 credits in required courses and 18 credits in elective courses.

Students are required to have undergraduate-level background coursework in microeconomics and macroeconomics before enrolling in a graduate economics course. Undergraduate courses do not count toward the master's degree. Students who do not have prior coursework should consult with the Program Director regarding available options.

Code	Title	Credits
Required (9 credits)		
IAFF 6212	Strategy and Leadership	
IAFF 6213	Leadership Capstone	
One of the following courses in international economics:		
ECON 6250	Survey of Economic Development	
ECON 6280	Survey of International Economics	
ECON 6283	Survey of International Trade Theory and Policy	

ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy
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IAFF 6216	Economic Tools for Global Policy
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Electives (18 credits)

18 credits tailored to the individual student's needs and selected in consultation with an advisor and the Program Director. May include up to 3 credits of one-credit, skills-based workshops.

Students must complete degree requirements within three years of their admission to the program. Students who are temporarily unable to continue their studies may request a leave of absence not to exceed one year. Extensions beyond the three-year period may be granted in exceptional circumstances, but the student is required to register for Continuous Enrollment.

No more than 6 graduate credits may be transferred into the MIPP program from accredited institutions or from non-degree status. All credits considered for transfer must have been earned from accredited institutions. Transfer credits may be accepted only under limited conditions, including length of time since the courses in question were completed, grades earned, and relevance to the student's program. The sole exception to the transfer credit policy is made for students who attend one of the Elliott School's International Exchange Partner schools. Such students may transfer a maximum of 10 graduate credits, provided no prior transfer credit has been accepted. No student may transfer more than a total of 10 credits from all sources combined. Credit from foreign language courses is not eligible for transfer. Credit from a previously earned degree may not be counted toward the MIPP degree.*

Visit the MIPP program page (<http://elliott.gwu.edu/international-policy-and-practice/>) for additional information.

MASTER OF INTERNATIONAL POLICY AND PRACTICE-ONLINE

The demands of globalization are dramatically changing career and employment practices for individuals and organizations in international affairs. Professionals who want to excel in the international arena must have knowledge of international economic, political, and social trends. They must possess the analytical and management skills necessary to formulate and advocate policies on key international issues, as well as the ability to negotiate and work effectively in cross-cultural settings.

The international policy and practice program (MIPP) enhances the capacities of mid-career students to lead change and take on the challenges of the 21st century by providing them with the tools and insights of cutting-edge scholarship.

The program's interdisciplinary curriculum combines three foundation courses with a wide variety of course options that are selected to suit the student's professional goals and intellectual interests. Most courses are offered in the late afternoon and early evening to accommodate student work schedules, making it ideal for working professionals. Cohort events throughout the year provide additional venues for professional networking with other students, faculty, and guest speakers.

Students in the MIPP program also benefit from the events and programs sponsored by the Elliott School's exceptional research centers and institutes. The Elliott School's active calendar of lectures, conferences, and workshops feature leading scholars and practitioners from the national and international policy communities.

Visit the program website (<https://online.gwu.edu/master-international-policy-and-practice/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 27 credits, including 9 credits in core courses and 18 credits in restricted elective courses.

Code	Title	Credits
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Required (9 credits)

Core

IAFF 6212	Strategy and Leadership
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IAFF 6213	Leadership Capstone
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IAFF 6216	Economic Tools for Global Policy
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Electives (18 credits)

18 credits tailored to the individual student's needs and selected in consultation with an advisor and the Program Director.

IAFF 6108	International Development Policy
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IAFF 6118	Special Topics in International Affairs (Qualitative Methods)
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IAFF 6138	Special Topics in International Development Studies (Bottom-Up Development)
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IAFF 6138	Special Topics in International Development Studies (Gender and Development)
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IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
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IAFF 6163	Transnational Security
IAFF 6171	Introduction to Conflict Resolution
IAFF 6173	Security and Development
IAFF 6186	Special Topics in Security Policy Studies (Civil-Military Relations)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)
IAFF 6186	Special Topics in Security Policy Studies (Emerging Threats)
IAFF 6186	Special Topics in Security Policy Studies (Terrorism Today)
IAFF 6186	Special Topics in Security Policy Studies (U.S. National Security)
IAFF 6222	Special Topics in International Policy and Practice (International Security Politics)
IAFF 6222	Special Topics in International Policy and Practice (Ethics and Security)
IAFF 6222	Special Topics in International Policy and Practice (Globalization)
IAFF 6222	Special Topics in International Policy and Practice (U.S. Foreign Policy)
IAFF 6501	Quantitative Analysis for International Affairs Practitioners
All offerings under IAFF 6222 may be used for elective requirements and repeated for credit provided the topic differs.	

MASTER OF INTERNATIONAL STUDIES

The master of international studies (MIS) program creates an opportunity for students at our international partner institutions to spend a year at the Elliott School.

To thrive in today's international arena, successful professionals must possess knowledge of global and regional issues and a keen ability to communicate, negotiate, and lead in a multicultural environment. For many international affairs professionals, experience in Washington, DC, is an invaluable opportunity that strengthens and enhances their academic, professional, and cultural understanding of our globalized world.

The MIS is a unique program open to current students and recent alumni from MA programs at Elliott School partner institutions around the globe. MIS students complete an additional academic year of full-time study in Washington,

DC. Students pursue expanded study of a complementary global issue or world region, building upon the foundation of coursework completed at the partner school.

Whether one's interests are in global trade, the development world, international public health, security and conflict resolution, or other global and regional issues, the Elliott School's MIS program prepares students for careers in diplomacy, public service, international and non-governmental organizations, and multi-national organizations.

REQUIREMENTS

The following requirements must be fulfilled: 28 credits, including 9 to 12 credits in core field courses, a 4-credit capstone sequence, 12 credits in a major field, and 0 to 3 credits in elective courses. In addition, all students are required to fulfill a foreign language proficiency requirement.*

See notes regarding special topics, skills, and LAW courses**

Code	Title	Credits
Required		
Core field (9-12 credits)		
Three or four required courses in economics, history, and international affairs/political science, as described below. If the MIS candidate has taken an equivalent course at the partner institution, the student may transfer credit to satisfy that core field requirement with approval of the Program Director.		
3 credits in political science		
IAFF 6101	International Affairs Cornerstone (Fall)	
3 credits in history		
HIST 6030	History and Its Uses in International Affairs	
3-6 credits in economics using one of the following options:		
ECON 6280	Survey of International Economics	
or		
ECON 6283 & ECON 6284	Survey of International Trade Theory and Policy and Survey of International Macroeconomics and Finance Theory and Policy	
ECON 6280 is designed for students who have little background in economics. Those with a stronger prior background in economics may wish to substitute ECON 6280 with the ECON 6283 and ECON 6284 sequence for 6 credits. The ECON 6283 and ECON 6284 sequence is required for the international economic affairs concentration.		

Capstone (4 credits)

Students complete a two-course capstone sequence that most closely matches the thematic area of their project. The capstone sequence includes a 2-credit capstone workshop taken before the 2-credit capstone seminar. The two 2-credit capstone courses must be taken consecutively.

IAFF 6898 Capstone Workshop

IAFF 6899 Capstone Course

Specialization (12 credits)

Specializations in the MIS program consist of four courses (12 credits) selected from one of the global issues or regional areas listed below. Students should choose courses from more than one academic discipline to complete their specialization and are encouraged to discuss these choices with the MIS Program Director. Subject matter covered in special topics courses may vary each semester. If the student has taken a related course at the partner institution, this may be transferred to satisfy as a specialization course, with approval of the MIS Program Director. Requirements for the specialization are outlined below. Note that the focus of special topics courses vary by semester. Consult the Schedule of Classes for each semester's offerings. With permission of the Program Director, other topics courses not listed here may be used to fulfill program requirements.

Electives (0 to 3 credits)

Students who take ECON 6280 to fulfill the core requirement must take 3 credits in elective courses, which may be selected from disciplines including anthropology; business, economics, education, history, public administration, political sciences, among others. Up to 3 credits may be taken in skills courses.

Specializations

Thematic specializations

- Conflict and Conflict Resolution (p. 1015)
- Global Energy and Environmental Policy (p. 1016)
- Global Gender Policy (p. 1017)
- Global Health (p. 1018)
- International Affairs and Development (p. 1019)
- International Economic Affairs (p. 1021)
- International Law and Organizations (p. 1022)
- International Security Studies (p. 1022)
- Nuclear Policy (p. 1026)
- Technology and International Affairs (p. 1026)
- U.S. Foreign Policy (p. 1026)

Regional specializations

- Africa (p. 1014)
- Asia (p. 1015)

- Europe, Eurasia, and Russia (p. 1016)
- Latin America (p. 1025)
- Middle East (p. 1025)

*Foreign language proficiency requirement

Students in the master of international studies program are required to demonstrate proficiency in a modern language other than English. Students may fulfill this requirement in one of the following ways:

- Having earned a minimum grade of *B* in a sixth-semester university-level advanced language course completed no more than three years prior to matriculation in the Elliott School's master's degree program.
- Having earned a minimum grade of *B* in a sixth-semester university-level advanced language course at GW, or in an approved course taken at another institution of higher learning, including Elliott School exchange partner institutions, while enrolled in the Elliott School master's program.
- Passing the Elliott School-administered foreign language proficiency reading and speaking examination at the currently-required level of proficiency (<https://elliott.gwu.edu/foreign-language-proficiency-requirement/>). The Elliott School administers foreign language proficiency examinations once in the fall and once in the spring semesters. Students should plan to take the language proficiency examination as soon as possible following their matriculation in the program. Students have three opportunities to pass the examination. Failure to pass the examination for a third time results in dismissal from the program.
- Achieving the required proficiency level in a reading and speaking examination administered by an Elliott School-approved foreign language assessment institution, at the student's expense, while enrolled in the Elliott School's Master's Degree Program.
- Demonstrating the required foreign language proficiency level in a foreign language professional skills course offered through the Elliott School. The instructor tests the student during the course (<https://elliott.drupal.gwu.edu/international-affairs-masters/foreign-language/#skills>) to determine if the required proficiency level has been achieved.

As of fall 2018, the above policy applies to new and current students in the Elliott School's non-regional studies master's programs with a foreign language requirement. Consult the Program Director for more information.

**Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes (<http://my.gwu.edu/mod/pws/>) for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the Program Director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>) is available on the Elliott School website.

Students may, with permission of their advisor, include courses offered by the Law School in their major field. Enrolling in a LAW course also requires permission of the Law School dean of students. Students should consult the Elliott School's Office of Academic Advising and Student Service before enrolling in LAW courses.

SPECIALIZATIONS

Specializations

Thematic specializations

- Conflict and Conflict Resolution (p. 1015)
- Global Energy and Environmental Policy (p. 1016)
- Global Gender Policy (p. 1017)
- Global Health (p. 1018)
- International Affairs and Development (p. 1019)
- International Economic Affairs (p. 1021)
- International Law and Organizations (p. 1022)
- International Security Studies (p. 1022)
- Nuclear Policy (p. 1026)
- Technology and International Affairs (p. 1026)
- U.S. Foreign Policy (p. 1026)

Regional specializations

- Africa (p. 1014)
- Asia (p. 1015)
- Europe, Eurasia, and Russia (p. 1016)
- Latin America (p. 1025)
- Middle East (p. 1025)

DUAL MASTER OF ARTS IN ELLIOTT SCHOOL PROGRAMS AND MASTER OF PUBLIC HEALTH

The Elliott School for International Affairs and the Milken Institute School of Public Health cooperate to offer a dual master of arts (MA) and master of public health (p. 1357) (MPH) degree program. Students must be admitted separately to both schools. Application for the dual degree program can be made after matriculation in either program but prior to completion of the initial degree.

The following MA/MPH areas of combined study are available:

Milken Institute School of Public Health

Master of Public Health in the following programs:

- Global health epidemiology and disease control
- Global health policy
- Global health program design, monitoring and evaluation
- Humanitarian Health

Elliott School of International Affairs

- Master of Arts (any program)

The Elliott School accepts up to 12 credits in MPH coursework toward requirements for the MA and the School of Public Health accepts up to 6 credits in Elliott School MA coursework towards requirements for the MPH.

All requirements for both programs must be fulfilled. Students completing the requirements for one program may apply to graduate with that degree prior to completing the second degree. Students also may request to withdraw from either program at any time to pursue a single degree. All degree requirements must be completed within five years of the student's date of matriculation in either program.

Visit the Elliott School (<https://elliott.gwu.edu/joint-and-dual-degrees/>) and School of Public Health (<https://publichealth.gwu.edu/programs/joint-degree-ma-mph/>) websites for additional information.

JOINT MASTER OF ARTS IN THE ELLIOTT SCHOOL AND JURIS DOCTOR DEGREE

The Elliott School of International Affairs cooperates with the Law School in offering a program of study leading to a joint master of arts and juris doctor degree. Student must be accepted for admission by both schools; applications should be made separately to each school, with a notice of interest in the joint program. The Law School stipulates that the first year of coursework for the Juris Doctor degree must be taken as a unit; students should consult with the Law School's Associate Dean for Student Affairs.

As part of this program, each school accepts up to 12 credits of coursework from the other school in fulfillment of its degree requirements. The Elliott School MA portion of the program may not include a thesis. The joint program takes approximately four years of full-time study for completion. All requirements for both degrees must be fulfilled. As degrees in joint programs are awarded simultaneously, degree requirements for both programs must be met before either degree is awarded. Joint degree students must apply for graduation from both schools. All work for this joint degree program must be completed in five years, unless an extension of time is granted by the respective deans.

Visit the Elliott School (<https://elliott.gwu.edu/joint-and-dual-degrees/>) and Law School (<https://www.law.gwu.edu/joint-degrees/>) websites for additional information

JOINT MA IN THE ELLIOTT SCHOOL AND MBA

The Elliott School of International Affairs and the GW School of Business offer a joint degree program leading to any of the master of arts degrees in the Elliott School (p. 833) and the master of business administration (p. 574) (MBA). Students must be admitted to both schools separately, and each school must approve the student's application to pursue the joint degree program.

The Elliott School counts up to 12 credits of business courses taken as part of the MBA toward the completion of the MA degree. The School of Business counts up to 12 credits of coursework completed in the MA program toward completion of the MBA. All requirements for both degrees must be fulfilled. As degrees in joint programs are awarded simultaneously, degree requirements for both programs must be met before either degree is awarded. Students should consult an advisor regarding detailed joint program requirements.

Visit the Elliott School (<https://elliott.gwu.edu/joint-and-dual-degrees/>) and School of Business (<https://business.gwu.edu/academics/programs/mba/joint-dual-degree-mba/>) websites for additional information.

CERTIFICATE PROGRAMS

Graduate certificate programs

The Elliott School of International Affairs offers a series of graduate certificates covering topics of specialized interest. The certificate programs are open to all graduate students presently enrolled in the Elliott School, Columbian College of Arts and Sciences, Graduate School of Education and Human Development, School of Business, and Milken Institute School of Public Health. The programs also are open to graduate students from other universities, individuals who already have earned a graduate degree, and individuals with a bachelor's degree and a minimum of eight years of relevant professional work experience. Applicants who have less than eight years of work experience are eligible to apply but must submit the same application materials required of other MA degree programs. Transfer credit from non-GW institutions is not accepted into any graduate certificate program. No more than 6 credits of graduate coursework taken in any degree or non-degree status within the University, including the Elliott School, may be included in any graduate certificate program. Additional information is available in the Elliott School Graduate Admissions office (<http://elliott.gwu.edu/graduate-admissions/>).

- Graduate certificate in global gender policy (p. 1037)
- Graduate certificate in international science and technology policy (p. 1038)
- Graduate certificate in nuclear policy (p. 1039)

GRADUATE CERTIFICATE IN GLOBAL GENDER POLICY

As gender inequality continues to challenge society, global gender policy continues to grow within international affairs. The graduate certificate program in global gender policy prepares students to become leaders in promoting gender equality around the world. Students in the program will take a cornerstone course on global gender policy, as well as a rigorous methods course that explores the challenges and best practices of gender-specific data collection and analysis. In addition to these core requirements, students can choose from elective courses on subjects from gender and disaster to human trafficking, as well as several one-credit skills courses related to this field.

REQUIREMENTS

Visit the program website (<http://elliott.gwu.edu/graduate-certificates/global-gender-policy/>) for additional program information.

The following requirements must be fulfilled: 15 credits, including one 3-credit core course and 12 credits in supporting courses. Up to 3 credits of skills courses may be applied to the supporting course requirements.

See notes regarding special topics and skills courses.*

Code	Title	Credits
Core Requirement (3 credits):		
IAFF 6102	Global Gender Policy	
Supporting Courses (12 credits)		
At least three courses from the following:		
ANTH 6501	Gender and Sexuality	
EDUC 6640	Selected Topics in International Education (Gender in International Education and Development)	
IAFF 3190W	Special Topics (Masculinities in International Affairs; open to graduate students)*	
IAFF 6118	Special Topics in International Affairs (Gender and Security)*	
IAFF 6118	Special Topics in International Affairs (Gender, War, and Peace)*	

IAFF 6118	Special Topics in International Affairs (Research Methods in Global Gender Issues) *
IAFF 6136	Gender and Development
IAFF 6138	Special Topics in International Development Studies (Gender and Development) *
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster, and Development) *
IAFF 6138	Special Topics in International Development Studies (Gender, Power, and Sexuality in East Asia) *
IAFF 6138	Special Topics in International Development Studies (Human Trafficking)
IAFF 6138	Special Topics in International Development Studies (Violence, Gender, and Humanitarian Assistance) *
LAW 6350	Domestic Violence Law
LAW 6394	Sexuality and the Law
LAW 6570	International Human Rights of Women
LAW 6608	Feminist Legal Theory
PUBH 6399	Topics in Health Policy (Reproductive Health Policy)
SOC 6273	The Sex Industry
WGSS 2135	A Study of Women and Media
WGSS 6220	Fundamentals of Feminist Theory
WGSS 6221	Research Issues in Women's, Gender, and Sexuality Studies
WGSS 6230	Global Feminisms
WGSS 6238	Feminist Ethics and Policy Implications
WGSS 6240	Gender and Public Policy
WGSS 6241	Gender, Law, and Politics
WGSS 6268	Race, Gender, and Class
WGSS 6270	Seminar: Selected Topics **

Recommended Skills Courses

Up to three credits from the following can be applied to supporting course requirements:

IAFF 6502	Professional Skills I (Advocating for Women's Rights) *
IAFF 6502	Professional Skills I (Developing Effective Proposals)
IAFF 6502	Professional Skills I (Negotiation Skills)
IAFF 6502	Professional Skills I (Participatory Monitoring and Evaluation for Development)
IAFF 6502	Professional Skills I (Participatory Planning)
IAFF 6503	Professional Skills II (Feminist Research Methods for Post-Conflict Contexts) *
IAFF 6503	Professional Skills II (Gender Advisor: Roles and Skills) *
IAFF 6503	Professional Skills II (Gender Monitoring & Evaluation) *
IAFF 6503	Professional Skills II (Gender Responsive Budgeting) *
IAFF 6503	Professional Skills II (Political Analysis)

*These courses are directly affiliated with the Elliott School's Gender Equality Initiative in International Affairs and are strongly recommended to be taken as part of students' program of study.

**Only specific topics that are determined by the director to be relevant to the student's program of study may be used to fulfill this requirement. Any topic intended to be used for this requirement must be approved by the director prior to enrollment. Specific subject matter covered in special/selected topics courses varies by semester. Consult the Schedule of Classes for each semester's offerings. Topics courses not listed here may be used to fulfill program requirements if approved by the director.

Additional information regarding skills courses (<https://elliott.gwu.edu/professional-skills-courses/>) is available on the Elliott School website.

GRADUATE CERTIFICATE IN INTERNATIONAL SCIENCE AND TECHNOLOGY POLICY

Scientific and technological advances provide the basis of international competitiveness and account for the bulk of national growth and the improvement of the quality of life around the world. The ability to create, adapt, and adopt new technologies defines modern societies. In today's global environment, the need for innovation is essential for solving societal problems and staying ahead of competition. Developments in information technology, space exploration,

genetic modification, and advances in material science are governed and shaped by institutions that set science and technology policy. T

The Elliott School offers a graduate certificate in international science and technology policy, consisting of 18 credits (6 courses), for professionals and students interested in exploring this topic outside their primary field of study.

Visit the program website (<https://elliott.gwu.edu/graduate-certificates/international-science-technology-policy/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: a minimum of 15 credits, including one 3-credit core course and 12 credits in courses for a self-designed science and technology specialization.

At least three of the five courses required for the certificate must be taught by faculty in the International Science and Technology Policy (ISTP) MA program.

Code	Title	Credits
Core course (3 credits)		
One course from the following:		
IAFF 6141	International Science and Technology Policy Cornerstone	
Science and technology specialization (12 credits)		
Students work with the program director to develop a self-designed science and technology specialization consisting of four 3-credit courses. At least two of these courses must be selected from the following:		
ECON 6237	Economics of the Environment and Natural Resources	
ECON 6250	Survey of Economic Development	
ECON 6255	Economics of Technological Change (same as IAFF 6158: Economics of Technological Change)	
ECON 6283	Survey of International Trade Theory and Policy	
ECON 6295	Special Topics (Energy Economics)	
ECON 6301	Applied Microeconomic Theory	
ECON 6305	Applied Macroeconomic Theory	
IAFF 6118	Special Topics in International Affairs (Applied Qualitative Methods)	

IAFF 6118	Special Topics in International Affairs (Data Analytics in International Affairs)
IAFF 6142	Technology Creation/Diffusion
IAFF 6143	Science and Technology Policy Analysis
IAFF 6145	U.S. Space Policy
IAFF 6146	Space Law
IAFF 6148	Space and National Security
IAFF 6151	Environmental Policy
IAFF 6153	Science, Technology, and National Security
IAFF 6158	Special Topics in International Science and Technology Policy (Climate Change and Energy Policy)
IAFF 6158	Special Topics in International Science and Technology Policy (Economics of Space)
IAFF 6158	Special Topics in International Science and Technology Policy (Economics of Technological Change. Same as ECON 6255)
IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
IAFF 6186	Special Topics in Security Policy Studies (Cybersecurity)

GRADUATE CERTIFICATE IN NUCLEAR POLICY

The 15-credit graduate certificate in nuclear policy provides a broad knowledge of nuclear security, non-proliferation and arms control issues, as well as broader security and energy policy issues in an international affairs context. Unique to this certificate is the requirement of a hands-on scientific analysis course for non-scientists. Students will gain detailed knowledge of contemporary issues, critical thinking skills, and laboratory experience from expert faculty within the Elliott School of International Affairs.

Visit the program website (<https://elliott.gwu.edu/graduate-certificates/nuclear-policy/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including a 3-credit core course and 12 credits in supporting courses.

Code	Title	Credits
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Required (3 credits)

One course from the following. The course not selected may be used as a supporting course.

IAFF 6106	Nuclear Weapons
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IAFF 6107	The Science of Nuclear Materials
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Supporting courses (12 credits)

Four courses from the following:

IAFF 6106	Nuclear Weapons *
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IAFF 6107	The Science of Nuclear Materials *
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IAFF 6118	Special Topics in International Affairs (Nuclear Energy)
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IAFF 6118	Special Topics in International Affairs (Nuclear Security Policy)
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IAFF 6158	Special Topics in International Science and Technology Policy (Energy Policy)
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IAFF 6186	Special Topics in Security Policy Studies (Nuclear Strategy)
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Other related courses may be counted toward supporting course requirements with the approval of the program director.

*If not used as the core course.

SCHOOL OF MEDICINE AND HEALTH SCIENCES

Dean B. Bass

Senior Associate Dean for Health Sciences R. Bushardt

Associate Deans A. Artino, C. Golden, R. Goldberg, T. Mallinson, L. Norris

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The George Washington University (GW) School of Medicine and Health Sciences (SMHS) is dedicated to improving the health of local, national, and global communities by:

- Educating a diverse workforce of tomorrow's leaders in medicine, science, and health sciences.
- Healing through innovative and compassionate care.
- Advancing biomedical, translational, and health services delivery research with an emphasis on multidisciplinary collaboration.
- Promoting a culture of excellence through inclusion, service, and advocacy.

As a globally recognized academic medical center, GW SMHS embraces the challenge of eliminating health disparities and transforming health care to enrich and improve the lives of those we serve.

Medical Programs

For information about GW medical programs, please refer to the medicine and health sciences website (<http://smhs.gwu.edu/>).

GW Health Sciences

GW Health Sciences (<http://smhs.gwu.edu/academics/health-sciences/>) comprises four (<https://smhs.gwu.edu/academics/health-sciences-programs/departments/>) academic departments: Biomedical Laboratory Sciences (<https://smhs.gwu.edu/academics/health-sciences-programs/departments/ihs-programs/>); Clinical Research and Leadership (<http://smhs.gwu.edu/crl/>); Health, Human Function, and Rehabilitation Sciences (<https://smhs.gwu.edu/academics/health-sciences-programs/departments/hhfrs-programs/>); and Physician Assistant Studies (<http://smhs.gwu.edu/pas/>). SMHS Health Sciences Programs prepare professionals for roles in selected specialties within health care. These programs emphasize the interdependent roles and responsibilities of professionals in health care practice, research, and leadership.

The mission of GW Health Sciences is built upon five tenets:

- Interdisciplinary education provides a foundation for the future of health care delivery and generates collaborative structures and models for benchmarking and improvement.
- Clinical training is a foundation for professional development in clinical practice.

- Community service learning applies to communities broadly and is an important component of education for the transformation of communities of practice, research, and access in health care.
- Cultivating leadership capacity development within the health sciences, medical, and scientific communities that we serve.
- Scholarship among faculty, staff, and students alike contribute to the process of new knowledge creation and are a foundation for advancing translational science in health care.

REGULATIONS

General Information

Vision

The George Washington University School of Medicine and Health Sciences (GW SMHS) is dedicated to improving the health of local, national, and global communities by:

- Educating a diverse workforce of tomorrow's leaders in medicine, science, and health sciences.
- Healing through innovative and compassionate care.
- Advancing biomedical, translational, and health services delivery research with an emphasis on multidisciplinary collaboration.
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Health Sciences Campus Locations

GW Health Sciences (<http://smhs.gwu.edu/academics/health-sciences/>) is a vibrant, diverse community of faculty, staff, and students across 50 academic and research programs, representing 34 fields of study. Our highly ranked academic programs and translational research initiatives are housed within four academic departments: Biomedical Laboratory Sciences (<https://smhs.gwu.edu/academics/health-sciences-programs/departments/ihs-programs/>), Clinical Research and Leadership (<http://smhs.gwu.edu/crl/>), Health, Human Function, and Rehabilitation Sciences (<https://smhs.gwu.edu/academics/health-sciences-programs/departments/hhfrs-programs/>), and Physician Assistant Studies (<http://smhs.gwu.edu/pas/>). Our division is also home to the Office of Integrative Medicine and Health (<https://smhs.gwu.edu/oimh/>), the GW Biomedical Informatics Center (<https://smhs.gwu.edu/biomedinfo/>), the GW Collaboratory for Health Research and Education (<https://smhs.gwu.edu/impact/collaboratory/>), an Advanced Metrics Lab, and a HRSA-funded Health Careers Opportunity Program (<https://smhs.gwu.edu/gwhcop/>). We value strategic partnerships, such as our collaboration with

the Alexandria City Public Schools in the Governor's Health Sciences Academy (<https://smhs.gwu.edu/hssp/>) at T.C. Williams High School.

We offer certificate, associate's, bachelor's, master's, and doctoral degree programs on two campuses - Foggy Bottom in Washington, D.C. and the Virginia Science and Technology Campus in Ashburn, Virginia - and in blended and online formats.

Health Sciences Mission and Vision

GW Health Sciences' mission is to drive innovation and quality in health and health care delivery through education, scholarship, and service. We strive to reflect our core values of diversity & inclusion, collaboration, and innovation by investing in people, living our social mission, influencing health professions education, health care policy and practice, and catalyzing innovation and entrepreneurship. Our vision is to be a leader in transforming health and health care delivery - locally, nationally, and globally. This vision aligns with the aspirations of the university: "Framed by our nation's capital, inspired by our namesake's vision, we the George Washington University aspire to preeminence as a comprehensive, global, research university."

Preamble

Students enrolled in GW Health Sciences are required to conform to all rules, regulations, and policies with University-wide applicability, including those contained in the Guide to Student Rights and Responsibilities (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>) (hereinafter "the Guide"). The Guide is the University's primary document concerning student behavior, and it includes ten sections which address the following issues:

- # Student Rights and Responsibilities
- # Equal Opportunity
- # Sexual and Gender Based Harassment and Interpersonal Violence
- # Student Grievance Procedures
- # Student Conduct
- # Additional Conduct Regulations
- # Academic Integrity
- # Privacy of Student Records
- # Other University Policies
- # Security

Because of the unique curricular and degree-related requirements of health care professional and clinical research training programs, GW Health Sciences imposes higher standards than the University describes in the Guide. Therefore, the following GW Health Sciences Regulations (hereinafter "Regulations") have been adopted. In the event GW Health Sciences simply adopts University policy as published within the Guide, this is reiterated within the Regulations.

GW Health Sciences publishes its bulletin and Regulations on the SMHS bulletin website (<http://bulletin.gwu.edu/medicine-health-sciences/>). Additionally, select programs of study produce supplemental program handbooks (hereinafter "Handbooks") with additional guidance, policies, and resources for students. Handbooks, as applicable, are also published online and can be found within the Student Resources section available from the specified program's primary website. A full list of program primary websites can be found on the GW Health Sciences programs website (<https://smhs.gwu.edu/programs/>).

To the extent these Regulations or Handbooks are silent as to a particular right or procedure, such right or procedure is not intended to be afforded under these Regulations or Handbooks. In the case of any inconsistency or ambiguity between these Regulations and University-wide rules, regulations, and policies, including the Guide, these Regulations shall govern. Students are expected to comply with all University and GW Health Sciences policies and regulations; failure to do so may result in disciplinary action, including dismissal.

Admission

To be considered for admission, applicants must submit a completed application form online, together with all required supporting documentation and a non-refundable application fee. All applicants should review the technical standards and essential functions policies prior to application. Students applying to programs that require completion of clinical rotations or a supervised clinical experience should review Background Check and Drug Screen ([https://smhs.gwu.edu/sites/default/files/Background%20Check%20%20Drug%20Screening%20Policy%20\(mlr%20redline%202-22-18\)-1_RB%20FINAL\(mlr%20redline%203-1-18\)-1_RB%203_1_18\(1\).pdf](https://smhs.gwu.edu/sites/default/files/Background%20Check%20%20Drug%20Screening%20Policy%20(mlr%20redline%202-22-18)-1_RB%20FINAL(mlr%20redline%203-1-18)-1_RB%203_1_18(1).pdf)) prior to application.

Bachelor of Science in Health Sciences (BSHS) programs are designed for transfer students; applicants are expected to have completed a minimum of 45 credits of coursework from a regionally accredited post-secondary institution prior to entry. Applicants to the post-baccalaureate and graduate programs must hold a bachelor's degree from a regionally accredited college or university, with the exception of the doctoral programs which require a master's degree or entry-level professional doctorate. Official transcripts must be submitted from each academic institution attended, regardless of whether credit was earned or is desired. The transcript(s) must indicate a minimum cumulative grade-point average of 2.5 on a scale of 4.0 for undergraduate and post-baccalaureate applicants, and a 3.0 on a scale of 4.0 for graduate students. The applicant must be in good standing and eligible to return to the academic institution most recently attended. Dual degree applicants may have increased higher cumulative grade-point average requirements beyond these posted minimums; dual degree applicants should refer to the respective program's website under "Admissions Requirements" for guidance.

With evidence of special promise, an applicant whose academic record falls short of the minimum GPA may be accepted on a conditional basis; see Conditional Admission, below. Students who have been suspended or dismissed academically from GW will not be considered for admission for at least one year from the date of their last suspension or dismissal.

Applicants should refer to the individual program descriptions for information on prerequisites and supporting documents since these vary by program. It is the responsibility of applicants to ensure that all required application materials are submitted by the designated deadlines. Unofficial copies, facsimiles, or photocopies of transcripts, certificates, or diplomas are not accepted. All records become the property of the University and will not be returned.

Conditional Admission—Admission with conditions to GW Health Sciences may be offered at the discretion of the senior associate dean for health sciences (or delegate) and/or the respective program director. The terms of admission will be outlined in a letter of acceptance from GW. When any conditions of admission have not been satisfied, notification is sent from the Health Sciences Dean's Office regarding the student's academic standing and eligibility to continue in the program of study, which may include dismissal. Students dismissed for not meeting the conditions of their admission from non-clinical programs must sit out one calendar year before re-applying. Readmission is not guaranteed. Students enrolled in clinical programs should consult their program handbook for program-specific dismissal policies and procedures.

Advance Tuition Deposit—Upon notification of acceptance to GW Health Sciences, an orientation fee and/or advance tuition deposit may be required (including readmission). Programs requiring an orientation fee and/or advance tuition deposit publish this requirement on their website and notify students in writing of this deposit requirement at the time of acceptance.

Advance tuition deposits are credited toward tuition and are non-refundable. An orientation fee, if required by the program, must be submitted along with the tuition deposit and is also non-refundable.

Readmission—Students who were previously registered in GW Health Sciences but who did not register during the immediate preceding semester (summer sessions excluded) and who did not receive an approved leave of absence, must apply for readmission. In some cases, an abbreviated process for applying for readmission is available and students are notified of this option by their advisor. Otherwise, readmission requires completion of a new application. Students seeking to enroll in a different degree or field of study should complete a new application to the respective program. An abbreviated process for applying for readmission is not available for the following disciplines: clinical microbiology, medical laboratory sciences, molecular diagnostic science, laboratory medicine, leadership in clinical practice and education, physician assistant, physical

therapy, pre-medicine, and translational health sciences. Students who have subsequently earned academic credit from another academic institution while not enrolled at GW must submit complete official transcripts to the Health Sciences Dean's Office as a requirement for readmission. Readmission is not guaranteed.

Transfer Credit for Graduate Students—A maximum of one quarter of the credits of graduate coursework required for a degree or certificate may be approved for transfer to a graduate program in GW Health Sciences. These credits may come from enrollment in non-degree coursework at GW, or from another degree-granting school or college of GW, or another regionally accredited college or university. Eligible coursework must: be graduate-level credit, not be applied toward completion of requirements for another degree, and earned with a minimum acceptable grade of a *B* (grades of *B-* and below do not transfer). Requests for transfer credit must be submitted in writing and approved by the program director and the Health Sciences Dean's Office after admission to the program. The University reserves the right to determine course equivalency and degree applicability. Students in the clinical microbiology, laboratory medicine, leadership in clinical practice and education, molecular diagnostic science, occupational therapy, physician assistant, physical therapy, and translational health sciences programs should refer to the respective program handbook for specific transfer credit policies and procedures.

Transfer Credit/Advanced Standing for Undergraduates—Transfer credit may be awarded for appropriate coursework completed at other regionally accredited institutions provided minimum grade requirements have been met. The minimum acceptable grade is *C* for coursework to be applied toward an undergraduate degree (grades of *C-* and below do not transfer). Transfer credit may also be considered from Advanced Placement (AP) and International Baccalaureate Credit (IB) credit, as well as the College Level Examination Program (CLEP exams). Please refer to GW U (<https://undergraduate.admissions.gwu.edu/>) for information on maximum credits, minimum scores, and GW course equivalents for AP and IB credits. Advanced standing may also be awarded for non-traditional classroom or clinical experience as determined by the individual programs. The University reserves the right to determine course equivalency and degree applicability. Health Sciences degree programs vary in the amount of advanced standing they award. For bachelor's programs, no more than 60 credits are accepted as advanced standing. Degree candidates who are currently enrolled at the University and plan to take courses at other regionally accredited institutions for transfer credit must first obtain program approval. Students in the medical laboratory sciences and molecular diagnostic science programs should refer to the respective program handbook for specific transfer credit policies and procedures.

International Applicants—The following additional requirements pertain to international applicants. Additional guidance is available from the GW International Services Office (<https://internationalservices.gwu.edu/>).

Required Records—An evaluation of the applicant's official transcripts from institutions attended outside of the United States must be completed by an accredited international evaluation service and must be submitted whether or not the official record is in English. Refer to the program's admissions website for additional information on specific documents to submit and links to accepted accredited evaluation services.

Language Tests—Applicants whose native language is not English or who are not citizens of countries where English is the official language must submit official test scores for academic IELTS, TOEFL, or PTE. The following are the minimum scores for admission consideration:

- Academic IELTS: An overall band score of 7.0, with no individual band score below 6.0.
- TOEFL: 600 paper-based or 100 Internet-based.
- PTE: Overall score of 68

The IELTS/TOEFL/PTE requirement may be waived for applicants who hold a bachelor's degree or higher from a regionally accredited U.S. college or university; applicants who hold a bachelor's degree or higher from an international higher education institution must demonstrate through transcript evaluation from an accredited international evaluation service that the institution is equivalent to a U.S. regionally accredited college or university, and that English is the language of instruction at the institution where the degree was completed. Waivers may exist for citizens of countries where the official language is English, as determined by the GW International Services Office.

Financial Certificate—A Financial Certificate must be completed and submitted with the application for admission by all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate is required for the issuance of a Form I-20 or IAP-66. Please note that for online learners the financial certificate is not required.

Unclassified Students—A student who wishes to take individual courses in GW Health Sciences must obtain permission to register as an unclassified student by Health Sciences Dean's Office. If permission is granted, application is made with the Office of Non-Degree Students (<https://registrar.gwu.edu/non-degree-students/>). Permission to take individual courses, if granted, is generally limited to a total of 6 credits. Credit earned for courses taken as an unclassified student may be transferred to a degree program at the University if the courses are applicable to the program, have been taken for credit, and have been completed with the minimum grade required in the program. This should not exceed 6 credits. Successful

completion of coursework taken as an unclassified student does not guarantee admission to a degree program.

Student Progress and Records

Complete Withdrawal from the University—A student who wishes to withdraw from all courses, and the University, must complete a Complete Withdrawal Form (<https://registrar.gwu.edu/sites/g/files/zaxdzs2171/f/downloads/completewithdrawal.pdf>) and submit it to the Office of the Registrar via the student's program advisor. The deadline for complete withdrawal from all courses without academic penalty is the end of the tenth week of classes, with the exception of summer and accelerated courses, which may have different deadlines. Complete withdrawal after the tenth week requires a petition to the appropriate dean. A student who wishes to withdraw from one or all courses, but not the University, should submit a Registration Transaction Form (https://registrar.gwu.edu/sites/g/files/zaxdzs2171/f/downloads/reg_transaction_form.pdf) via the student's program advisor. A student who wishes to withdraw from the University upon completion of currently registered courses should notify their program director and the Health Sciences Dean's Office. It is highly recommended that before doing anything a student should contact their advisor to discuss their options.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations (<http://bulletin.gwu.edu/fees-financial-regulations/>) in this Bulletin. Failure to complete a Complete Withdrawal Form can result in an extended financial obligation and the recording of grades of F (Failure) or notations of Z (Unauthorized Withdrawal). There is no automatic drop for non-payment or no show.

Course Withdrawal—GW Health Sciences offers courses in many formats, including those that follow the traditional academic calendar, and those that have an alternative format (e.g. summer term, accelerated course). Course start date and end dates may be found on the Schedule of Classes (<https://my.gwu.edu/mod/pws/>). For a course following the traditional academic calendar, after the fourth week of classes, a dropped course is considered a withdrawal and a notation of 'W' will appear on the transcript. Students may withdraw through the end of the tenth. Withdrawals after the tenth week of classes require a petition to the Health Sciences Dean's Office. For courses that do not follow the traditional academic calendar (e.g. summer term, accelerated courses), withdrawal dates vary. Information related to the course withdrawal dates for courses that do not follow the traditional academic calendar may be found on the Health Sciences Student Services Course/Drop Refund Schedule (<http://smhs.gwu.edu/academics/health-sciences-programs/student-services/course-drop-refund-schedule/>).

Leave of Absence—A student who must interrupt active pursuit of the degree or certificate may petition the senior associate dean for health sciences (or delegate) through the respective program director, for a leave of absence for a

specified period of time, generally limited to one calendar year. If the petition is approved, the student must register for leave of absence in the specified fall and/or spring semester, following regular registration procedures. The request should be made using the Leave of Absence/Continuous Enrollment (https://registrar.gwu.edu/sites/g/files/zaxdzs2171/f/LOA_CE201901.pdf) form. Students who discontinue their studies without being granted a leave of absence, and students granted leave who do not return to active study at the close of the period of approved absence, must apply for readmission and are subject to the regulations and requirements then in force. The right to use University facilities is suspended while the leave is in effect.

Privacy of Student Records (academic records)– The University and its faculty and staff protect the privacy of students' education records as required by federal law and regulations and as set forth in this policy. Refer to Privacy of Student Records (<https://studentconduct.gwu.edu/privacy-student-records/>) within the Guide.

Privacy of Records (student health and wellness records)– The University is committed to implementing the best practices associated with privacy and security of health information for the protection of its students, faculty, staff, and those served by University clinics, counseling centers, and other programs or departments that provide health or health-related services. For students enrolled in programs that require completion of clinical rotations or a supervised clinical experience, additional requirements or procedures may apply; refer to the GW Health Sciences Health Screening and Immunization Policy ([https://smhs.gwu.edu/sites/default/files/Health%20Screening%20and%20Immunization%20Policy_rb%20\(1\)\(1\).pdf](https://smhs.gwu.edu/sites/default/files/Health%20Screening%20and%20Immunization%20Policy_rb%20(1)(1).pdf)).

Request for Accommodation for Students with Disabilities– GW is committed to providing an inclusive and welcoming environment that is accessible for everyone, including individuals with disabilities. Accessibility is an essential part of a positive experience and a critical component of the University's academic environment for students with disabilities, as well as for faculty, staff, and visitors who have disabilities. Refer to Technical Standards and Essential Functions within the Regulations. Refer also to program-specific technical standards and essential functions published within the respective Handbook. Additional guidance for students is available from GW Disability Support Services (<https://disabilitysupport.gwu.edu/>).

Students Called to Active Military Duty – Refer to the Policy Regarding Student Called to Active Military Service published within the University Bulletin (<http://bulletin.gwu.edu/university-regulations/#military>).

Tuition Refund–It is the policy of the GW Health Sciences to refund student tuition if notified of the class change, or dropped classes, within an appropriate period of time. Courses dropped prior to the first day of the semester will have 100% of the tuition charges cancelled. Courses dropped on or after

the first day of the semester are subject to Refund Schedules (<https://smhs.gwu.edu/academics/health-sciences-programs/student-services/course-drop-refund-schedule/>) which govern the prorated cancellation of semester tuition charges in cases of program adjustment or withdrawal. Refer to the Health Sciences Student Services Course/Drop Refund Schedule (<https://smhs.gwu.edu/academics/health-sciences-programs/student-services/course-drop-refund-schedule/>).

Student Expectations

Student Conduct–In addition to complying with the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>), students enrolled in GW Health Sciences must adhere to additional Regulations regarding student conduct. Students enrolled in a program which publishes a separate Handbook, must also comply with the additional conduct requirements stated in the handbook. Violation of conduct standards described in the Guide, the Regulations, or the Handbook may result in disciplinary action, including dismissal. All students must be familiar with and abide by published conduct standards. Student orientation for and the assignment of a program advisor to each GW Health Sciences student provide additional means to support student understanding of and compliance with these standards.

Computer-Based Exams–Students in GW Health Sciences Programs, either online or on campus, who are required to take computer-based exams must utilize the remote proctoring system Remote Proctor NOW (RPNOW) by Software Secure, unless the student's particular health sciences program requires a different system approved by GW SMHS. Students are expected to follow all remote testing requirements before and during each quiz/exam. Each session is reviewed by Software Secure, Inc. (SSI) and GW Health Sciences program faculty/administration for violations and/or suspicious activity. GW SMHS expects that all students will demonstrate academic honesty in all academic endeavors, including but not limited to computer-based testing, as identified in the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>). Refer to the Computer-Based Exam (<https://smhs.gwu.edu/sites/default/files/Computer-Based%20Exam%20Policy.pdf>) Policy (p. 1042).

Criminal Background Check and Drug Screens–Some criminal offenses preclude students from participating in patient care. In addition, some professional licensure boards prohibit licensure for those convicted of specific offenses. Thus, students from professional programs are subject to the statutory and/or regulatory requirements independently imposed by law, or as required by affiliating entities. Students must meet any and all requirements of the clinical facilities to which they are assigned for clinical rotations or supervised clinical experiences. Such requirements may be more extensive than referenced herein. Inability to participate in patient care or being subject to any other exclusion prescribed by law will preclude successful completion of the requisite curriculum. As such, affected students may not be eligible for

matriculation, continuation in the program, or graduation. Refer to Background Check and Drug Screening ([https://smhs.gwu.edu/sites/default/files/Background%20Check%20%20Drug%20Screening%20Policy%20\(mlr%20redline%202-22-18\)-1_RB%20FINAL\(mlr%20redline%203-1-18\)-1_RB%203_1_18\(1\).pdf](https://smhs.gwu.edu/sites/default/files/Background%20Check%20%20Drug%20Screening%20Policy%20(mlr%20redline%202-22-18)-1_RB%20FINAL(mlr%20redline%203-1-18)-1_RB%203_1_18(1).pdf)) Policy ([https://smhs.gwu.edu/sites/default/files/Background%20Check%20%20Drug%20Screening%20Policy%20\(mlr%20redline%202-22-18\)-1_RB%20FINAL\(mlr%20redline%203-1-18\)-1_RB%203_1_18\(1\).pdf](https://smhs.gwu.edu/sites/default/files/Background%20Check%20%20Drug%20Screening%20Policy%20(mlr%20redline%202-22-18)-1_RB%20FINAL(mlr%20redline%203-1-18)-1_RB%203_1_18(1).pdf)).

Dress Code in Patient Care (or Simulated) Settings–

All students must dress in a professional manner. Jeans, shorts, cutoffs, t-shirts, recreational clothing, clothing that obstructs movement required to meet training functions, or clothing that exposes areas of the chest, abdomen, or back are unacceptable attire. Only closed toed shoes are allowed in the clinical setting. Avoid wearing perfumes, scented lotions, or colognes in all clinical settings. With the exception of small, non-dangling earrings, no body piercings are acceptable in the clinical setting. For specific dress code requirements related to a program of study, please refer to the respective program's Handbook.

Ethical Behavior and Professionalism–GW Health Sciences expects its faculty, staff, and students to engage in ethical behavior and demonstrate professionalism in all aspects of their academic life. Refer to Ethical Behavior and Professionalism (https://smhs.gwu.edu/sites/default/files/Ethical%20Behavior%20and%20Professionalism%20Policy_MLR%20redline.pdf) Policy (https://smhs.gwu.edu/sites/default/files/Ethical%20Behavior%20and%20Professionalism%20Policy_MLR%20redline.pdf). This regulation provides expectations that exceed conduct standards published within the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>).

Social Media–Refer to the University Social Media Policy. (<http://my.gwu.edu/files/policies/SocialMediaPolicyFINAL.pdf>)

Student Documentation in the Medical Record–It is the policy of GW SMHS to permit students in select clinical programs (e.g., physician assistant, physical therapy) to document in the medical record for educational purposes consistent with the policies of clinical facilities in which students rotate. Refer to the Student Documentation in the Medical Record Policy ([https://smhs.gwu.edu/sites/default/files/Student%20Documentation%20in%20the%20Medical%20Record%20Policy%20\(mlr%20redlined%202-22-18\)-1%20\(1\)%20RB%20FINAL.pdf](https://smhs.gwu.edu/sites/default/files/Student%20Documentation%20in%20the%20Medical%20Record%20Policy%20(mlr%20redlined%202-22-18)-1%20(1)%20RB%20FINAL.pdf)).

Technical Standards and Essential Functions–Regardless of the specific discipline of study, students within GW Health Sciences must demonstrate competency in the intellectual, physical, and social tasks that cumulatively represent the essential functions of professional practice within health science-related careers. Further, GW Health Sciences expects every graduate of its programs of study to demonstrate

the capacity and a personal commitment to address the challenge of eliminating health inequities and transforming health care to enrich and improve the lives of those we serve. Refer to Technical Standards and Essential Functions (<https://smhs.gwu.edu/sites/default/files/TECHNICAL%20STANDARDS%20and%20ESSENTIAL%20FUNCTIONS%20FINAL%20030618.pdf>). Students within select clinical programs (e.g., Medical Laboratory Sciences, Physician Assistant, Physical Therapy) must also comply with program-specific technical standards and essential functions, which may be found in the respective Handbook.

Campus Life and Safety

Diversity and Inclusion–Refer to University Policy on Equal Opportunity in the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>) and the University Policy on Diversity and Inclusion (<https://smhs.gwu.edu/sites/default/files/Policy%20Statement%20on%20Diversity%20and%20Inclusion.8.25.15.JF.pdf>).

Exposure to Infectious and Environmental Hazards (Potential Health Risks)– For students in programs of study who are at risk of exposure to Bloodborne Pathogens or Environmental Hazards, GW Health Sciences adopts the Policy and Procedures on Health Sciences Clinical Student Occupational Exposures (https://smhs.gwu.edu/sites/default/files/Policy%20and%20Procedures%20on%20Health%20Sciences%20Clinical%20Student%20Occupational%20Exposures_Final_2020_06_15.pdf). The procedures detail the process through which students should seek evaluation and treatment for occupational exposures with blood and other potentially infectious material while training or performing their duties.

Right to Change Rules and Programs–The University reserves the right to modify or change requirements, rules, and fees as well as make changes in programs without notice whenever circumstances warrant such changes. Such regulations shall go into force whenever the proper authorities may determine. It is the practice of GW Health Sciences to communicate in writing (e.g. email, digital newsletter) to students should a change occur to the Health Sciences Bulletin and Regulations outside of the routine annual Bulletin revision process.

Sexual and Gender Based Harassment and Interpersonal Violence–Refer to the University's Sexual and Gender Based Harassment and Interpersonal Violence Policy in the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>).

Student Health Insurance–All on-campus and international students (holding a J1 or F1 visa) enrolled in GW Health Sciences are required to carry student health insurance while they study at GW. Degree-seeking students who meet these criteria are automatically enrolled in the GW Student Health Insurance Plan (SHIP) and must submit an opt-out waiver if they have another insurance plan that meets required waiver criteria. Certificate-seeking students who meet these criteria will need

to opt-in in order to be enrolled in the GW SHIP. Please see Colonial Health Center (<https://healthcenter.gwu.edu/student-health-insurance/>) for more information, including how to waive and opt into GW student health insurance.

Substance Use—GW expects its community to support a “drug free” campus and abide by published regulations on the possession and/or use of alcohol and other substances that have the capacity to produce impairment. Refer to the University’s Code of Student Conduct and Alcoholic Beverage Consumption & Distribution Policy in the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>). The Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>) also includes a copy of the most current Drug-Free Schools Disclosure Statement. GW Health Sciences provides additional guidance and student conduct expectations related to substance use which also includes resources for any individual affected by a substance use disorder.

Academic Standing

An enrolled student is considered to be in good academic standing provided that they are not on academic probation or suspension. The information outlined below applies to all GW Health Sciences students. Students are also expected to comply with any program-specific guidelines as detailed in the respective Handbook, including higher standards and additional requirements related to student academic progress and academic standing.

Evaluation of Academic Performance—Faculty members are responsible for evaluating the performance of students in a meaningful, useful, and timely manner and for assigning grades on a basis that is rational, just, and unbiased. Official grades for coursework may be obtained from the Office of the Registrar. Unofficial grades for coursework are available via the GWeb Information System.

Grades in Undergraduate Degree or Certificate and Post-Baccalaureate Certificate Programs—The following grading system is used: *A*, Excellent; *B*, Good; *C*, Satisfactory; *D*, Low Pass; *F*, Fail. At the discretion of the program and individual faculty, “+” or “-” (plus or minus) grades also may be assigned. Except for courses that specifically state that repetition for credit is permitted, a student enrolled in a program for an undergraduate degree or undergraduate-level certificate (including post-baccalaureate certificate) may not repeat a course in which a minimum grade of *C* was received, unless a petition to do so is approved by the senior associate dean for health sciences (or delegate) upon recommendation of the respective program director. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. GW Health Sciences is excluded from the Academic Forgiveness Policy. Symbols that may appear on the transcript include *CR*, Credit; *AU*, Audit; *P*, Pass; *NP*, No Pass; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized

Withdrawal; *Z*, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

Grades in Graduate Degree and Certificate Programs—The following grading system is used: *A*, Excellent; *B*, Good; *C*, Minimum Pass; *F*, Fail. At the discretion of the program and individual faculty, “+” or “-” (plus or minus) grades also may be assigned. Except for courses that specifically state that repetition is permitted, a student enrolled in a program for a graduate degree or certificate may not repeat a course in which a minimum grade of *C* was received, unless a petition to do so is approved by the senior associate dean for health sciences (or delegate) upon recommendation of the respective program director. For graduate courses where a grade of *C-* or below was received, the course must be repeated for credit. If a course is repeated, the first grade remains on the student's record and is included in the cumulative GPA. Symbols that may appear on the transcript include *CR*, Credit; *AU*, Audit; *P*, Pass; *NP*, No Pass; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal. These symbols are not considered in determining the GPA.

Incomplete/In Progress—The symbol of *I* indicates that the instructor has received a satisfactory explanation for the student's inability to complete the required work of the course and an extension has been granted. The grade may be used only if the student's prior performance in the course has been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned will result in the grade of *F* for the course. Incomplete work must be made up by a date agreed upon by the instructor and the student but no later than the last day of the examination period for the semester immediately following the semester or summer session in which the notation of *I* is assigned. An extension of one additional semester can be requested by the student and may be approved by the program director. When work for the course is completed, the grade earned replaces the symbol *I* on the transcript. An Incomplete that is not changed within the allotted time reverts to an *F*.

The symbol of *IPG* is reserved for courses (such as special projects) in which the final class date extends beyond the official University deadline for submitting grades. Once the course has been completed, the *IPG* is removed from the transcript and the earned grade recorded.

Unauthorized Withdrawal—The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record may be encumbered until released by the student's advisor or academic dean. The symbol *Z* is not a grade, but an administrative notation.

The Grade-Point Average—Scholarship is computed in terms of the grade-point average, based only on the student's record

in this University. The grade-point average is computed from grades as follows: A, 4.0; A-, 3.7; B+, 3.3; B, 3.0; B-, 2.7; C+, 2.3; C, 2.0; C-, 1.7; D+, 1.3; D, 1.0; D-, 0.7; F, 0, for each credit for which the student has registered in a degree program. In undergraduate courses, grades of F will be computed in the grade-point average but will not be considered as fulfilling degree requirements. In graduate programs, final course grades below C- are recorded as F.

Appeal Procedures for Cases of Alleged Improper

Academic Evaluation—Students who believe that a grade or evaluation is unjust or inaccurate may use the following appeal procedures:

- Step 1: Attempt resolution with the relevant faculty member and the student's program director.
 - The student must complete Section 1 of the Appeal Form for Cases of Alleged Improper Academic Evaluation (<https://smhs.gwu.edu/academics/health-sciences/student-services/policies-forms/>) and submit this written appeal to the relevant faculty member within ten calendar days of the time the grade is posted, with a copy to the program director.
 - The faculty member will review the student's Appeal and complete Section 2 of the form. Upon completion, the faculty member will submit the form to the program director with the student in copy.
 - A review shall be conducted by the program director, consulting with the student and respective faculty member(s) involved with the grade or evaluation under review as the program director finds appropriate. If the program director is the faculty member who assigned the grade or evaluation under review, then a senior academic official (e.g., department chair, associate dean) conducts the review process.
 - Following the program director's review, the program director's decision will be input in Section 3 of the Appeal Form. The completed Appeal Form will be provided to the student and the faculty member.
- Step 2: Escalate the appeal to the senior associate dean for health sciences.
 - If a mutually satisfactory resolution is not achieved in Step 1, the student may, within five calendar days of the decision of the program director (or senior academic official, if applicable) being rendered, appeal to the senior associate dean for health sciences.
 - The student must submit to the senior associate dean for health sciences a written letter of appeal, accompanied by the completed Appeal Form used in Step 1 and any other supporting documentation that the senior associate dean for health sciences permits.
 - Appeal requests are reviewed by the senior associate dean for health sciences, consulting with the student and all respective faculty members involved with the grade or evaluation under review, as the senior associate dean for health sciences finds appropriate, to

determine whether the grading procedures employed were fair, equitable, objective, and consistent. Appeal requests may be referred to the Health Sciences Student Evaluation Committee by the senior associate dean for health sciences to provide additional guidance and recommendations.

- The senior associate dean for health sciences (or delegate) will render a decision in writing to the student with the student's program director in copy. The decision of the senior associate dean for health sciences is final.

Warning—An undergraduate whose GPA falls at or above 2.5 but below 2.7, and a graduate student whose GPA falls at or above 3.0 but below 3.2 will receive a warning notification. The warning may be delivered to the student the form of an email. A record of warning notifications is maintained by the Health Sciences Dean's Office.

Academic Probation—*Undergraduate Program:* A full- or part-time student in an undergraduate degree or certificate program whose cumulative GPA falls below 2.5 will be placed on academic probation, and that status will be noted on the student's transcript. This probation extends over the period during which the student attempts an additional 12 credits of coursework. While on probation, students are allowed to register for no more than 12 credits per semester, unless approved by the program director and the senior associate dean for health sciences (or delegate). *Graduate Program:* A full- or part-time graduate degree or certificate candidate whose cumulative GPA falls below 3.0 will be placed on academic probation. For full-time students, probation extends for 9 credits or "full-time" as defined by the program; for part-time students, probation during the period in which the student attempts 9 credits of coursework. While on probation, full-time students may register for no more than a total of 9 credits (or "full-time" as defined by the program) unless an exception is approved by the program director and the appropriate dean; part-time students may register for a combination of 9 credits, but may not register for additional credits; e.g., a part-time student who attempts 6 credits in one semester would be restricted to 3 credits in the following semester of enrollment.

If the program director determines that extenuating and valid circumstances exist, a student may be granted an extension of the probationary period. If granted, the student will be notified by the program director outlining conditions to be met by the student. The student must return a statement to the program director by mail or email confirming that he/she has read, understands, and agrees to the conditions.

If the student fails to attain the conditions in the time specified, the student will be suspended (see Suspension, below). If the student succeeds in raising his/her cumulative GPA to the minimum scholarship requirements, academic probation is lifted. A student who has been placed on probation more than one time will be recommended for dismissal.

Suspension—Students on probation who have not raised their cumulative GPA within the allowed number of credits (12 for undergraduate and 9 for graduate students) may be suspended. A student suspended for poor scholarship may not register for any coursework at the University, even as an auditor. The Health Sciences Dean's Office mails or emails a Letter of Suspension notifying the student of suspension.

A student who is suspended for failure to raise the cumulative GPA may apply for readmission after one calendar year. Evidence must be presented to the student's program director, demonstrating that the student is better prepared to pursue academic coursework. Any student suspended twice for poor scholarship will not be readmitted. If the student fails to achieve the minimum GPA at the end of the semester following readmission, the program director may recommend that the student be dismissed and further enrollment prohibited; such a recommendation is reviewed by the appropriate dean, whose recommendation is forwarded to the senior associate dean for health sciences.

Dismissal—A dismissal represents a summary determination of program faculty that a student has failed to attain and apply the necessary knowledge, skills and behaviors within a program of study, or that the conduct of the student is inconsistent with published standards of ethical conduct and professionalism. Each program of study designates a faculty coordinator or faculty committee to continuously monitor and evaluate student academic progress and conduct. This coordinator or committee provides recommendations to the program director regarding individual student academic progress, including dismissal. The program director is responsible for making final determinations of student academic progress, including dismissal from a program of study.

The faculty and director of an academic program are responsible for ensuring students meet minimum performance expectations and demonstrate the competencies as defined for the respective program of study. The most common reason for a student dismissal is failure of the student to maintain minimum academic standards. Reasons for a student dismissal include, but are not limited to, the following:

- Academic dishonesty.
- Failure to comply with University or Program policies, procedures, or requirements.
- Failure to maintain minimum academic standards.
- Failure to make satisfactory progress in completing program requirements.
- Failure to support a safe, healthy learning environment.
- Inability to meet essential functions or technical standards required for a program of study.
- Performance in a patient care setting that threatens the delivery of safe, high quality, patient-centered care.
- Unethical or unprofessional behavior.

A dismissal is generally the final outcome of numerous informal and formal communications with the student regarding their unsatisfactory progress in the program. A program director informs any student subject to dismissal of this action in writing, which includes guidance on exit procedures, and will generally work with the student through the University exit process. A student who is dismissed from a program of study may apply for readmission after the lapse of one calendar year. Readmission is not guaranteed. Students should refer to the respective Handbook, if applicable, for more details on academic progress policies and procedures.

Dismissal Appeal—If a student believes they have been unfairly or unjustly dismissed from a program of study, an opportunity for appeal exists. A student who wishes to appeal a program dismissal decision must submit a request in writing within ten (10) calendar days of notification of the dismissal to senior associate dean for health sciences. This may be submitted via email to hsp@gwu.edu. The student's written appeal must clearly state which of the following conditions applies and set forth specific facts and relevant supporting materials to justify the merits of the appeal request:

- Procedural error as set forth in policy,
- Dismissal decision was inappropriate based on the circumstance, and/or
- Evidence is available now that was not available at the time of the dismissal to warrant an appeal.

Upon receipt of a dismissal appeal process that demonstrates at least one of the conditions stated above, the senior associate dean for health sciences refers the request to the Health Sciences Student Evaluation Committee, which is a SMHS standing committee (<http://smhs.gwu.edu/faculty/faculty-assembly/standing-committees/>). This committee investigates the dismissal decision and applicable policies, in consultation with the student and program faculty. After adequate investigation, the Committee makes a nonbinding recommendation to the senior associate dean, who subsequently renders a decision to uphold or reject the program dismissal decision. The decision of the senior associate dean is final.

The student may address the Committee and provide information to support the appeal. The Committee may prescribe, in its sole discretion, the manner, time, and form of any such address and/or information. Should the student choose not to meet with the Committee, the student may submit a written statement and any supporting documentation to the committee chair no later than the date the appeal is scheduled to be heard. While the student may have advisors, counsel, or other individuals available to lend support throughout the process, only the student who is appealing the dismissal is permitted to meet with the Health Sciences Student Evaluation Committee. The Committee may seek further information, testimony, or witnesses at their discretion during the appeals process. Students who provide testimony at the request of the committee abide by the Student Code

of Conduct in the Guide (<https://studentconduct.gwu.edu/guide-student-rights-responsibilities/>) and the Ethical Behavior and Professionalism Policy (https://smhs.gwu.edu/sites/default/files/Ethical%20Behavior%20and%20Professionalism%20Policy_MLR%20redline.pdf).

Programs of Study

Undergraduate Programs and Advisement—Students enrolled in undergraduate degree or undergraduate-level certificate programs (including post-baccalaureate certificates) must meet with their academic advisor (in person or electronically) to review a program of study, listing all coursework required for the degree or certificate, including applicable transfer credit. Changes to the program of study can be made through petition to the program, and changes may require approval by the senior associate dean for health sciences (or delegate).

Transfer within GW Health Sciences—To apply for a transfer from one health sciences program to another, a written request must be submitted to the senior associate dean for health sciences, along with the necessary supporting documentation required by the program. To change from certificate to degree program may require an admissions application.

Transfer outside Health Sciences Programs—No internal transfers are permitted from a program of study within GW Health Sciences to another GW school or college. To transfer outside of GW Health Sciences, a student must follow the full admission processes for the other GW program.

Changes within GW Health Sciences—A student may not substitute one course for another without approval of the program director, the department chair, and the appropriate dean. After the deadlines for adding or dropping courses, a student must obtain the permission of the course instructor, the program director, and the appropriate dean to change status from credit to audit or from audit to credit.

Adding and Dropping Courses—During the registration period (typically before the end of the second week of classes) students may add or drop courses using GWeb. There is no automatic drop for non-payment or no show. After the second week of classes, students who wish to add a course must complete a Registration Transaction Form and submit the form to the senior associate dean for health sciences via their program advisor. Adding a course after the second week requires a signature of the instructor or other authorized member of the department. For accelerated courses, adds may be restricted to the first week of classes given the compressed nature of the course format. Note that courses added after the term has begun will be subject to a late fee.

For courses following the traditional academic calendar, a course dropped during the first four weeks of classes does not appear on the student's transcript. Students may drop a course via GWeb through the end of the fourth week of classes. A course dropped after the fourth week but before the end

of the tenth week is assigned a notation of W (Authorized Withdrawal). After the end of the tenth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the senior associate dean for health sciences (or delegate) and receives written permission. Deadlines for summer or accelerated courses may vary. Refer to the Health Sciences Student Services Course/Drop Refund Schedule (<https://smhs.gwu.edu/academics/health-sciences-programs/student-services/course-drop-refund-schedule/>).

All charges for courses which the student drops or withdraws from are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Students taking summer or accelerated courses should refer to the Health Sciences Student Services Course/Drop Refund Schedule for additional information. Failure to withdraw by these procedures can result in an extended financial obligation and the recording of a grade of F (Failure) or a notation of Z (Unauthorized Withdrawal).

Graduation Requirements

Degrees and certificates are conferred in January, May, and August. Degree-seeking students graduating from GW Health Sciences may participate in the commencement ceremony held each year in May.

To be recommended for graduation by the faculty, students must have met admission requirements; have completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree; have filed an application for graduation prior to the published deadline; and be free from all indebtedness to the University. Registration, either for coursework or for continuous enrollment, is required for the semester or summer session of which the degree is to be conferred.

Applications for graduation must be filed by October 1 for fall graduation, February 1 for spring graduation, and July 1 for summer graduation.

Undergraduate Residence Requirements—Bachelor of Science in Health Sciences programs follow the Residence Requirement under University Regulations.

Graduate and Doctoral Residence Requirements—Graduate and doctoral programs may set higher residency requirements; students should consult the program office or program handbook, if applicable.

Honors—Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4 to 3.59; *magna cum laude*, 3.6 to 3.79; *summa cum laude*, 3.8 to 4.0. The grade-point average includes all coursework completed at GW and is not rounded off. To be eligible for an honors designation, a student must complete at least 60 credits of coursework at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and the diploma of those students who earn an honors designation. If honors are entered in the commencement program, honors status is determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credits required for the degree. Honors indicated on the diploma are calculated on the basis of all coursework completed. The diploma and transcript are the official indication that a degree was conferred and honors awarded.

Certificate Completion—Students planning to complete a certificate by the end of a semester must submit an Application for Certificate Completion (https://registrar.gwu.edu/sites/g/files/zaxdzs2171/f/downloads/Certificate_Completion.pdf) by April 1 for spring semester, July 1 for summer sessions, and December 1 for fall semester. Completed applications should be sent to the Health Sciences Dean's Office via email to hspgrad@gwu.edu. Students completing a certificate are not recognized at the University Commencement and are not issued tickets to the ceremonies.

Financial Aid

Financial assistance for undergraduate students at GW is described in the Financial Aid Sourcebook from The George Washington University Office of Student Financial Assistance (<https://financialaid.gwu.edu/>). Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on academic achievement and demonstrated financial need. All undergraduate gift aid (institutional scholarships and grants, and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time workload at GW. Students are limited to ten semesters of institutional aid. Institutional aid is not available for online programs nor graduate programs. Loans and resident assistantships not based on financial need are available.

Several offices on campus provide information on financial assistance for graduate and certificate students. Information about funding opportunities is provided by the Office of Graduate Student Assistantships and Fellowships (<https://www2.gwu.edu/~fellows/>). Forms and information on federal loans for graduate students can be obtained from the Office of Student Financial Assistance (<https://financialaid.gwu.edu/>). Information on the Federal Work-Study Program, cooperative education opportunities, and on- and off-campus employment is available from the GW Center for Career Services (<https://careerservices.gwu.edu/>). Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a

student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid is adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Applications for institutional or federal aid cannot be processed if the relevant tax returns have not been filed in accordance with the IRS Code. Documents submitted as part of aid applications become the property of the University and cannot be returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session is entitled to a full refund of all tuition and fees that they have paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student has the option of either taking a full refund of tuition and fees or taking an Incomplete in their courses with the privilege of returning to complete all required coursework at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of their activation to the Health Sciences Dean's Office and the Office of Student Accounts and to request the appropriate refund.

All students on active duty are automatically exempted from the request for a \$50 voluntary library contribution without requiring any communication from them or their initials on the bill. Students can opt out of the fee with a button click on the Student Accounts bill pay site.

Students not meeting financial aid satisfactory academic progress (SAP) requirements may appeal to the Office of Financial Aid for review. The Office of Financial Aid notifies the student if they must complete the appeal process for reinstatement of aid. The appeal must state the reasons for failing to meet SAP requirements, such as special circumstances that contributed to the student's failure to make satisfactory academic progress (e.g., the death of a relative, an injury or illness of the student, or other special circumstances).

All appeals must be submitted to the Office of Financial Aid within two weeks of the date of notification that a student has not passed financial aid SAP.

Information on financial aid is accurate at the time each Bulletin is prepared for press. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Policies and Definitions

Academic Residency—To earn a bachelor's degree, students must earn at least 60 credits at or through GW, which may

include a University-authorized study abroad and study away program. At least 30 of the 60 credits earned at or through GW must be in upper-level courses (numbered 2000 or above); at least 12 credits in upper-level courses must be in the major field, and at least 6 credits in upper-level courses must be in the minor field, if sought.

Attendance—Students may attend only those classes for which they are officially registered. Regular attendance is expected. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

Auditing—A student who has been admitted to GW Health Sciences may register as an auditor in a class only with the permission of the instructor, the faculty advisor, and the appropriate dean. An auditor receives no academic credit and is not required to take active part in the class or to pass examinations. A student who takes a course as an auditor may not repeat it later for credit. The regular program tuition rate is charged for audited courses.

Continuous Enrollment—Once entered in a degree or certificate program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements each semester of the academic year until such time as the degree is conferred or certificate completed. Students who break continuous enrollment at the University and do not request and receive a leave of absence (see Student Progress and Records above) must apply for readmission and, if granted, are subject to the requirements and regulations then in force. Students who plan to attend other institutions and apply credit earned toward graduation from this University must first obtain written approval from the program director and the appropriate dean.

Credit—Credit is awarded only after registration for a course and satisfactory completion of the required work, or upon assignment of advanced standing.

Transcripts of Record—Official transcripts of student records are issued by the Office of the Registrar (<https://registrar.gwu.edu/>) and may be requested through GWeb (https://banweb.gwu.edu/PRODCartridge/twbkwbis.P_WWWLogin/) or TranscriptsPlus (<https://www.credentials-inc.com/CGI-BIN/dvcgitp.pgm?ALUMTRO001444>) by any student or former student who has paid all charges, including any outstanding student loan installments, due to the University at the time of the request. A fee is charged for each transcript. Partial transcripts are not issued. Unofficial transcripts can be obtained via the Office of the Registrar and through the GWeb Information System.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science in Health Sciences with a major in bioinformatics (p. 1054)
- Bachelor of Science in Health Sciences with a major in biomedical informatics (p. 1055)
- Bachelor of Science in Health Sciences with a major in clinical health sciences (p. 1057) (military contract)
- Bachelor of Science in Health Sciences with a major in clinical embryology and assisted reproductive technology (p. 1056)
- Bachelor of Science in Health Sciences with a major in clinical operations and health care management (p. 1059)
- Bachelor of Science in Health Sciences with a major in clinical research administration
- Bachelor of Science in Health Sciences with a major in emergency medical services management
- Bachelor of Science in Health Sciences with a major in global leadership in disaster response
- Bachelor of Science in Health Sciences with a major in leadership for emergency action and disaster response (military contract)
- Bachelor of Science in Health Sciences with a major in medical laboratory science
- Bachelor of Science in Health Sciences with a major in molecular diagnostic sciences (p. 1066)

Combined programs

- Dual Bachelor of Science in Health Sciences with a major in clinical operations and healthcare management and Master of Science in Health Sciences in the field of health care quality (p. 1067)
- Dual Bachelor of Science in Health Science with a major in clinical research administration and Master of Science in Health Sciences in the field of biomedical informatics (p. 1068)
- Dual Bachelor of Science in Health Sciences with a major in clinical research administration and Master of Science in Health Sciences in the field of clinical research administration
- Dual Bachelor of Science in Health Sciences with a major in clinical research administration and Master of Science in Health Sciences in the field of clinical translational research
- Dual Bachelor of Science in Health Sciences with a major in clinical research administration and Master of Science in Health Science in the field of regulatory affairs
- Dual Bachelor of Science in Health Sciences with a major in medical laboratory sciences and Master of Science in Health Sciences in the field of molecular diagnostic sciences (p. 1068)
- Dual Bachelor of Science in Health Sciences with a major in molecular diagnostic sciences and Master of Science

in Health Sciences in the field of clinical microbiology (p. 1069)

Minors

- Minor in anatomy (p. 1069)
- Minor in blood banking for medical laboratory science (p. 1069)
- Minor in emergency health services

MASTER'S

Master's programs

- Master of Science in Health Sciences in the field of biomedical informatics (p. 1070)
- Master of Science in Health Sciences in the field of clinical microbiology (p. 1071)
- Master of Science in Health Sciences in the field of clinical operations and health care management (p. 1071)
- Master of Science in Health Sciences in the field of clinical research administration (p. 1072)
- Master of Science in Health Sciences in the field of clinical and translational research (p. 1073)
- Master of Science in Health Sciences in the field of correctional health administration (p. 1074)
- Master of Science in Health Sciences in the field of health care quality (p. 1074)
- Master of Science in Health Sciences in the field of immunohematology and biotechnology (p. 1075)
- Master of Science in Health Sciences in the field of integrative medicine (p. 1076)
- Master of Science in Health Sciences in the field of laboratory medicine (p. 1077)
- Master of Science in Health Sciences in the field of medical laboratory science (p. 1077)
- Master of Science in Health Sciences in the field of molecular diagnostic science (p. 1078)
- Master of Science in Health Sciences in the field of regulatory affairs (p. 1078)
- Master of Science in Health Sciences in the field of physician assistant (p. 1079)
- Master of Science in Health Sciences in the field of translational microbiology (p. 1080)

Joint degree programs

- Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (Milken Institute School of Public Health) (p. 1081)

Military contract program

- Master of Science in Health Sciences in the field of immunohematology (p. 1075)

DOCTORAL

Doctoral programs

- Doctor of Health Sciences in the field of leadership in clinical practice and education (p. 1088)
- Doctor of Philosophy in the field of translational health sciences (p. 1089)
- Doctor of Physical Therapy (p. 1090)
- Advanced Practice Clinical Doctorate in Occupational Therapy (p. 1092)

CERTIFICATES

Post-baccalaureate certificates

- Post-baccalaureate certificate in blood banking for medical laboratory science (p. 1097)
- Post-baccalaureate certificate in chemistry for medical laboratory science (p. 1098)
- Post-baccalaureate certificate in clinical microbiology (p. 1098)
- Post-baccalaureate certificate in hematology for medical laboratory science (p. 1099)
- Post-baccalaureate certificate in medical laboratory science (p. 1099)
- Post-baccalaureate certificate in microbiology for medical laboratory science (p. 1099)
- Post-baccalaureate certificate in molecular diagnostic sciences (p. 1100)
- Post-baccalaureate certificate in pre-medicine (p. 1101)

Graduate certificates

- Graduate certificate in biomedical informatics (p. 1092)
- Graduate certificate in clinical operations and health care management (p. 1093)
- Graduate certificate in clinical research administration (p. 1093)
- Graduate certificate in clinical and translational research (p. 1094)
- Graduate certificate in clinical research practice (p. 1094)
- Graduate certificate in correctional health administration (p. 1095)
- Graduate certificate in health care quality (p. 1095)
- Graduate certificate in health sciences (p. 1096)
- Graduate certificate in health services and outcome research (p. 1096)
- Graduate certificate in integrative medicine (p. 1096)
- Graduate certificate in regulatory affairs (p. 1097)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
 - Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
 - Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
 - The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
-
- Anatomy and Regenerative Biology (ANAT) (p. 1407)
 - Clinical Embryology and Reproductive Technology (CERT) (p. 1462)
 - Clinical Management Leadership (CML) (p. 1463)
 - Clinical Research and Administration (CRA) (p. 1466)
 - Clinical Translational Science (CTS) (p. 1467)
 - Correctional Health Administration (CHA) (p. 1517)
 - Emergency Health Services (EHS) (p. 1564)
 - Health Care Quality (HCQ) (p. 1617)
 - Health Sciences (HSCI) (p. 1619)
 - Human Function and Rehabilitation (HFR) (p. 1645)
 - Informatics (INFR) (p. 1651)
 - Integrative Medicine (INTM) (p. 1657)
 - Medical Laboratory Science (MLS) (p. 1699)
 - Occupational Therapy (OT) (p. 1713)
 - Pharmacogenomics (PHRG) (p. 1718)
 - Physician Assistant (PA) (p. 1729)
 - Physical Therapy (PT) (p. 1725)
 - Regulatory Affairs (RAFF) (p. 1806)
 - Translational Health Sciences (THS) (p. 1852)

UNDERGRADUATE PROGRAMS

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- Bachelor of Science in Health Sciences with a major in global leadership in disaster response
- Bachelor of Science in Health Sciences with a major in leadership for emergency action and disaster response (military contract)
- Bachelor of Science in Health Sciences with a major in medical laboratory science
- Bachelor of Science in Health Sciences with a major in molecular diagnostic sciences (p. 1066)

Combined programs

- Dual Bachelor of Science in Health Sciences with a major in clinical operations and healthcare management and Master of Science in Health Sciences in the field of health care quality (p. 1067)
- Dual Bachelor of Science in Health Science with a major in clinical research administration and Master of Science in Health Sciences in the field of biomedical informatics (p. 1068)
- Dual Bachelor of Science in Health Sciences with a major in clinical research administration and Master of Science in Health Sciences in the field of clinical research administration
- Dual Bachelor of Science in Health Sciences with a major in clinical research administration and Master of Science in Health Sciences in the field of clinical translational research
- Dual Bachelor of Science in Health Sciences with a major in clinical research administration and Master of Science in Health Science in the field of regulatory affairs
- Dual Bachelor of Science in Health Sciences with a major in medical laboratory sciences and Master of Science in Health Sciences in the field of molecular diagnostic sciences (p. 1068)
- Dual Bachelor of Science in Health Sciences with a major in molecular diagnostic sciences and Master of Science in Health Sciences in the field of clinical microbiology (p. 1069)

Minors

- Minor in anatomy (p. 1069)
- Minor in blood banking for medical laboratory science (p. 1069)
- Minor in emergency health services

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN BIOINFORMATICS

Bioinformaticists use computers to analyze, organize, and visualize biological data in ways that increase the understanding of this data and lead to new discoveries. Graduates of this program will be well-qualified for many

rewarding careers, including those in bioinformatics software development, biomedical research, biotechnology, comparative genomics, genomics, molecular imaging, pharmaceutical research and development, proteomics, and vaccine development.

Visit the program website (<https://smhs.gwu.edu/bioinformatics/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
60 credits of general education including:		
3 credits English composition		
3 credits humanities		
6 credits social science		
8 credits biology with lab		
8 credits of general or inorganic chemistry with lab		
4 credits of organic chemistry with lab or 4 credits of genetics with lab		
8 credits in computer science (or related coursework in programming languages)		
4 credits in calculus		
3 credits in statistics		
13 credits in elective courses. Additional courses in biology, chemistry, computer science, mathematics, and/or statistics are recommended.		
Required		
HSCI 2105	Current Issues in Bioethics	
HSCI 2112W	Writing in the Health Sciences	
HSCI 4106	Introduction to Epidemiology for Health Sciences	
HSCI 4112W	Research and Writing in Health Sciences	
INFR 3101	Introduction to Bioinformatics	
INFR 3102	Scripting	
INFR 3103	Genomics	
INFR 4120	Bioinformatics Algorithms	
INFR 4121	High Performance Computing	
INFR 4122	Advanced Scripting	

INFR 4123	Statistical Genetics
INFR 4203	Seminar in Computational Biology
6 credits from the following (may be repeated for credit):	
INFR 4204	Bioinformatics Internship
INFR 4205	Bioinformatics Research Project
Electives	
9 credits from the following:	
INFR 3104	Human Genetics
HSCI 3105	Biochemistry
HSCI 3106	Microbiology for Health Sciences
HSCI 3117	Principles of Biostatistics for Health Sciences
9 credits from the following:	
INFR 4101	Introduction to Medical Informatics
INFR 4102	Survey of Medicine for Informaticians
INFR 4104	Medical Informatics Terminology & Standards
INFR 4105	Consumer Health Informatics
INFR 4106	Population Health for Medical Informatics

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN BIOMEDICAL INFORMATICS

The introduction of electronic health records and health databases within the clinical setting has transformed health care. Informatics serves as the bridge between human-computer interactions in the health care space, as well as how the data we collect in these settings can be leveraged to improve patient safety, outcomes, and quality.

Visit the program website (<https://smhs.gwu.edu/biomedical-informatics/programs/undergraduate/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, 60 of which must be completed at GW. Up to 60 credits from coursework taken elsewhere may be transferable.

Code	Title	Credits
General education and advanced standing		
3 credits in English composition		
3 credits in the humanities		
6 credits in social sciences		
4 credits in biology with lab. Anatomy and physiology with lab is acceptable.		
3 credits in mathematics (college algebra level or above)		
4 credits in computer science		
37 transfer credits and electives. Credit from non-traditional sources, i.e., other than from academic coursework, may be considered on a case-by-case basis. This may include military coursework, credit-by-exam, and non-college based health programs.		
60 credits in major coursework, which must be completed at GW.		
HSCI 2105	Current Issues in Bioethics	
HSCI 2112W	Writing in the Health Sciences	
HSCI 3117	Principles of Biostatistics for Health Sciences	
HSCI 4112W	Research and Writing in Health Sciences	
INFR 3102	Scripting	
INFR 4101	Introduction to Medical Informatics	
INFR 4102	Survey of Medicine for Informaticians	
INFR 4103	Programming for Informaticians	
INFR 4104	Medical Informatics Terminology & Standards	
INFR 4105	Consumer Health Informatics	
INFR 4106	Population Health for Medical Informatics	
INFR 4107	Clinical Decision Support	
INFR 4108	Information Extraction for Medical Informatics	
INFR 4109	Evaluation Methods in Medical Informatics	
INFR 4110	Biomedical Data Science	
INFR 4122	Advanced Scripting	

One of the following courses selected with the advisor's approval:

INFR 4197 Medical Informatics Internship *

INFR 4198 Medical Informatics Research Project *

Electives

Three courses selected from the following with the advisor's approval:

HSCI 2101 Psychosocial Aspects of Health and Illness

HSCI 2102 Pathophysiology

HSCI 2103 Health Policy and the Health Care System

HSCI 2108 Quality Improvement in Health Care

HSCI 4106 Introduction to Epidemiology for Health Sciences

INFR 4121 High Performance Computing

*Students may repeat INFR 4197 or INFR 4198 as an elective once other degree requirement have been met. Alternative elective courses may be approved by the advisor.

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL EMBRYOLOGY AND ASSISTED REPRODUCTIVE TECHNOLOGY

The bachelor of science in health sciences with a major in clinical embryology and assisted reproductive technology program is designed prepare graduates with the theoretical knowledge and practical skills for positions in assisted reproductive technology laboratories, biotechnology companies, research institutes and hospitals. In addition, program graduates will be eligible to take the embryology and andrology board of certification examination (ELS and ALS) offered by the American Board of Bioanalysis (ABB). The curriculum will also ensure that graduates will be prepared to pursue an advanced degree beyond the baccalaureate if they so choose.

Visit the program website (<https://healthsciencesprograms.gwu.edu/program/the-george-washington-university-bshs-in-clinical-embryology-and-assisted-reproductive-technology-bachelor-1571160919685/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
General education and advanced standing ¹		
3 credits of English composition ²		
8 credits of biology with lab		
8 credits of general or inorganic chemistry with lab		
3 credits of college math (algebra, statistics, or higher)		
3 credits of humanities ²		
6 credits of social sciences ²		
A minimum of 29 credits in elective coursework. Elective coursework may include courses in pathophysiology or anatomy and physiology, ethics or values, and global/cross-cultural perspectives. Credit from non-traditional sources, i.e., other than from academic coursework, may be considered on a case-by-case basis. This may include military coursework, credit-by-exam, and non-college based health programs. ¹		
60 credits in major coursework, which must be completed at GW		
HSCI 2112W	Writing in the Health Sciences	
HSCI 4112W	Research and Writing in Health Sciences	
MLS 3000	Clinical Laboratory Mathematics	
MLS 3001	Professional Ethics for Medical Laboratory Scientists	
MLS 3003	Biochemistry for Laboratory Science	
MLS 4141	Immunology and Serology	
MLS 4151	Molecular Diagnostics	
MLS 4251	Molecular Diagnostics Laboratory	
MLS 4158	Laboratory Management and Operations	
MLS 4171	Human Genetics	
CERT 3004	Endocrinology for Health Sciences	
CERT 3005	Topics in Biomedical Science	
CERT 4010	Clinical Human Embryology	
CERT 4011	Human Embryology Laboratory	
CERT 4012	Clinical Human Andrology	

CERT 4013	Human Andrology Laboratory
CERT 4014	Human Reproductive Cryobiology
CERT 4015	Human Cryobiology Laboratory
CERT 4016	Preimplantation Genetic Diagnosis Laboratory
CERT 4017	Clinical Experience in Embryology
CERT 4018	Clinical Experience in Andrology
CERT 4019	Clinical Experience in Cryobiology
CERT 4020	Clinical Experience in Preimplantation Genetic Diagnosis

3 credits in elective MLS or HSCI courses approved by the program director.

¹ Up to 60 credits may be transferable from coursework taken elsewhere. Students should contact the program office for an assessment on the transferability of previous coursework. To be considered for transfer credit, coursework must be:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a minimum grade of C (C- grades do not transfer)

² Students missing coursework in these areas may be considered for admission to the program if they have at least 45 college credits, and those credits include all other prerequisite courses. Students will need to complete missing coursework after admission to fulfill degree requirements.

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL HEALTH SCIENCES

The bachelor of science in health sciences (BSHS) with a major in clinical health sciences degree program is available only to active-duty Navy IDCs, Army 18Ds, and Air Force IDMTs. Coast Guardsmen who completed a Navy IDC School may be eligible, depending on their current duty assignment.

This distance learning program offers active-duty Navy IDCs, Army Special Forces Medical Sergeants (18Ds), and Air Force Independent Medical Technicians (IDMTs) a way to formalize their specialized military training with a GW degree. All courses are offered online in a flexible, asynchronous format allowing students to pursue their degree, regardless of time zone, station, or overseas assignment. The clinical rotations are

arranged by students in their current duty station or location, and must be completed while on active-duty.

Visit the program website (<https://online.gwu.edu/bachelor-science-health-sciences-clinical-health-sciences/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits divided into three degree components.

Code	Title	Credits
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Advanced standing and electives (60 credits):

During the first semester the student is enrolled in the program, advanced standing for eligible military courses will be noted on the student's record and applied towards the bachelor's degree.

General education (24 credits):

3 credits of English composition

4 credits of natural or physical science with lab

8 credits of mathematics, science, or statistics

6 credits of social sciences

3 credits of humanities

If a student still needs general education coursework, GW offers online coursework for some of these requirements.

Code	Title	Credits
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Recommended coursework at GW (for those missing general education requirements)

General education

English composition

HSCI 2100	Writing and Composition in the Health Sciences
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Humanities

HSCI 2107	Health Care in Literature
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Social sciences

HSCI 2103	Health Policy and the Health Care System
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HSCI 2111	Development of the Health Care Professions
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HSCI 4103	Health Care Law/Regulation
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Science or statistics

HSCI 2117	Introduction to Statistics for Health Sciences
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HSCI 3106	Microbiology for Health Sciences
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HSCI 3117	Principles of Biostatistics for Health Sciences
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MLS 2000	Biology for Health Sciences
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MLS 2001	Chemistry for Health Sciences
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Code	Title	Credits
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At least 36 credits of GW coursework including:

Foundation courses

EHS 2109	Infectious Diseases and Bioterrorism
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HSCI 2050	Foundations of Health Equity
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HSCI 2101	Psychosocial Aspects of Health and Illness
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HSCI 2105	Current Issues in Bioethics
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HSCI 2110	Disease Prevention and Health Promotion Concepts
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or HSCI 2114	Health Care in Developing Nations
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HSCI 2112W	Writing in the Health Sciences
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HSCI 2130	Primary Care Skills Practicum *
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HSCI 2131	Adult Primary Care Practicum *
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HSCI 2133	Specialized Clinical Experience *
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HSCI 3117	Principles of Biostatistics for Health Sciences
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or HSCI 2117	Introduction to Statistics for Health Sciences
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HSCI 4102	Human Physiology in Extreme Environments
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HSCI 4112W	Research and Writing in Health Sciences
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Electives

One of the following selected in consultation with advisor

EHS 2160	Disaster Response Planning and Management
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EHS 2161	Principles of Hazardous Materials and CBRNE Incident Management
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EHS 2211	Introduction to Telemedicine
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EHS 3101	Leadership Concepts
EHS 3105	Integrated Response to High Impact Violent Incidents
HSCI 2114 or HSCI 2110	Health Care in Developing Nations Disease Prevention and Health Promotion Concepts
HSCI 4106	Introduction to Epidemiology for Health Sciences

*Must be completed while on active-duty. Students arrange rotations at their current duty stations. All rotations require a MD or PA preceptor.

Students who complete HSCI 2117 to meet the general education requirement in science or statistics must then take HSCI 3117 to meet the major requirement.

Students may choose to take either HSCI 2110 or HSCI 2114 to meet a major requirement; the alternate course may be used towards the elective requirement. One course cannot not meet two different degree requirements simultaneously.

Transferable Coursework (84 credits maximum)

For an assessment on the transferability of your previous coursework, please contact the program office. Coursework will be evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a C or above (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL OPERATIONS AND HEALTH CARE MANAGEMENT

As health care continues to grow as a core workforce area needed to meet the needs of an aging population, there is an associated increased need for administrative oversight. The BSHS with a major in clinical operations and health care management degree prepares graduates to be administrative professionals in this field.

REQUIREMENTS

Code	Title	Credits
General Education and Advanced Standing		
3 credits English composition		

4 credits in natural or physical science with lab

6 credits in social sciences

3 credits humanities

44 transfer credits. Credit from non-traditional sources, i.e., other than from academic coursework, may be considered on a case-by-case basis. This may include military coursework, credit-by-exam, and non-college based health programs.

60 credits in major coursework, which must be completed at GW.

CML 2140	Management of Human Resources in Health Sciences Organizations
CML 4144	Seminar in Health Science Leadership
COHM 2141	Marketing for Healthcare Leaders
COHM 2142	Finance for Health Care Managers
COHM 4145	Case Studies for Clinical Healthcare Management and Leadership
COHM 4150	Practicum in Clinical Operations
HSCI 2103	Health Policy and the Health Care System
HSCI 2104	Management of Health Science Services
HSCI 2105	Current Issues in Bioethics
HSCI 2108	Quality Improvement in Health Care
HSCI 2112W	Writing in the Health Sciences
HSCI 2117	Introduction to Statistics for Health Sciences
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4106	Introduction to Epidemiology for Health Sciences
HSCI 4112W	Research and Writing in Health Sciences
INFR 4101	Introduction to Medical Informatics

Electives

Three elective courses selected from the following with the advisor's approval.

HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology

HSCI 2107	Health Care in Literature
HSCI 2110	Disease Prevention and Health Promotion Concepts
HSCI 3117	Principles of Biostatistics for Health Sciences
Alternative electives may be approved by the Program Director.	

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN CLINICAL RESEARCH ADMINISTRATION

Offered in a distance learning format, the bachelor of science in health sciences with a major in clinical research administration prepares students for meeting the increasing global needs for a highly qualified workforce within the clinical research arena. This program creates a learning environment that supports student and faculty excellence in clinical research competencies such as scientific concepts and research design, ethical and patient safety considerations, drug development, clinical trial operations, human subject protection, Good Clinical Practice (GCP), regulatory requirements, and key business components. To achieve this mission, the program draws upon its diverse, multidisciplinary student body; outstanding, collaborative, practice-based faculty; and the vast resources available at the university.

Visit the program website for more information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, 60 credits of which must be completed at GW. Up to 60 credits from coursework taken elsewhere may be transferable.

Code	Title	Credits
60 credits of general education and advanced standing including:		
3 credits of English composition		
4 credits of natural or physical science with lab		
6 credits of social sciences		
3 credits of humanities		
44 credits of advanced standing*		
Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs). *		

Requirements for the major	
At least 60 credits of GW coursework including:	
CRA 2101	Basics of Clinical Research
CRA 2102	Processes of Clinical Research
CRA 2103	Good Clinical Practices
CRA 2104	Business of Clinical Research
CRA 2105	Capstone in Clinical Research Administration
CRA 2107	Introduction to Monitoring Clinical Trials
HSCI 2102	Pathophysiology
HSCI 2103	Health Policy and the Health Care System
HSCI 2105	Current Issues in Bioethics
HSCI 2107	Health Care in Literature
HSCI 2112W	Writing in the Health Sciences
HSCI 2117	Introduction to Statistics for Health Sciences
HSCI 4103	Health Care Law/Regulation
HSCI 4105	Case Studies in Health Care
HSCI 4106	Introduction to Epidemiology for Health Sciences
HSCI 4112W	Research and Writing in Health Sciences
INFR 4101	Introduction to Medical Informatics

Electives

3 courses from the following with advisor approval:

CRA 4106	Clinical Research Administration Internship
HSCI 2050	Foundations of Health Equity
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2104	Management of Health Science Services
HSCI 2108	Quality Improvement in Health Care
HSCI 2110	Disease Prevention and Health Promotion Concepts

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN EMERGENCY MEDICAL SERVICES MANAGEMENT

Emergency medical services (EMS) is a challenging and rapidly emerging discipline at the intersection of traditional EMS, public health, public safety, and health care. The bachelor of science in health sciences in emergency medical services management (EMSM) is designed to prepare students for leadership positions in the field and to improve the quality of out-of-hospital care domestically and internationally.

Visit the program website (<https://smhs.gwu.edu/emergency-medical-services/programs/undergraduate/bshs/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, at least 60 of which must be completed at GW. Up to 60 credits from coursework completed elsewhere may be transferable.

Code	Title	Credits
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60 credits of general education and advanced standing including:

3 credits of English composition

4 credits of natural or physical science with lab

6 credits of social sciences

3 credits of humanities

44 credits of advanced standing*

Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e., military coursework, credit-by-exam, and non-college based health programs).

Requirements for the major:

At least 60 credits of GW coursework including:

CML 2140	Management of Human Resources in Health Sciences Organizations
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CML 2142	Financial Management in the Health Sciences
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EHS 2174	Foundations of Emergency Health Services Systems
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EHS 4110	Operations Management in Emergency Health Services Systems
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EHS 4111	Leadership Concepts in EHS
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EHS 4112	Special Operations and Disaster Management
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EHS 4144	Seminar in EHS Leadership
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HSCI 2103	Health Policy and the Health Care System
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HSCI 2104	Management of Health Science Services
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HSCI 2105	Current Issues in Bioethics
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HSCI 2108	Quality Improvement in Health Care
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HSCI 2112W	Writing in the Health Sciences
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HSCI 2117	Introduction to Statistics for Health Sciences
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HSCI 4103	Health Care Law/Regulation
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HSCI 4106	Introduction to Epidemiology for Health Sciences
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HSCI 4112W	Research and Writing in Health Sciences
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Three elective courses from the following (advisor approval is required):

EHS 2211	Introduction to Telemedicine
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EHS 4101	Humanitarian Relief Operations
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HSCI 2101	Psychosocial Aspects of Health and Illness
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HSCI 2102	Pathophysiology
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HSCI 2110	Disease Prevention and Health Promotion Concepts
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HSCI 2111	Development of the Health Care Professions
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HSCI 3117	Principles of Biostatistics for Health Sciences
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HSCI 4102	Human Physiology in Extreme Environments
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HSCI 4105	Case Studies in Health Care
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Transferring credits

Up to 60 credits of coursework may be transferable from coursework taken elsewhere provided it is:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a minimum grade of C (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN GLOBAL LEADERSHIP IN DISASTER RESPONSE

Offered in a distance learning format, the bachelor of science in health sciences (BSHS) in global leadership disaster response degree program is available to active-duty and veteran service members from the civil affairs medic community or related health care fields and to civilians in the health care fields with international experience and interest. All courses are offered online in a flexible, asynchronous format allowing students to pursue their degree, regardless of time zone, station, or overseas assignment.

Drawing heavily from both civilian and military challenges and successes experienced during natural as well as man-made disaster and crisis events, both domestically and internationally, the program allows civil affairs medics to build on their existing academic, military, and training experiences. Students are called upon to work individually as well as collaboratively in the development of broadened view of and holistic approach to delivery of aid and relief to the individuals, families, and communities affected by catastrophic events.

Visit the program website (<https://smhs.gwu.edu/health-intervention-disaster-response/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, 60 of which must be completed at GW. Up to 60 credits from coursework taken elsewhere may be transferable.

Code	Title	Credits
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General education (16 credits)

3 credits English Composition

4 credits Natural or Physical Science with Lab

6 credits of Social Sciences

3 credits Humanities

Advanced standing (44 credits)

Up to 44 credits in prior academic coursework is evaluated for transferability. Academic credit also may be awarded for ACE-recognized military courses and other non-traditional learning, as appropriate. *

Courses in the major (60 credits)

Required

EHS 2109	Infectious Diseases and Bioterrorism
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EHS 2160	Disaster Response Planning and Management
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EHS 2211	Introduction to Telemedicine
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EHS 3101	Leadership Concepts
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EHS 3103	Technology in Critical Incident Response
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EHS 3107	Financial Management for the Disaster Cycle
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EHS 4101	Humanitarian Relief Operations
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EHS 4103	Advanced Topics in Leadership
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EHS 4105	Operations Management in Asymmetric Conditions
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EHS 4160	Project Management and Leadership Capstone
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HSCI 2105	Current Issues in Bioethics
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HSCI 2110	Disease Prevention and Health Promotion Concepts
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HSCI 2112W	Writing in the Health Sciences
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HSCI 2114	Health Care in Developing Nations
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HSCI 2117	Introduction to Statistics for Health Sciences
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HSCI 4102	Human Physiology in Extreme Environments
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HSCI 4106	Introduction to Epidemiology for Health Sciences
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HSCI 4112W	Research and Writing in Health Sciences
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Electives

Two courses selected from the following with the advisor's approval:

EHS 2161	Principles of Hazardous Materials and CBRNE Incident Management
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EHS 3105	Integrated Response to High Impact Violent Incidents
EHS 4198	Administrative Internship
HSCI 2102	Pathophysiology
HSCI 2104	Management of Health Science Services
HSCI 4105	Case Studies in Health Care

*Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e., military coursework, credit-by-exam, and non-college based health programs).

Transferring credits

Up to 60 credits may be transferable from coursework taken elsewhere. Students should contact the program office for an assessment on the transferability of previous coursework. Coursework is evaluated for transfer using the following criteria:

- College-level
- Academic in nature
- Completed at a regionally accredited institution
- Earned with a minimum grade of C (C- grades do not transfer)

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN LEADERSHIP FOR EMERGENCY ACTION AND DISASTER RESPONSE

The BSHS in leadership for emergency action and disaster response (LEADR) is 120-credit hour degree-completion program. This is a military partnership program, and only current or former Special Operations Forces (SOF) operators and enablers across the Army, Navy, Air Force, and Marines are considered for admission. As a closed admission military program established via military partnership, additional coursework above 60 credits may be considered for equivalency to courses in the major at the discretion of the program director. On a case-by-case basis, up to 75 credits may be transferred from traditional and non-traditional learning.

Upon completion of the bachelor of science in health sciences with a major in leadership for emergency action and disaster response degree program, the graduate is prepared in the following areas:

- Leadership: Compare leadership approaches for implementation and execution of complex projects in diverse, interagency environments;

- Technology: Analyze methods of technology application in asymmetric conditions;
- Resources: Appraise resource utilization and management in emergency and disaster settings;
- AEM/CEM: Analyze four phases of the disaster activity (i.e., mitigation, preparedness, response, and recovery) for all risks (i.e., attack, man-made, and natural) and the role of actors and stakeholders in the cycle;
- Management: Synthesize key agency roles and collaboration throughout critical incident responses; and
- Communication: Communicate effectively with diverse stakeholders, individually and in group settings, using verbal, written, and electronic modes of communication.

Visit the program website (<https://smhs.gwu.edu/military-affiliated-programs/bshs-leadership-emergency-action-disaster-response/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, 60 credits of which may be considered for equivalency to courses in the major; at the discretion of the program director, additional coursework above 60 credits may be considered. On a case-by-case basis, up to 75 credits may be transferred from traditional and non-traditional learning.

Code	Title	Credits
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General education: 19 credits

3 credits English Composition

4 credits Natural or Physical Science with lab (Biology recommended)

6 credits Social Sciences

3 credits Humanities

3 credits Statistics

Advanced standing and electives: 41 credits

During the student's first semester of enrollment in the program, advanced standing for eligible military courses and other non-traditional learning will be noted on the student's record and applied toward the bachelor's degree.

Courses in the major: 60 credits

EHS 2109	Infectious Diseases and Bioterrorism
EHS 2160	Disaster Response Planning and Management
EHS 2161	Principles of Hazardous Materials and CBRNE Incident Management
EHS 3101	Leadership Concepts

EHS 3103	Technology in Critical Incident Response
EHS 3105	Integrated Response to High Impact Violent Incidents
EHS 3107	Financial Management for the Disaster Cycle
EHS 4101	Humanitarian Relief Operations
EHS 4103	Advanced Topics in Leadership
EHS 4105	Operations Management in Asymmetric Conditions
EHS 4160	Project Management and Leadership Capstone
HSCI 2105	Current Issues in Bioethics
HSCI 2112W	Writing in the Health Sciences
HSCI 4102	Human Physiology in Extreme Environments
HSCI 4112W	Research and Writing in Health Sciences
Major Electives - 15 credits	
EHS 2211	Introduction to Telemedicine
EHS 4198	Administrative Internship
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2103	Health Policy and the Health Care System
HSCI 2110	Disease Prevention and Health Promotion Concepts
HSCI 2114	Health Care in Developing Nations
HSCI 4105	Case Studies in Health Care
HSCI 4106	Introduction to Epidemiology for Health Sciences

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN MEDICAL LABORATORY SCIENCE

Online or hybrid online/on campus

Medical laboratory science combines medicine, basic sciences, and clinical sciences. Professionals in the field investigate and

determine the causes of disease, using the latest biomedical instruments and molecular techniques to perform both routine and complex testing.

The bachelor of science in health sciences (BSHS) with a major in medical laboratory science (MLS) is a degree completion program offered in two formats: online or a hybrid of online and on-campus study. Both program formats also are offered as a second bachelor's degree.

BSHS in Medical Laboratory Science—Fully Online. (<http://smhs.gwu.edu/medical-laboratory-sciences/programs/bshs/fully-online-mlt/mlt-mls-bshs-medical-laboratory-science-fully-online/>) The online BSHS in MLS is for students who have successfully completed a medical laboratory technician (MLT) program and currently are board certified MLTs.

BSHS in Medical Laboratory Science—Hybrid (<https://healthsciencesprograms.gwu.edu/program/the-george-washington-university-blended-bshs-in-medical-laboratory-sciences-bachelor-1588610227621/>). The hybrid BSHS in MLS is for students who have completed 60 credits towards an associate's degree or who have earned an associate's degree along with the required prerequisite science and general education courses.

Second bachelor's degree program

The BSHS in MLS program is offered in both formats as a second bachelor's degree to students who already hold a baccalaureate degree from a regionally accredited college or university with the required prerequisite and general education coursework. For the online program, students also must have completed a medical laboratory technician (MLT) program and currently be board certified MLTs.

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) (<http://www.naacsls.org/>).

Visit the program website (<http://smhs.gwu.edu/medical-laboratory-sciences/programs/bshs/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including a minimum of 60 credits in required courses completed at GW and up to 60 transfer credits in courses taken elsewhere. Eligible students admitted through approved SMHS Guaranteed Admission Agreements (<http://smhs.gwu.edu/academics/health-sciences-programs/guaranteed-admission-agreements/>) partnerships must complete a minimum of 52 required credits at GW; eligibility is reviewed on a case-by-case basis.

Code	Title	Credits
Completion of the following prerequisite coursework from a regionally accredited college or university with a grade of C or above:		
3 credits of English composition		
8 credits of biology with lab ^{1,3}		
8 credits of general or inorganic chemistry with lab ^{1,3}		
4 credits of microbiology with lab ^{1,3}		
3 credits of organic chemistry or biochemistry ¹		
3 credits of college math (algebra, statistics, or higher)		
3 credits of humanities		
6 credits of social sciences		
A minimum of 22 credits in elective coursework. Elective coursework should include courses in pathophysiology or anatomy and physiology, ethics or values, and global/cross-cultural perspectives. ²		
Required for the major		
HSCI 2112W	Writing in the Health Sciences	
HSCI 4112W	Research and Writing in Health Sciences	
MLS 4116	Clinical Bacteriology I	
MLS 4117	Clinical Bacteriology II	
MLS 4119	Parasitology, Mycology, and Virology	
MLS 4130	Hematology I	
MLS 4131	Hematology II	
MLS 4141	Immunology and Serology	
MLS 4145	Clinical Biochemistry I	
MLS 4146	Clinical Biochemistry II	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4158	Laboratory Management and Operations	
MLS 4159	Capstone Seminar	
Additional requirements for the fully online BSHS program		
MLS 3000	Clinical Laboratory Mathematics	

MLS 3001	Professional Ethics for Medical Laboratory Scientists
MLS 4136	Clinical Experience I
MLS 4137	Clinical Experience II
MLS 4138	Clinical Experience III
MLS 4139	Clinical Experience IV
8 Credits of Electives selected with advisor approval	
Additional requirements for the hybrid BSHS program	
MLS 4160	Blood Bank Practicum
MLS 4161	Clinical Biochemistry Practicum
MLS 4162	Hematology Practicum
MLS 4164	Clinical Microbiology Practicum
MLS 4165	Urinalysis Practicum
MLS 4166	Coagulation Practicum
MLS 4216	Clinical Bacteriology Laboratory
MLS 4219	Parasitology, Mycology, and Virology Laboratory
MLS 4230	Hematology Laboratory
MLS 4246	Clinical Biochemistry Laboratory
MLS 4250	Immunohematology Laboratory
MLS 4251	Molecular Diagnostics Laboratory

¹ Medical laboratory technicians (MLTs) may receive transfer credit for biological sciences, general microbiology, general chemistry, and organic chemistry/biochemistry courses.

² Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).

³ Hands-on lab required. Online lab not acceptable.

SECOND BACHELOR'S

The BSHS in MLS program is offered as a second bachelor's degree to students who already hold a baccalaureate degree from a regionally accredited college or university with the required prerequisite and general education coursework.

The following requirements must be fulfilled: 120 credits, including a minimum of 60 credits in required courses completed at GW and up to 60 transfer credits in courses taken elsewhere.

Code	Title	Credits
Completion of the following prerequisite coursework from a regionally accredited college or university with a grade of C or above:		
3 credits of English composition		
8 credits of biology with lab ^{1,3}		
8 credits of general or inorganic chemistry with lab ^{1,3}		
4 credits of microbiology with lab ^{1,3}		
3 credits of organic chemistry or biochemistry ¹		
3 credits of college math (algebra, statistics, or higher)		
3 credits of humanities		
6 credits of social sciences		
A minimum of 22 credits in elective coursework. Elective coursework should include courses in pathophysiology or anatomy and physiology, ethics or values, and global/cross-cultural perspectives. ²		
Required for the major		
HSCI 2112W	Writing in the Health Sciences	
HSCI 4112W	Research and Writing in Health Sciences	
MLS 4116	Clinical Bacteriology I	
MLS 4117	Clinical Bacteriology II	
MLS 4119	Parasitology, Mycology, and Virology	
MLS 4130	Hematology I	
MLS 4131	Hematology II	
MLS 4141	Immunology and Serology	
MLS 4145	Clinical Biochemistry I	
MLS 4146	Clinical Biochemistry II	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4158	Laboratory Management and Operations	
MLS 4159	Capstone Seminar	
Additional requirements for the fully online BSHS program		
MLS 3000	Clinical Laboratory Mathematics	

MLS 3001	Professional Ethics for Medical Laboratory Scientists
MLS 4136	Clinical Experience I
MLS 4137	Clinical Experience II
MLS 4138	Clinical Experience III
MLS 4139	Clinical Experience IV
8 Credits of Electives selected with advisor approval	
Additional requirements for the hybrid BSHS program	
MLS 4160	Blood Bank Practicum
MLS 4161	Clinical Biochemistry Practicum
MLS 4162	Hematology Practicum
MLS 4164	Clinical Microbiology Practicum
MLS 4165	Urinalysis Practicum
MLS 4166	Coagulation Practicum
MLS 4216	Clinical Bacteriology Laboratory
MLS 4219	Parasitology, Mycology, and Virology Laboratory
MLS 4230	Hematology Laboratory
MLS 4246	Clinical Biochemistry Laboratory
MLS 4250	Immunohematology Laboratory
MLS 4251	Molecular Diagnostics Laboratory

¹ Medical laboratory technicians (MLTs) may receive transfer credit for biological sciences, general microbiology, general chemistry, and organic chemistry/biochemistry courses.

² Additional academic coursework. Non-traditional credit sources may be considered on a case-by-case basis (i.e. military coursework, credit-by-exam, and non-college based health programs).

³ Hands-on lab required. Online lab not acceptable.

BACHELOR OF SCIENCE IN HEALTH SCIENCES WITH A MAJOR IN MOLECULAR DIAGNOSTIC SCIENCES

The bachelor of science in health sciences with a major in molecular diagnostic sciences is offered both in fully online and hybrid formats. The program provides students with the theoretical knowledge and practical skills needed for positions

in diagnostic clinical molecular laboratories, public health laboratories, biotechnology companies, government agencies, law enforcement agencies, and research institutes. In addition, students who complete the program are eligible to take the Molecular Biology Board of Certification examination offered by the American Society for Clinical Pathology (ASCP).

Visit the program website (<https://healthsciencesprograms.gwu.edu/program/the-george-washington-university-bshs-in-molecular-diagnostic-science-bachelor-1571165426562/>) for more information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Completion of the following prerequisite coursework from a regionally accredited college or university with a grade of C or above:		
3 credits of English composition		
8 credits of biology (lecture and lab)		
4 credits of microbiology (lecture and lab)		
8 credits of chemistry (lecture and lab)		
3 credits of organic chemistry or biochemistry		
3 credits of college mathematics (algebra, statistics, or higher)		
3 credits in humanities		
6 credits in social sciences		
A minimum of 22 credits in elective coursework. Elective coursework should include courses in pathophysiology or anatomy and physiology, ethics or values, or global/cross-cultural perspectives.		
Required for the major		
HSCI 1106	Introduction to Biotechnology for Health Sciences	
HSCI 2112W	Writing in the Health Sciences	
HSCI 3117	Principles of Biostatistics for Health Sciences	
HSCI 4106	Introduction to Epidemiology for Health Sciences	
HSCI 4112W	Research and Writing in Health Sciences	
MLS 3000	Clinical Laboratory Mathematics	

MLS 3001	Professional Ethics for Medical Laboratory Scientists
MLS 4141	Immunology and Serology
MLS 4151	Molecular Diagnostics
MLS 4158	Laboratory Management and Operations
MLS 4170	Introduction to Molecular Biology
MLS 4171	Human Genetics
MLS 4172	Molecular Diagnostics Capstone
MLS 4217	Molecular Techniques
MLS 4242	Applications of Molecular Testing
MLS 4266	Molecular Diagnostics Practicum

Additional requirements for the fully online BSHS program

9 credits in elective coursework selected in consultation with the program advisor.

Additional requirements for the hybrid BSHS program

MLS 4251	Molecular Diagnostics Laboratory
MLS 4252	Applications of Molecular Testing Laboratory

6 credits in elective coursework selected in consultation with the program advisor.

DUAL BSHS WITH A MAJOR IN CLINICAL OPERATIONS AND HEALTHCARE MANAGEMENT AND MSHS IN THE FIELD OF HEALTH CARE QUALITY

The School of Medicine and Health Sciences offers a dual bachelor of science in health sciences with a major in clinical operations and healthcare management (p. 1059) and master of science in health sciences in the field of health care quality (p. 1074) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

DUAL BSHS IN CLINICAL RESEARCH ADMINISTRATION AND MSHS IN BIOMEDICAL INFORMATICS

The School of Medicine and Health Sciences offers a dual bachelor of science in health sciences with a major in clinical research administration (p. 1060) and master of science in health sciences in the field of biomedical informatics (p. 1070) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the School of Medicine and Health Sciences website (<https://smhs.gwu.edu/>) for additional information.

DUAL BSHS WITH A MAJOR IN CLINICAL RESEARCH ADMINISTRATION AND MSHS IN THE FIELD OF CLINICAL RESEARCH ADMINISTRATION

The School of Medicine and Health Sciences offers a dual bachelor of science in health science with a major in clinical research administration (p. 1060) and master of science in health sciences in the field of clinical research administration (p. 1060) degree program. The online program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the program website (<https://smhs.gwu.edu/clinical-research-administration/programs/dual-degrees/curriculum/dual-degree-bshsmshs-clinical-research-administration/>) for additional information.

DUAL BSHS IN CLINICAL RESEARCH ADMINISTRATION AND MSHS IN CLINICAL AND TRANSLATIONAL RESEARCH

The School of Medicine and Health Sciences offers a dual bachelor of science in health sciences with a major in clinical research administration (p. 1060) and master of science in health sciences in the field of clinical and translational research (p. 1073) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally

required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the School of Medicine and Health Sciences website (<https://smhs.gwu.edu/>) for additional information.

DUAL BSHS WITH A MAJOR IN CLINICAL RESEARCH ADMINISTRATION AND MSHS IN THE FIELD OF REGULATORY AFFAIRS

The School of Medicine and Health Sciences offers a dual bachelor of science in health science with a major in clinical research administration (p. 1060) and master of science in health sciences in the field of regulatory affairs (p. 1078) degree program. This online program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the program website (<https://smhs.gwu.edu/clinical-research-administration/programs/dual-degrees/curriculum/dual-degree-bshs-clinical-research-administrationmshs-regulatory/>) for additional information.

DUAL BSHS WITH A MAJOR IN MEDICAL LABORATORY SCIENCES AND MSHS IN THE FIELD OF MOLECULAR DIAGNOSTIC SCIENCES

The School of Medicine and Health Sciences offers a dual bachelor of science in health sciences with a major in medical laboratory sciences (<http://bulletin.gwu.edu/medicine-health-sciences/undergraduate-programs/bshs-medical-laboratory-science/>) and master of science in health sciences in the field molecular diagnostic sciences (<http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-molecular-diagnostics/>) (<http://bulletin.gwu.edu/engineering-applied-science/computer-science/ms/>) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the program website (<https://healthsciencesprograms.gwu.edu/program/the-george-washington-university-dual-degree-bshs-in-medical-laboratory-sciences-mshs-in-molecular-diagnostic-sciences-master-1540388661589/>) for more information

DUAL BSHS IN MOLECULAR DIAGNOSTIC SCIENCES AND MSHS IN CLINICAL MICROBIOLOGY

The School of Medicine and Health Sciences offers a dual bachelor of science in health sciences with a major in molecular diagnostic sciences (p. 1066) and master of science in health sciences in the field of clinical microbiology (p. 1071) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Visit the School of Medicine and Health Sciences (<https://smhs.gwu.edu/>) website for additional information.

MINOR IN ANATOMY

The Department of Anatomy and Regenerative Biology (<http://smhs.gwu.edu/anatomy/>) in the School of Medicine and Health Sciences (<http://smhs.gwu.edu/>) offers courses required for the 12-credit minor in human anatomy.

Code	Title	Credits
ANAT 2130	Human Embryology	
ANAT 2150	Human Microscopic Anatomy	
ANAT 2160	Human Functional Neuroanatomy	
ANAT 2181	Human Gross Anatomy	

Visit the program website (<https://smhs.gwu.edu/anatomy/education/minor-human-anatomy/>) for additional information.

MINOR IN BLOOD BANKING FOR MEDICAL LABORATORY SCIENCE

REQUIREMENTS

The following requirements must be fulfilled: 16 credits, including a 4-credit practicum course.

Completion of this minor qualifies the student to take the Technologist in Blood Banking examination offered by national certifying agencies.

Code	Title	Credits
Required		
MLS 4141	Immunology and Serology	
MLS 4150	Immunohematology	

MLS 4151	Molecular Diagnostics
MLS 4158	Laboratory Management and Operations
MLS 4160	Blood Bank Practicum

All courses for the minor are taught online, with the exception of the clinical practicum. The clinical practicum is taken upon completion of didactic coursework. Students typically are in a clinical laboratory eight hours per day (daytime hours), five days per week. Students must be able to fulfill the necessary time requirement for the practicum.

Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/certificate/curriculum/blood-banking/>) for additional information.

MINOR IN EMERGENCY HEALTH SERVICES

REQUIREMENTS

The minor in emergency health services requires successful completion of at least 18 credits with a GPA of 2.5 or above.

Code	Title	Credits
Required		
EHS 1040	Emergency Medical Tech-Basic *	
EHS 1041	EMT - Basic Lab *	
EHS 2174	Foundations of Emergency Health Services Systems	
EHS 2175	Community Risk Management and Safety in EHS	
HSCI 2101	Psychosocial Aspects of Health and Illness	
Electives		
At least five credits from the following:		
EHS 1002	CPR and First Aid	
EHS 1058	EMT Instructor Development	
EHS 2107	Theory and Practice of Research in a Clinical Setting	
EHS 2108	Emergency Medicine Clinical Scribe	
EHS 2109	Infectious Diseases and Bioterrorism	
EHS 2110	Emergency Department Critical Care Assessment and Procedures	

EHS 2162 Introduction to the Principles of Tactical Medicine

EHS 4112 Special Operations and Disaster Management

HSCI 2105 Current Issues in Bioethics

*Alternative elective courses may be selected with program approval.

*For students who have EMT-Basic Certification, a minimum of 4 credits in elective courses may be substituted for EHS 1040 and EHS 1041 with the approval of the program.

MASTER'S PROGRAMS

Master's programs

- Master of Science in Health Sciences in the field of biomedical informatics (p. 1070)
- Master of Science in Health Sciences in the field of clinical microbiology (p. 1071)
- Master of Science in Health Sciences in the field of clinical operations and health care management (p. 1071)
- Master of Science in Health Sciences in the field of clinical research administration (p. 1072)
- Master of Science in Health Sciences in the field of clinical and translational research (p. 1073)
- Master of Science in Health Sciences in the field of correctional health administration (p. 1074)
- Master of Science in Health Sciences in the field of health care quality (p. 1074)
- Master of Science in Health Sciences in the field of immunohematology and biotechnology (p. 1075)
- Master of Science in Health Sciences in the field of integrative medicine (p. 1076)
- Master of Science in Health Sciences in the field of laboratory medicine (p. 1077)
- Master of Science in Health Sciences in the field of medical laboratory science (p. 1077)
- Master of Science in Health Sciences in the field of molecular diagnostic science (p. 1078)
- Master of Science in Health Sciences in the field of regulatory affairs (p. 1078)
- Master of Science in Health Sciences in the field of physician assistant (p. 1079)
- Master of Science in Health Sciences in the field of translational microbiology (p. 1080)

Joint degree programs

- Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (Milken Institute School of Public Health) (p. 1081)

Military contract program

- Master of Science in Health Sciences in the field of immunohematology (p. 1075)

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF BIOMEDICAL INFORMATICS

The biomedical informatics program prepares professionals for a rewarding career in health care leadership and research. Graduates will be skilled in the integration of programming, data analysis and data manipulation skills to solve biomedical problems. Students learn how to apply data analytics to improve the quality of healthcare and patient outcomes. This interdisciplinary education includes components of clinical healthcare, computer science, data analytics, ethics and translational medicine. Our innovative curriculum include courses in statistics, leadership, computer programming, and clinical care and the healthcare system. Students develop informatics analytics and tools in support of clinical decision-making, clinical research, and patient engagement. Graduates are well-prepared for informatics careers working at hospitals and medical centers, pharmaceutical companies, global health care organizations, consulting groups, and in government agencies.

Visit the program website (<https://smhs.gwu.edu/biomedical-informatics/>) for additional information.

REQUIREMENTS

Code	Title	Credits
Required		
HSCI 6223	Topics in Health Care Leadership	
HSCI 6240	Issues and Trends in the Health Care System	
HSCI 6263	Biostatistics Translational Research	
HSCI 6264	Epidemiology Translational Research	
INFR 6101	Principles of Medical Informatics	
INFR 6102	Principles of Medicine for Informaticians	
INFR 6105	Health Care Quality for Informatics	
INFR 6121	High Performance Computing	
INFR 6197	Biomedical Informatics Practicum *	
INFR 6198	Biomedical Informatics Capstone	
INFR 6540	Medical Decision Making and Decision Support Systems	

Elective

One 3-credit elective course selected from the following with the advisor's approval:

HSCI 6265	Grantsmanship in Translational Research
HSCI 6273	Bioinformatics for Genomics
INFR 6103	Advanced Computing Applications for Biomedical Informatics
INFR 6197	Biomedical Informatics Practicum

*Students may repeat INFR 6197 as an elective once other degree requirement have been met.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL MICROBIOLOGY

This online program provides students with clinical microbiology and laboratory science coursework as well as a hands-on microbiology practicum that will prepare students for a diagnostic microbiology laboratory position and provides eligibility for national certification examinations in clinical microbiology. The program also includes additional graduate coursework to prepare students for careers in research institutions, public health laboratories, biotechnology firms, pharmaceutical companies or governmental agencies.

Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/clinical-microbiology/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Translational Research	
MLS 6116	Advanced Clinical Bacteriology I	
MLS 6117	Advanced Clinical Bacteriology II	
MLS 6119	Advanced Parasitology, Mycology, and Virology	
MLS 6141	Advanced Immunology and Serology	
MLS 6151	Advanced Molecular Diagnostics	
MLS 6158	Advanced Laboratory Management and Operations	

MLS 6216 Microbial Pathogenesis

MLS 6217 Medical Biotechnology

MLS 6244 Research Ethics and Integrity

MLS 6251 Advanced Clinical Microbiology Practicum

Electives

6 credits in HSCI or MLS courses selected in consultation with the advisor.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL OPERATIONS AND HEALTHCARE MANAGEMENT

George Washington University's (GW) online master of science in Health Sciences (MSHS) in clinical operations and healthcare management prepares healthcare professionals to take the next step in their healthcare leadership career through learning the skills of day-to-day operations in today's complex, health-service delivery. The program is interdisciplinary, competency-based, rigorous, and innovative. The MSHS in clinical operations and healthcare management provides students with core competency knowledge to become leaders in clinical operations via a curriculum that emphasizes professional and practical skills and career and leadership development.

The program is aligned with the National Center for Healthcare Leadership and its Health Leadership Competency Model. Academic programs adopt this model when designing curriculum for healthcare administration and clinical programs as it is considered the industry standard. Additionally, the MSHS in clinical operations and healthcare management curriculum follows the Competencies Assessment Tool Model developed by the American College of Healthcare Executives (ACHE). The American College of Healthcare Executives is the premier professional society for healthcare leaders committed to improving health.

With this flexible online program, with low faculty/student ratios, you'll learn what it takes to lead a healthcare delivery system that is clinically effective, cost-efficient, and improves overall patient care and safety. With a focus on population healthcare, you'll learn ways to improve your own communication skills for optimal interprofessional practice, lead efforts in quality improvement, and understand the technological tools needed to conduct effective data analyses for strategic development.

When you complete the masters in clinical operations and healthcare management program, you'll be able to pursue a

clinical operations career in a variety of healthcare and related health organizations.

Program Outcomes

The online Clinical Operations and Healthcare Management masters degree program leverages distinguished faculty, innovative curriculum, and real-world experience. You'll gain the comprehensive skills you need to succeed in the field of clinical operations, so when you graduate, you'll be able to:

- Communicate effectively across a variety of platforms to optimize interprofessional practice and operations
- Evaluate healthcare systems to enhance ethical, efficient, and financially sound operations
- Conduct effective data analyses for operational and strategic development in the healthcare setting continuum
- Lead efforts to continuously improve the quality and value across healthcare operations
- Improve organizational performance in healthcare organizations by successfully implementing change management
- Apply the knowledge and skill necessary to sit for the Project Management Professional exam

Visit the School of Medicine and Health Sciences website (<https://smhs.gwu.edu/>) for additional information.

REQUIREMENTS

Code	Title	Credits
Course Requirements:		
CML 6202	Human Resource Development	
CML 6275	Leadership and Change in Clinical Management	
COHM 6210	Strategic Communications	
COHM 6215	Population Health for Health Care Innovators	
COHM 6220	Finance for Health Care Operations	
COHM 6320	Informatics for Operational Leadership and Health Care Quality	
COHM 6430	Health Care Systems Operations	
COHM 6465	Practicum in Clinical Operations	
COHM 6470	Applications in Clinical Operations and Health Care Management	
HSCI 6223	Topics in Health Care Leadership	
HSCI 6241	The Health Care Enterprise	

Elective

One 3-credit elective course selected with the advisor's approval.	
HSCI 6263	Biostatistics Translational Research
HSCI 6264	Epidemiology Translational Research
An alternate elective may be approved by the program director.	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL RESEARCH ADMINISTRATION

Clinical research administration is a vast and expanding field that involves the processes in which products—drugs, devices, biological and treatment protocols are developed for patient care. Both the master's degree and graduate certificate programs prepare health sciences professionals to participate in the science and business of the development process. Our rigorous curriculum focuses on regulatory requirements, ethical issues, processes for product development, the business of clinical research and scientific method processes. The distance education format, offered online, provides a convenient option for self-disciplined and self-directed students to pursue the program and prepare for professional advancement while maintaining their work and other commitments.

Professionals with a bachelor's degree and relevant clinical research or health science experience may apply for the master of science in health sciences program in clinical research administration.

A multi-level dual degree program offers academically qualified individuals a seamless and accelerated pathway for completing both the bachelor of science in health sciences (BSHS) in clinical research administration and the master of science in health sciences (MSHS) in clinical research administration.

Visit the program website (<https://smhs.gwu.edu/clinical-research-administration/>) for additional program information.

REQUIREMENTS

The MSHS in the field of clinical research administration (CRA (<https://smhs.gwu.edu/clinical-research-administration/>)) requires successful completion of 36 credits, including: 18 credits in clinical research administration, 9 credits of strategic leadership courses, 6 credits of graduate research coursework, and a 3-credit elective course.

Code	Title	Credits
Required		
Clinical research administration courses		
CRA 6201	Critical Analysis Clinical Research	
CRA 6202	Medicines Development	
CRA 6203	Partnerships with Human Subjects	
CRA 6204	The Clinical Research Industry	
CRA 6209	Quality and Risk Management	
CRA 6211	Monitoring, Auditing, and Oversight in Clinical Research	
CRA 6275	Leadership and Change in Clinical Research Administration	
Strategic leadership courses		
COHM 6235	Leadership Development in Health Care Systems	
COHM 6245	Strategic and Operational Decision Making for Health Care Leaders	
Graduate research courses		
HSCI 6263	Biostatistics Translational Research	
HSCI 6264	Epidemiology Translational Research	
Elective		
One course from the following:		
CRA 6208	International Clinical Research	
RAFF 6201	Introduction to Global Regulatory Affairs	

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CLINICAL AND TRANSLATIONAL RESEARCH

The master of science in health sciences (MSHS) clinical and translational research provides high quality education to researcher professionals through the use of a creative and innovative online format. The program was developed as a component of the Clinical and Translational Science Award granted to Children's National Health System and George Washington University. It prepares graduates to meet the needs of a more "translational" approach to research. The curriculum includes a combination of courses focused on translational, interdisciplinary and health care research and

leadership. Thus, the MSHS equips research professionals with the knowledge and skills to fill any number of clinical and translational research professions from funded scientist, clinical personnel, and those who mediate for better policy about health.

Visit the program website (<http://smhs.gwu.edu/clinical-translational-research/programs/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses, including 27 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
Clinical research		
CTS 6201	Critical Analysis in Clinical Research	
CTS 6205	Clinical Investigations	
Graduate research		
CTS 6273	Bioinformatics for Genomics	
HSCI 6263	Biostatistics Translational Research	
HSCI 6264	Epidemiology Translational Research	
Translational research		
CTS 6261	Foundations in Clinical and Translational Research	
CTS 6264	Clinical and Translational Research Capstone Project	
CTS 6265	Grantsmanship in Translational Health Science	
CTS 6275	Transdisciplinary Research Proposal	
CTS 6285	Collaboration and Team Science in Practice and Research	
Electives		
6 credits in elective courses selected in consultation with the advisor.		

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF CORRECTIONAL HEALTH ADMINISTRATION

The correctional health administration program provides a solid foundation for professionals seeking a career in correctional health care administration as well as valuable training for current correctional health care administrators seeking career advancement. Students will learn how to design a health care services plan for incarcerated patient populations; develop health care administration management skills for staffing and leading a correctional health care team; acquire strategies for cost containment while ensuring the delivery of quality health care; and adopt strategies for facilitating the continuity of health care for incarcerated patients returning to their communities.

Visit the program website (<https://smhs.gwu.edu/correctional-health-administration/>) for more information

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 27 credits in required courses, a 6-credit practicum, and one 3-credit elective course.

Code	Title	Credits
Required		
CHA 6210	Correctional Health Administration for Behavioral Health Populations	
CML 6020	Fundamentals of Correctional Health Care	
CML 6021	Correctional Health Care Administration for Special Populations	
CML 6023	Correctional Health Care Fiscal Management	
CML 6025	Correctional Health Care Oversight	
CML 6050	Correctional Health Care Delivery	
CML 6202	Human Resource Development	
HSCI 6223	Topics in Health Care Leadership	
INFR 6101	Principles of Medical Informatics	
Master's Practicum		
CHA 6275	Correctional Health Care Administration Practicum	
Elective		

One 3-credit elective course selected in consultation with program advisor.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF HEALTH CARE QUALITY

The master of science in health sciences in the field of health care quality program is designed to meet an emerging demand for quality and patient safety specialists who have the capacity and competence to grow and sustain a culture of continuous improvement at all levels and within every sector of the health care delivery system. The program helps prepare graduates for quality and patient safety leadership, management, and research positions within health care organizations or policy agencies. Upon completion of this program, students are able to:

- Develop, implement, and evaluate quality and patient safety improvement initiatives;
- Cultivate strategies to lead organizational change toward a quality-focused culture;
- Translate national quality expectations into daily operations;
- Apply processes and tools to measure, analyze, and interpret quality improvement data;
- Design and implement information technology systems to support quality assurance;
- Conduct research to drive clinical and operational decision-making.

Visit the program website (<https://smhs.gwu.edu/health-care-quality/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
Graduate research courses		
HSCI 6263	Biostatistics Translational Research	
HSCI 6264	Epidemiology Translational Research	
Professional courses		
COHM 6235	Leadership Development in Health Care Systems	
COHM 6245	Strategic and Operational Decision Making for Health Care Leaders	
Health care quality courses		

HCQ 6200	Introduction to Health Care Quality *
HCQ 6201	Building a Quality Culture
HCQ 6202	Health Care Quality Landscape
HCQ 6203	Quality Improvement Science
HCQ 6204	Health Care Quality Analysis
HCQ 6205	Patient Safety Systems
HCQ 6206	Health Information, Quality and Outcomes
HCQ 6275	Leadership and Change

*Certified Professional in Healthcare Quality (CPHQ) credential accepted as equivalent.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF IMMUNOHEMATOLOGY

Please note: The Immunohematology program is open to military contract students only.

The goal of the Immunohematology program is to prepare individuals who will be competitive for careers in management, research and education in the area of immunohematology.

Master's Degree

The Master of Science in Health Sciences program is designed for clinical laboratory scientists currently enrolled in Specialist in Blood Banking Technology Programs accredited by the Commission on Accreditation of Allied Health Education Programs (CAAHEP) or who have been certified as a Specialist in Blood Banking (S.B.B.) within the last seven years. The program incorporates aspects of blood transfusion medicine at the graduate level with research methods, current topics in transfusion medicine, immunology, biochemistry and research in an area of immunohematology. Students take 22 hours of online courses through the health sciences programs at The George Washington University. The program culminates in a research project.

Visit the program website (<https://smhs.gwu.edu/military-affiliated-programs/immunohematology/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 55 credits in required courses.

Code	Title	Credits
Required:		
HSCI 6263	Biostatistics Translational Research	

HSCI 6297	Independent Study for Health Professionals (taken for 1 credit)
MLS 6141	Advanced Immunology and Serology
MLS 6151	Advanced Molecular Diagnostics
MLS 6158	Advanced Laboratory Management and Operations
MLS 6203	Clinical Immunohematology I
MLS 6204	Clinical Immunohematology II
MLS 6207	Clinical Practicum: Blood Banking I
MLS 6208	Clinical Practicum: Blood Banking II
MLS 6209	Clinical Pract:Blood BankingIII
MLS 6211	Hematopoiesis &Blood Pathophys
MLS 6212	Organization and Management of Blood Banks
MLS 6213	Seminar in Immunohematology
MLS 6214	Specialized Practicum
MLS 6245	Current Topics in Medical Laboratory Science
MLS 6246	Capstone Project

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF IMMUNOHEMATOLOGY AND BIOTECHNOLOGY

Immunohematology, also called blood banking, is a field within the medical laboratory science profession that focuses on studying human immunologic reactions as they relate to disease processes and clinical manifestations of blood disorders. The clinical laboratory has traditionally used conventional methods to perform tests and assays for the purpose of aiding in human disease diagnosis. Over the years, there have been significant advances in biotechnologies.

Although conventional lab methods are still utilized in the clinical laboratory, more labs are starting to integrate molecular-based tests and to replace some of the more traditional technologies with cutting edge methods. The program has been designed to provide certified blood bankers with a strong foundation in Immunohematology as well as molecular biology and biotechnology.

Visit the program website (<http://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/>)

immunohematology-biotechnology/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 35 credits, including 29 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Translational Research	
MLS 6141	Advanced Immunology and Serology	
MLS 6158	Advanced Laboratory Management and Operations	
or MLS 6159	Leadership in Laboratory Medicine	
MLS 6213	Seminar in Immunohematology	
MLS 6217	Medical Biotechnology	
MLS 6218	Genetics	
MLS 6219	Molecular Biology	
MLS 6244	Research Ethics and Integrity	
MLS 6245	Current Topics in Medical Laboratory Science	
MLS 6246	Capstone Project	
Electives		

6 credits in elective courses selected in consultation with the Program Director.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF INTEGRATIVE MEDICINE

THE GRADUATE PROGRAM IN INTEGRATIVE MEDICINE PREPARES PHYSICIANS AND HEALTH PRACTITIONERS IN ADVANCED PRINCIPLES AND PRACTICES OF WELLNESS AND LIFESTYLE MEDICINE. THE CURRICULUM IS TAUGHT BY INTERNATIONALLY RECOGNIZED LEADERS FROM THE CLINICAL AND RESEARCH SCIENCES, INCLUDING NOBEL-PRIZE WINNERS AND NASA SCIENTISTS, WITH A FOCUS ON PREVENTIVE, PROGNOSTIC, AND PATIENT-CENTRIC APPROACHES TO CARE.

Visit the program website (<https://smhs.gwu.edu/integrative-medicine/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 27 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required		
INTM 6101	Nutrition I: Assessment, Diagnosis, and Intervention	
INTM 6102	Nutrition II: Life Cycle	
INTM 6201	Foundations in Integrative Medicine	
INTM 6202	Self-Care Methods for Health Care Professionals	
INTM 6203	Nutritional Metabolism and Environmental Exposure	
INTM 6204	Metabolic Networks in Integrative Medicine	
INTM 6206	Legal and Medical Ethics in Integrative Medicine	
INTM 6207	Business of Integrative Medicine and Health Care	
INTM 6210	Practical Application of Integrative Medicine I	
INTM 6212	Clinical Research in Integrative Medicine	

Electives		
9 credits in elective courses selected from the following:		
INTM 6105	Advanced Nutrition: Biochemistry	
INTM 6110	Food Technology and Health	
INTM 6111	Topics in Nutrition	
INTM 6120	Nutritional Immunology	
INTM 6205	Clinical Genomics, Proteomics, and Metabolomics	
INTM 6211	Practical Application of Integrative Medicine II (or)	
INTM 6213	Clinical Approaches in Integrative Medicine	

Other elective courses may be selected in consultation with the program advisor.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF LABORATORY MEDICINE

Medical laboratory sciences (MLS) is a challenging and rewarding health care profession that has great impact on patient care. Working in a variety of settings, medical laboratory scientists are essential members of the health care team who provide vital information about the status and function of the body and its systems. The data obtained by medical laboratory scientists is utilized in the diagnosis, treatment, and prevention of disease.

The MSHS in laboratory medicine is designed for individuals who have a baccalaureate degree in a science or health science related field and wants to be eligible to become certified as a medical laboratory scientist.

Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/mshs-laboratory-medicine/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 52 credits in required coursework.

Code	Title	Credits
Required		
MLS 6116	Advanced Clinical Bacteriology I	
MLS 6117	Advanced Clinical Bacteriology II	
MLS 6119	Advanced Parasitology, Mycology, and Virology	
MLS 6130	Advanced Hematology I	
MLS 6131	Advanced Hematology II	
MLS 6141	Advanced Immunology and Serology	
MLS 6145	Advanced Clinical Biochemistry I	
MLS 6146	Advanced Clinical Biochemistry II	
MLS 6150	Advanced Immunohematology	
MLS 6151	Advanced Molecular Diagnostics	
MLS 6158	Advanced Laboratory Management and Operations	
Practicum		
MLS 6247	Advanced Clinical Biochemistry Practicum	

MLS 6248	Advanced Blood Bank Practicum
MLS 6249	Advanced Coagulation Practicum
MLS 6250	Advanced Hematology Practicum
MLS 6251	Advanced Clinical Microbiology Practicum
MLS 6252	Advanced Urinalysis Practicum
Research	
HSCI 6263	Biostatistics Translational Research
MLS 6244	Research Ethics and Integrity
MLS 6245	Current Topics in Medical Laboratory Science
MLS 6246	Capstone Project

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF MEDICAL LABORATORY SCIENCE

The of science in health sciences (MSHS) in medical laboratory science (MLS) provides high quality education for health professionals through the use of a creative and innovative online format. The curriculum in the program includes a combination of courses focused on leadership, research, teaching and assessment strategies, ethics and health policy.

Additionally, the program incorporates course work designed to provide students with a deeper understanding of the technologies and techniques upon which modern medical laboratory diagnostics are based, and insights on new trends and emerging technologies in laboratory science. Thus, the MSHS in MLS will equip certified laboratory scientists with the knowledge and skills to assume leadership positions in the laboratory, as managers, educators, clinicians or researchers.

Visit the program website (<http://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/medical-laboratory-sciences/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 15 credits in courses in the field and a mentored research project, 6 credits in strategic leadership courses, 12 credits in graduate research courses, and one 3-credit elective course.

Code	Title	Credits
Required		
Medical laboratory science		

MLS 6242	Molecular Pathology
MLS 6243	Education and Assessment in MLS
MLS 6244	Research Ethics and Integrity
MLS 6245	Current Topics in Medical Laboratory Science
MLS 6246	Capstone Project
Strategic leadership	
MLS 6158	Advanced Laboratory Management and Operations
MLS 6159	Leadership in Laboratory Medicine
Graduate research	
HSCI 6263	Biostatistics Translational Research
MLS 6132	Molecular Epidemiology
MLS 6160	Data Analytics and Research Methods in Laboratory Medicine

Electives

6 credits in graduate distance learning courses in medical laboratory sciences, clinical operations and health care management, health care quality, regulatory affairs, and clinical research administration, selected in consultation with the program advisor.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF MOLECULAR DIAGNOSTIC SCIENCE

Molecular diagnostic testing uses highly sensitive and specific laboratory techniques to detect and identify biomarkers at the nucleic acid (DNA and RNA) level. Common molecular-based applications include medical diagnosis, establishing prognosis, monitoring the course of disease, and selecting optimal therapies. The master of science in health sciences (MSHS) in molecular diagnostic sciences prepares both MLS certified and non-certified individuals for careers in clinical or public health laboratories, research institutions, law enforcement agencies, as well as biotechnology or pharmaceutical companies.

The proposed curriculum has been designed so that students can complete the entire program in two academic years and offers the flexibility of allowing students to enroll either on a full-time or part-time basis. Furthermore, the program of study provides practical experience to individuals with no previous clinical molecular diagnostic experience in the form of a molecular diagnostics practicum course.

Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/molecular-diagnostic-science/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 35 credits, including 32 credits in required courses and a 3-credit elective course.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Translational Research	
MLS 6216	Microbial Pathogenesis	
MLS 6217	Medical Biotechnology	
MLS 6218	Genetics	
MLS 6219	Molecular Biology	
MLS 6158	Advanced Laboratory Management and Operations	
MLS 6166	Molecular Diagnostics Practicum *	
MLS 6242	Molecular Pathology	
MLS 6244	Research Ethics and Integrity	
MLS 6245	Current Topics in Medical Laboratory Science	
MLS 6246	Capstone Project	

Elective

One 3-credit MLS or HSCI course selected in consultation with the academic advisor.

* May be substituted with an elective course for students with current clinical molecular laboratory experience.

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF REGULATORY AFFAIRS

The regulation of clinical research is in itself a dynamic and emergent field. It brings together the science in which products—drugs, devices, biologics and vaccines—and treatment protocols are developed for improved global health care. Both the master's degree and graduate certificate programs prepare scientists and regulatory professionals to manage the key elements of the clinical research regulatory process. The rigorous curriculum focuses on regulatory strategy, regulatory guidance, legal and ethical issues, processes for product development and the business and political components

of regulation in clinical research, all while reinforcing the science behind the methods. Master's Degree Graduates of this program master the fine line between regulatory leadership and guidance.

They manage partnerships with sponsors and emerging pressures to further take into account global health, outcomes research and health care cost containment. Contemporary regulatory affairs leadership requires a foundation in data analysis and research. This program has been designed to meet all of these objectives. The distance education format provides a contemporary option for self-directed professionals who work in the field with industry or who may be just entering the field with one of the health and human services agencies charged with providing oversight and guidance to industry. Our course work has been developed in partnership with colleagues in industry and public regulatory agencies. The curriculum is taught by faculty members who bring both the perspectives of the sponsor and those of public health agencies.

As a result, the program provides each graduate with a robust academic education, while giving the student access to key leaders and practitioners in regulatory affairs. This program has been strategically designed to generate leaders who will meet the needs of the emerging trends in regulatory affairs.

Visit the program website (<https://smhs.gwu.edu/regulatory-affairs/>)for additional program information.

REQUIREMENTS

The master of science in health sciences in the field of regulatory affairs (RAFF) requires successful completion of 36 credits, including: 9 credits of the research coursework, 6 credits of strategic leadership courses, 18 credits in the field of regulatory affairs, and a 3-credit elective course.

Code	Title	Credits
Required		
Regulatory affairs courses		
RAFF 6201	Introduction to Global Regulatory Affairs	
RAFF 6202	Regulatory Drug Biologics	
RAFF 6203	Regulatory Device Diagnostics	
RAFF 6204	Clinical Research for Regulatory Affairs	
RAFF 6205	Regulatory Affairs Compliance	
RAFF 6275	Leadership in Regulatory Affairs	
Graduate research courses		
HSCI 6263	Biostatistics Translational Research	

HSCI 6264	Epidemiology Translational Research
Strategic leadership courses	
HSCI 6223	Topics in Health Care Leadership
HSCI 6240	Issues and Trends in the Health Care System
HSCI 6241	The Health Care Enterprise
Electives	
One of the following:	
CML 6274	Health Economics and Finance
CRA 6203	Partnerships with Human Subjects
CRA 6208	International Clinical Research
CRA 6209	Quality and Risk Management
CRA 6210	Medical Writing/Clinical Research
HCQ 6201	Building a Quality Culture

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT

The physician assistant degree is a 24 or 36-month, full-time educational program divided into an academic and a clinical phase. The academic, or didactic phase, of the program is 12 months in duration and consists of four components: basic sciences, behavioral sciences, clinical medicine and pre-clinical skills. The academic phase also includes patient experiences designed to enhance the student's familiarity with the clinical environment.

The dual MPH./MSHS plan requires one additional year of academic coursework specific to public health. The clinical phase consists of a series of rotations in a variety of inpatient and outpatient settings. Students participate in the care of patients under the supervision of a licensed health care provider. Required experiences include inpatient medicine, surgery, pediatrics, emergency medicine, behavioral medicine and an elective rotation.

Visit the program website (<https://smhs.gwu.edu/physician-assistant/>)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 104 credits in required courses.

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6110	Evidence Based Practice for PA Students	
or PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6118	Health, Justice, and Society I	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	
PA 6263	Surgical Inpatient Clinical Practicum	
PA 6264	Women's Health Clinical Practicum	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Practicum	
PA 6267	Behavioral Medicine Clinical Practicum	
PA 6268	Elective Clinical Practicum	
PA 6300	Introduction to Professional Practice	

PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF TRANSLATIONAL MICROBIOLOGY

The master of science in health sciences in the field of translational microbiology program, offered in a distance learning format, prepares students with the theoretical knowledge and practical skills for research positions in public health microbiology laboratories, biotechnology companies, government agencies, and research institutes. This program is ideal for students who already have microbiology or medical laboratory sciences (MLS) certification, or for individuals who do not have an interest in becoming certified microbiologists.

Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/mshs/curriculum/translational-microbiology/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 30 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
Medical laboratory science courses		
MLS 6119	Advanced Parasitology, Mycology, and Virology	
MLS 6217	Medical Biotechnology	
MLS 6244	Research Ethics and Integrity	
MLS 6245	Current Topics in Medical Laboratory Science	
MLS 6246	Capstone Project	
Strategic leadership courses		
One course from the following two options:		
MLS 6158	Advanced Laboratory Management and Operations	
MLS 6159	Leadership in Laboratory Medicine	

Graduate research courses

HSCI 6263 Biostatistics Translational Research

MLS 6216 Microbial Pathogenesis

MLS 6132 Molecular Epidemiology

MLS 6160 Data Analytics and Research Methods in Laboratory Medicine

Electives

6 credits in elective courses in Medical Laboratory Science (MLS) selected with the approval of program director.

JOINT MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT AND MASTER OF PUBLIC HEALTH

Applicants with a strong interest in public health may wish to consider the joint master of science in health sciences (MSHS) in the field of physician assistant and master of public health (MPH) degree program. The three-year program provides both clinical and academic preparation for careers in medicine and public health. Students receive advanced training in the design of health studies, epidemiological methods, application of computers to public health, community medicine, and techniques of health promotion. Students also design a special research project in collaboration with faculty of the Milken Institute School of Public Health and local, national, or international public health organizations.

For the MPH degree, students choose from among the following tracks: community-oriented primary care, environmental health science and policy, epidemiology, global environmental health, and health policy.

Visit the master of science in health sciences in the field of physician assistant (<https://smhs.gwu.edu/physician-assistant/>) and the master of public health (<http://publichealth.gwu.edu/academics/graduate/masters-programs/#joint>) program websites for additional information.

COMMUNITY-ORIENTED PRIMARY CARE

Community-Oriented Primary Care Track

The following requirements must be fulfilled: 137 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 10 credits in prevention and community health courses, and 14 credits in community-oriented primary care track courses.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	
PA 6263	Surgical Inpatient Clinical Practicum	
PA 6264	Women's Health Clinical Practicum	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Practicum	
PA 6267	Behavioral Medicine Clinical Practicum	
PA 6268	Elective Clinical Practicum	
PA 6300	Introduction to Professional Practice	
PHAR 6207	Basic Principles of Pharmacology	

PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public health (community-oriented primary care) curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Prevention and community health		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
PUBH 6015	Culminating Experience	
Community-oriented primary care track		
PUBH 6504	Social and Behavioral Science Research Methods	
PUBH 6510	Community-Oriented Primary Care Principles and Practice	
PUBH 6512	Community-Oriented Primary Care Policy and Issues	
PUBH 6513	Community Health Management	
PUBH 6516	Community Health Information Resources	

PUBH 6591 PA/MPH Clinical Leadership Seminar

Electives

2 credits in PUBH courses.

ENVIRONMENTAL HEALTH SCIENCE & POLICY

Environmental Health Science and Policy Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 22 credits in environmental health sciences and policy courses, and 3 credits in electives.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	

PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Master of public health curriculum

Code	Title	Credits
Required		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs	
PUBH 6123	Toxicology: Applications for Public Health Policy	

PUBH 6124	Risk Management and Communication
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6137	Environmental and Occupational Health Culminating Experience I
PUBH 6138	Environmental and Occupational Health Culminating Experience II
PUBH 6591	PA/MPH Clinical Leadership Seminar
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Elective

One 1-credit PUBH course selected with the advisor's approval.

EPIDEMIOLOGY

Epidemiology Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 18 credits in epidemiology track courses, 4 credits in selective courses, and 3 credits in electives.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	

PA 6120	Human Behavior
PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Medicine Clinical Practicum
PA 6262	Primary Care Practicum
PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public health (epidemiology) curriculum

Code	Title	Credits
Required		
MPH core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	

PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
Epidemiology track	
PUBH 6015	Culminating Experience
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6591	PA/MPH Clinical Leadership Seminar
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Selective

4 credits from the following:

PUBH 6237	Chronic Disease Epidemiology
PUBH 6241	Nutritional Epidemiology
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research
PUBH 6244	Cancer Epidemiology
PUBH 6245	Infectious Disease Epidemiology
PUBH 6248	Epidemiology of Aging
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epidemiology Surveillance in Public Health

Electives

2 credits in graduate-level Public Health courses.

Additional information including approved elective lists can be found on the program website.

GLOBAL ENVIRONMENTAL HEALTH

Global Environmental Health Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 23 credits in global environmental health courses, and 2 credits in electives.

Code	Title	Credits
ANAT 6215	Anatomy for Physician Assistant Students	

PA 6101	Clinical Assessment I
PA 6102	Clinical Assessment II
PA 6103	Clinical Assessment III
PA 6104	Integration into Clinical Concepts I *
PA 6105	Integration into Clinical Concepts II
PA 6106	Integration into Clinical Concepts III
PA 6109	Foundations of Medicine
PA 6111	Evidence Based Practice for PA/MPH Students
PA 6112	Clinical Medicine I
PA 6113	Clinical Medicine II
PA 6116	Clinical Skills I
PA 6117	Clinical Skills II
PA 6119	Health, Justice, and Society II
PA 6120	Human Behavior
PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Medicine Clinical Practicum
PA 6262	Primary Care Practicum
PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum *
PA 6300	Introduction to Professional Practice
PHYL 6211	Physiology for Health Sciences Students
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students

Public Health (MPH) Curriculum (38 credits)

PUBH 6002	Biostatistical Applications for Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6007	Social and Behavioral Approaches to Public Health
PUBH 6009	Fundamentals of Public Health Program Evaluation
PUBH 6011	Environmental and Biological Foundations of Public Health
PUBH 6012	Fundamentals of Health Policy
PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6137	Environmental and Occupational Health Culminating Experience I
PUBH 6138	Environmental and Occupational Health Culminating Experience II
PUBH 6591	PA/MPH Clinical Leadership Seminar
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Electives

1 credit in PUBH courses selected with the advisor's approval.

Up to 15 credits may be taken online in the MPH@GWU program.

* PA 6104 Integration into Clinical Concepts I may be cross-credited for PA 6268 Elective Clinical Practicum with advanced approval by Practicum Director.

HEALTH POLICY

Health Policy Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 13 credits in MPH core, 22 credits in health policy track courses, and 3 credits in electives.

Physician Assistant Curriculum

Code	Title	Credits
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	
PA 6263	Surgical Inpatient Clinical Practicum	
PA 6264	Women's Health Clinical Practicum	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Practicum	

PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public Health (Health Policy) Curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Health policy track		
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Introduction to Health Policy Analysis	
PUBH 6320	Advanced Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6335	Public Health and Law	
or PUBH 6330	Health Services and Law	
PUBH 6340	Health Economics and Finance	

PUBH 6350	Health Policy Capstone
PUBH 6591	PA/MPH Clinical Leadership Seminar (I)
Electives	
3 credits in graduate-level Public Health courses.	

MATERNAL AND CHILD HEALTH

The following requirements must be fulfilled:

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 15 credits in public health core courses, and 23 credits in department and program specific coursework as outlined.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	

PA 6262	Primary Care Practicum
PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public health (maternal and child health curriculum)

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Prevention and community health		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
PUBH 6015	Culminating Experience	
PUBH 6591	PA/MPH Clinical Leadership Seminar	

Maternal and Child Health track	
PUBH 6550	Maternal and Child Health I
PUBH 6551	Maternal and Child Health II
Required Program-Specific Electives- choose 6 credits from below	
PUBH 6552	Women's Health
PUBH 6553	Adolescent Health
PUBH 6563	Global Child Health
PUBH 6561	Maternal and Child Health Policy Analysis
EXNS 6242	Nutrition Throughout the Life Cycle
PUBH 6359	Reproductive Health Policy
PUBH 6335	Public Health and Law
PUBH 6620	Designing Healthy Communities
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6452	Social and Behavior Change Communication in Middle- to Low-Income Countries
PUBH 6400	Global Health Frameworks
Electives	
2 credits minimum (any graduate level course in SPH)	

DOCTORAL PROGRAMS

Doctoral programs

- Doctor of Health Sciences in the field of leadership in clinical practice and education (p. 1088)
- Doctor of Philosophy in the field of translational health sciences (p. 1089)
- Doctor of Physical Therapy (p. 1090)
- Advanced Practice Clinical Doctorate in Occupational Therapy (p. 1092)

DOCTOR OF HEALTH SCIENCES IN THE FIELD OF LEADERSHIP IN CLINICAL PRACTICE AND EDUCATION

Gain a mastery of the design, implementation and evaluation of health care programs, lead interprofessional teams, and evaluate evidence to advance health care. The program

prepares those in clinical health positions from a range of backgrounds who seek to build competencies in advanced professional practice, whether that be in the clinical or academic environments.

The curriculum is primarily online, meaning you continue in your profession full-time, learning when and where it is most convenient to you. There are two residencies required over separate weekends, and the program culminates with a finalized manuscript ready for submission to a peer review journal. The program offers two concentrations in either clinical or educational practice. By graduation you'll be able to:

- Design strategies to improve clinical practice guidelines, clinician performance, and improved outcomes in a health care environment
- Collaborate with interprofessional teams to address a common goal such as improved efficiency and effectiveness, or improved satisfaction among patients and health care providers
- Analyze gaps between the outcomes of best practice and current practice in health care practice environments

REQUIREMENTS

The following requirements must be fulfilled: 48 credits as outlined below.

Students complete one of two tracks based on desired career outcomes. One track focuses on enhancing skills related to advancing clinical practice in leadership positions and the other track emphasizes skills related to providing education for health professions students as well as leadership for health professions education in a higher-education setting.

Code	Title	Credits
Core (24 credits)		
HFR 8101	Interprofessional Collaboration in Practice	
HFR 8107	Program Theory and Health Innovations	
HFR 8116	Academic and Clinical Leadership in the Health Professions	
HFR 8270	Research Methods in the Health Professions I	
HFR 8271	Research Methods in the Health Professions II	
HFR 8203	Bioethical Implications of Health Research	
HFR 8102	Health Professions Practicum I	
HFR 8103	Health Professions Practicum II	

Track-specific (9 credits)

Clinical practice leadership track

Three courses from the following:

HCQ 6200 Introduction to Health Care Quality

CML 6203 Health Information Quality and Outcomes

HFR 8314 Health Care Research

HFR 8313 Knowledge Translation in Health Care

Or

Educational leadership track

Three courses from the following:

HFR 8212 Teaching Strategies in the Health Professions

HFR 8213 Curriculum Development in the Health Professions

HFR 8214 Assessment in Health Profession Education

HFR 8215 Technology and Education in the Health Professions

Electives (6 credits)

Research elective

At least one course from the following:

THS 8123 Qualitative Methods in Translational Health Sciences

THS 8125 Advanced Statistical Methods for Clinical and Translational Research

THS 8221 Mixed Methods Research in Translational Health Sciences

THS 8127 Systematic Reviews of Health Care Innovations

Additional elective

With the advisor's approval, students select an additional track or research course or select one of the following as a second elective:

OT 8220 Measurement of Human Function and Learning

HSCI 6297 Independent Study for Health Professionals

HSCI 6241 The Health Care Enterprise

COHM 6220 Finance for Health Care Operations

Seminars (9 credits)

HFR 8996 Seminar I

HFR 8997 Seminar II

HFR 8997 Seminar II

DOCTOR OF PHILOSOPHY IN THE FIELD OF TRANSLATIONAL HEALTH SCIENCES

Graduates of the PhD in translational health sciences program will generate, implement, and disseminate evidence to improve health and healthcare. Graduates will work across organizational barriers to engage a range of stakeholders (including scientists, policymakers, and consumers) in identifying, designing, and testing innovations in everyday healthcare practice and education. The PhD program is designed to prepare change leaders in three areas: professional healthcare education, healthcare practice, and translational research. This program is targeted primarily toward licensed health practitioners, educators, healthcare administrators, and public health professionals who are interested in affecting positive change to the health of society.

The program requires 52 credits beyond a master's degree, successful completion of two comprehensive examinations, a proposal defense, and a defended dissertation. The curriculum is low residency, with facilitated learning activities delivered online and on campus (2 weekends per semester) at the Virginia Science and Technology Campus in Ashburn, Virginia. Graduates of the PhD program will generate, implement, and disseminate evidence to improve health and healthcare. Graduates will work across organizational barriers to engage a range of stakeholders (including scientists, policymakers, and consumers) in identifying, designing, and testing innovations in everyday healthcare practice and education.

The PhD program is designed to prepare change leaders in three areas: professional healthcare education, healthcare practice, and translational research. This program is targeted primarily toward licensed health practitioners, educators, healthcare administrators, and public health professionals who are interested in affecting positive change to the health of society.

Visit the program website (<http://smhs.gwu.edu/translational-health-sciences/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 54 credits, successful completion of three comprehensive examinations, a proposal defense, and a defended dissertation.

Code	Title	Credits
Required Courses		
THS 8101	Foundations in Translational Health Sciences	
THS 8103	Principles of Collaboration and Team Science	
THS 8105	Translational Health Sciences in Complex Health Systems	
THS 8107	Program Theory and Health Innovations	
THS 8109	Implementation Science and Innovation Leadership	
THS 8121	Advanced Study Design for Translational Research	
THS 8123	Qualitative Methods in Translational Health Sciences	
THS 8125	Advanced Statistical Methods for Clinical and Translational Research	
THS 8201	Learning Theory and Models for Knowledge Translation in Health Systems I	
THS 8203	Bioethical Implications of Health Research	
THS 8205	Learning Theory and Models for Knowledge Translation in Health Systems II	
THS 8221	Mixed Methods Research in Translational Health Sciences	
THS 8961	Proposal Defense Preparation	
THS 8996	Dissertation Seminar I	
THS 8997	Dissertation Seminar II	
THS 8998	Dissertation Seminar III	
Electives (6 credits)		
CRA 6205	Clinical Investigation	
HSCI 6265	Grantsmanship in Translational Research	

HSCI 6297	Independent Study for Health Professionals
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OT 8215	Quality Improvement through Translational Practices
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OT 8220	Measurement of Human Function and Learning
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THS 8127	Systematic Reviews of Health Care Innovations
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DOCTOR OF PHYSICAL THERAPY

The DPT program reflects the mission of GW's School of Medicine and Health Sciences: teaching with creativity and dedication; healing with quality and compassion; and discovering with imagination and innovation. The program is an eight-semester full-time entry-level professional program that prepares graduates to examine, evaluate, diagnose, develop plans of care, provide interventions and assess outcomes for patients with a wide range of musculoskeletal, neuromotor, cardiopulmonary and integumentary dysfunctions.

Students explore the legal and ethical aspects of patient care as well as issues of communication, patient education, health promotion, health policy and practice management. The program is committed to the development of generalist practitioners prepared to practice autonomously; reflective practitioners who think critically and use best evidence to effectively solve problems; compassionate practitioners who demonstrate excellence in communication and interpersonal skills, a respect for individual and cultural differences, and the core values of the profession; and dedicated practitioners who value the tenets of lifelong learning.

Small classes enable students to engage in critical thinking activities that facilitate effective clinical decision making and problem solving. Faculty members use innovative teaching strategies and integrate clinical experiences to facilitate learning and retention throughout the curriculum. The DPT program is accredited by the Commission on the Accreditation of Physical Therapist Education (CAPTE) of the American Physical Therapy Association (APTA). Students are eligible to sit for the national licensing examination upon graduation.

Visit the program website (<https://smhs.gwu.edu/physical-therapy/dpt-program/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 109 credits to be taken in the following sequence:

Program of Study

Code	Title	Credits
Fall I Semester I		
PT 8201	Functional Anatomy	
PT 8311	Foundations of Examination	
PT 8312	Foundations of Interventions	
PT 8351	Professional Issues in Physical Therapy Health Care Management I	
PT 8361	Clinical Conference I	
Spring I Semester II		
PT 8202	Applied Physiology	
PT 8313	Therapeutic Modalities	
PT 8352	Teaching in Physical Therapy Practice	
PT 8203	Neuroscience in Rehabilitation I	
PT 8271	Research in Practice	
PT 8362	Clinical Conference II	
PT 8483	Integrated Clinical Experience I	
PT 8204	Movement Science I	
Summer I Semester III		
PT 8205	Movement Science II	
PT 8206	Neuroscience in Rehabilitation II	
PT 8207	Clinical Medicine and Pharmacology	
PT 8363	Clinical Conference III	
PT 8481	Interprofessional Community Practicum	
Fall II Semester IV		
PT 8315	Management of Musculoskeletal Dysfunction I	
PT 8208	Medical Imaging	
PT 8318	Management of Neuromotor Dysfunction	

PT 8323 Prosthetics and Orthotics

PT 8364 Clinical Conference IV

PT 8272 Research Seminar

PT 8484 Integrated Clinical Experience II

Code	Title	Credits
Spring II Semester V		
PT 8316	Management of Musculoskeletal Dysfunction II	
PT 8320	Management of the Pediatric Client	
PT 8322	Management of the Aging Adult	
PT 8314	Management of Cardiopulmonary Dysfunction	
PT 8317	Management of Integumentary Dysfunction	
PT 8365	Clinical Conference V	

Code	Title	Credits
Summer II Semester VI		
PT 8491	Clinical Education Experience I	
PT 8366	Clinical Conference VI	
PT 8321	Women's Health	

Code	Title	Credits
Fall III Semester VII		
PT 8492	Clinical Education Experience II	
PT 8355	Professional Issues in Physical Therapy Health Care Management II	
PT 8357	Capstone Seminar	
PT 8356	Health Promotion and Wellness	

Code	Title	Credits
Spring III Semester VIII		
PT 8493	Clinical Education Experience III	
Elective		

DOCTOR OF OCCUPATIONAL THERAPY

The advanced practice occupational therapy doctorate (OTD) program trains practicing occupational therapists to engage as clinician-scholars in a multidirectional and interprofessional integration of basic research, client-oriented research, and population-based research, with the long-term aim of measuring and improving the health of the public, especially in the clinical area of post-acute care.

The 36-credit program is delivered in a creative and innovative online format. The curriculum includes a combination of courses focused on leadership, research, teaching and assessment strategies, and quality. Additionally, the program incorporates elective course work and a mentored capstone designed to provide students with a deeper understanding of evidence-based occupational therapy.

Visit the program website (<https://smhs.gwu.edu/occupational-therapy/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 24 credits in required courses and 12 credits in elective courses.

Visit the program website (<https://smhs.gwu.edu/occupational-therapy/>) for additional information.

Code	Title	Credits
Required		
Transdisciplinary practice and research		
HFR 8123	Qualitative Methods for the Health Professions	
OT 8220	Measurement of Human Function and Learning	
OT 8274	Program Theory and Health Innovations	
Scholarship in occupational therapy		
HFR 8270	Research Methods in the Health Professions I	
HFR 8271	Research Methods in the Health Professions II	
OT 8272	Mixed Methods in Translational Health Sciences	
OT 8275	Doctoral Capstone Preparation	
OT 8276	Doctoral Capstone	
Electives		

12 credits in elective courses selected in consultation with the Program Director.

CERTIFICATE PROGRAMS

Post-baccalaureate certificates

- Post-baccalaureate certificate in blood banking for medical laboratory science (p. 1097)
- Post-baccalaureate certificate in chemistry for medical laboratory science (p. 1098)
- Post-baccalaureate certificate in clinical microbiology (p. 1098)
- Post-baccalaureate certificate in hematology for medical laboratory science (p. 1099)
- Post-baccalaureate certificate in medical laboratory science (p. 1099)
- Post-baccalaureate certificate in microbiology for medical laboratory science (p. 1099)
- Post-baccalaureate certificate in molecular diagnostic sciences (p. 1100)
- Post-baccalaureate certificate in pre-medicine (p. 1101)

Graduate certificates

- Graduate certificate in biomedical informatics (p. 1092)
- Graduate certificate in clinical operations and health care management (p. 1093)
- Graduate certificate in clinical research administration (p. 1093)
- Graduate certificate in clinical and translational research (p. 1094)
- Graduate certificate in clinical research practice (p. 1094)
- Graduate certificate in correctional health administration (p. 1095)
- Graduate certificate in health care quality (p. 1095)
- Graduate certificate in health sciences (p. 1096)
- Graduate certificate in health services and outcome research (p. 1096)
- Graduate certificate in integrative medicine (p. 1096)
- Graduate certificate in regulatory affairs (p. 1097)

GRADUATE CERTIFICATE IN BIOMEDICAL INFORMATICS

The biomedical informatics program prepares professionals for a rewarding career in health care leadership and research. Graduates will be skilled in the integration of programming, data analysis and data manipulation skills to solve biomedical problems. Students learn how to apply data analytics to improve the quality of healthcare and patient outcomes. This interdisciplinary education includes components of clinical healthcare, computer science, data analytics, ethics and translational medicine. Our innovative curriculum include courses in statistics, leadership, computer programming, and

clinical care and the healthcare system. Students develop informatics analytics and tools in support of clinical decision-making, clinical research, and patient engagement. Graduates are well-prepared for informatics careers working at hospitals and medical centers, pharmaceutical companies, global health care organizations, consulting groups, and in government agencies.

REQUIREMENTS

The introduction of electronic health records and health databases within the clinical setting has transformed health care. Informatics serves as the bridge between human-computer interactions in the health care space, as well as how the data we collect in these settings can be leveraged to improve patient safety, outcomes, and quality.

Program Requirements

Course ListCode Title Credits

Required

INFR 6101	Principles of Medical Informatics
INFR 6102	Principles of Medicine for Informaticians
INFR 6105	Health Care Quality for Informatics
INFR 6121	High Performance Computing
INFR 6540	Medical Decision Making and Decision Support Systems

Elective

One 3-credit elective course selected from the following with the advisor's approval. The advisor may approve an alternative elective.

INFR 6103	Advanced Computing Applications for Biomedical Informatics
HSCI 6273	Bioinformatics for Genomics
HSCI 6265	Grantsmanship in Translational Research

Visit the program website for additional information

GRADUATE CERTIFICATE IN CLINICAL OPERATIONS AND HEALTHCARE MANAGEMENT

The online graduate certificate in clinical operations and healthcare management prepares you to effectively lead clinical operations and strategic development initiatives for a variety of healthcare organizations across the continuum of care. In GW's flexible online graduate certificate program, you will study ways to improve your own communication skills for optimal interprofessional practice, lead efforts in quality

improvement, and utilize the technological tools needed to conduct effective data analyses for strategic development.

When you complete the graduate certificate program, you'll be able to pursue a clinical operations career in a variety of healthcare organizations. All 18 credit hours are transferable to the MSHS program in clinical operations and healthcare management.

Program Outcomes

- Communicate effectively across a variety of platforms to optimize interprofessional practice and operations
- Evaluate healthcare systems to enhance ethical, efficient, and financially sound operations
- Conduct effective data analyses for operational and strategic development in a healthcare setting continuum
- Lead efforts to continuously improve the quality and value across healthcare operations
- Improve organizational performance by successfully implementing change management.

Visit the program website (<https://smhs.gwu.edu/cohm/programs/graduate-certificate-program/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required Courses:		
COHM 6210	Strategic Communications	
COHM 6220	Finance for Health Care Operations	
COHM 6320	Informatics for Operational Leadership and Health Care Quality	
COHM 6430	Health Care Systems Operations	
COHM 6470	Applications in Clinical Operations and Health Care Management	
HSCI 6223	Topics in Health Care Leadership	

GRADUATE CERTIFICATE IN CLINICAL RESEARCH ADMINISTRATION

Clinical research administration is a vast and expanding field that involves the processes in which products—drugs, devices, biological and treatment protocols are developed for patient care. Both the master's degree and graduate certificate programs prepare health sciences professionals to participate in the science and business of the development process. Our

rigorous curriculum focuses on regulatory requirements, ethical issues, processes for product development, the business of clinical research and scientific method processes. The distance education format, offered online, provides a convenient option for self-disciplined and self-directed students to pursue the program and prepare for professional advancement while maintaining their work and other commitments.

A Clinical Research Administration Certificate program is available at GW. The certificate requires 18 semester hours in clinical research administration course work. Those credits are transferable to the M.S.H.S. degree.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 15 hours in required courses and one 3-credit elective course. Courses successfully completed in this program are transferable to the master of science in health sciences (MSHS) in clinical research administration degree program.

Code	Title	Credits
Required		
CRA 6201	Critical Analysis Clinical Research	
CRA 6202	Medicines Development	
CRA 6203	Partnerships with Human Subjects	
CRA 6204	The Clinical Research Industry	
CRA 6209	Quality and Risk Management	
Elective		
One of the following		
CRA 6208	International Clinical Research	
CRA 6211	Monitoring, Auditing, and Oversight in Clinical Research	

Visit the program website (<https://smhs.gwu.edu/clinical-research-administration/programs/certificate/curriculum/>) for additional information.

GRADUATE CERTIFICATE IN CLINICAL AND TRANSLATIONAL RESEARCH

The master of science in health science (MSHS) in clinical and translational research provides high quality education to researcher professionals through the use of a creative and innovative online format. The program was developed as a component of the Clinical and Translational Science Award granted to Children’s National Health System and George

Washington University. It prepares graduates to meet the needs of a more “translational” approach to research. The curriculum includes a combination of courses focused on translational, interdisciplinary, and health care research and leadership. Thus, the MSHS and graduate certificates will equip research professionals with the knowledge and skills to fill any number of clinical and translational research professions from funded scientist, clinical personnel, and those who mediate for better policy about health.

Visit the program website (<https://smhs.gwu.edu/clinical-translational-research/programs/graduate-certificates/graduate-certificate-clinical-translational-research/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 21 credits, including 18 credits in required courses and a 3-credit elective course.

Code	Title	Credits
Required		
CTS 6201	Critical Analysis in Clinical Research	
CTS 6205	Clinical Investigations	
CTS 6261	Foundations in Clinical and Translational Research	
CTS 6264	Clinical and Translational Research Capstone Project	
CTS 6265	Grantsmanship in Translational Health Science	
CTS 6275	Transdisciplinary Research Proposal	
CTS 6285	Collaboration and Team Science in Practice and Research	

GRADUATE CERTIFICATE IN CLINICAL RESEARCH PRACTICE

The online graduate certificate in clinical research practice prepares you for evidence-based practice in the role of a Principal or co-investigator (Co-I or Co-PI) in clinical research. There are six online courses (15 credits) that can be applied toward the master of science in health sciences (MSHS) in clinical and translational research.

In earning the certificate, you learn how the Institutional Review Board (IRB), the Data Safety and Monitoring Board, protocol development, implementations, standard operating procedures, guidelines, regulations, and ethical considerations inform clinical research practice so you can collaborate with sponsored research programs.

In as little as 1 year, students complete 15 credit hours and learn to:

- Oversee clinical research at the study site level
- Ensure compliance with Good Clinical Practice (GCP)
- Use biostats and epidemiology to inform clinical practice in a research study site
- Improve the practice's potential for serving as a clinical study site

Visit the program website (<https://smhs.gwu.edu/clinical-translational-research/programs/graduate-certificates/graduate-certificate-clinical-research-practice/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 12 credits in required courses and 3 credits in elective courses.

Code	Title	Credits
Required		
CTS 6202	Research Methods for Clinical and Translational Research	
CTS 6203	Legal and Ethical Issues in Clinical and Translational Research	
CTS 6205	Clinical Investigations	
HSCI 6263	Biostatistics Translational Research	
HSCI 6264	Epidemiology Translational Research	
Electives		
3 credits in elective coursework selected in consultation with the academic advisor.		

GRADUATE CERTIFICATE IN CORRECTIONAL HEALTH ADMINISTRATION

The correctional health administration program provides a solid foundation for professionals seeking a career in correctional health care administration, as well as valuable training for current correctional health care administrators seeking career advancement. Students will learn how to design a health care services plan for incarcerated patient populations; develop health care administration management skills for staffing and leading a correctional health care team; acquire strategies for cost containment while ensuring the delivery of quality health care; and adopt strategies for facilitating the continuity of health care for incarcerated patients returning to their communities.

Visit the program website for additional information.

REQUIREMENTS

This certificate program provides a solid foundation for individuals seeking a career in correctional healthcare administration and valuable training for current correctional healthcare administrators seeking career advancement. Healthcare administrators are the key managers for ensuring the effective delivery of health care to these incarcerated patient populations. Capable correctional healthcare administration results in improved clinical outcomes for patients, more prudent allocation of limited healthcare resources and safer jails and prisons.

Program Requirements

Code	Title
15 credits of coursework from the following:	
CML 6020	Fundamentals of Correctional Health Care
CML 6021	Correctional Health Care Administration for Special Populations
CML 6023	Correctional Health Care Fiscal Management
CML 6025	Correctional Health Care Oversight
CML 6050	Correctional Health Care Delivery

Visit the program website (<https://smhs.gwu.edu/correctional-health-administration/curriculum/>) for additional information.

GRADUATE CERTIFICATE IN HEALTH CARE QUALITY

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses. All credits earned in this program are transferable to the Master of Science in Health Sciences in the field of health care quality (<http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-health-care-quality/>) degree program.

Code	Title	Credits
Required		
HCQ 6200	Introduction to Health Care Quality	
HCQ 6201	Building a Quality Culture	
HCQ 6202	Health Care Quality Landscape	
HCQ 6203	Quality Improvement Science	

HCO 6204	Health Care Quality Analysis
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HCO 6205	Patient Safety Systems
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Visit the program website (<https://smhs.gwu.edu/health-care-quality/curriculum/#grad>) for additional program information.

GRADUATE CERTIFICATE IN HEALTH SCIENCES

As more information about the structure, process and outcomes of health care emerges and the science of quality expands, quality improvement is emerging as an area of expertise in the industry. GW's master's program, delivered online, was developed to meet the emerging demand for quality and for patient-safety specialists who have the capacity and competence to grow and sustain a culture of continuous improvement at all levels and within all sectors of the health care delivery system.

Graduates will be prepared to lead the design, development, implementation and evaluation of health care quality and patient safety initiatives. They will have the skills and knowledge needed for success in quality and patient-safety leadership, management and research positions within health care organizations or policy agencies.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
CML 6205	Case Studies in Clinical Management and Leadership	
HCO 6200	Introduction to Health Care Quality	
HCO 6202	Health Care Quality Landscape	
HSCI 6240	Issues and Trends in the Health Care System	
RAFF 6201	Introduction to Global Regulatory Affairs	

GRADUATE CERTIFICATE IN HEALTH SERVICES AND OUTCOME RESEARCH

Health services research is a multidisciplinary field that requires researchers to apply concepts from variety of disciplines. A certificate in health services and outcome research contributes to the field by providing the targeted training to develop much needed and less emphasized skills in research design and methods for clinicians, physicians, nurses, medical students,

and residents who wish to expand their knowledge on the aforementioned areas. Clinicians in many cases lead health services research studies, and this is despite the fact that there is often a gap in their knowledge of research designs and methods.

Visit the program website (<https://online.gwu.edu/health-services-and-outcome-research-graduate-certificate/>) for additional information.

REQUIREMENTS

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Translational Research	
HSCI 6265	Grantsmanship in Translational Research	
HSCI 6270	Research Methods for the Health Professions I	
THS 6101	Survey of Advanced Quantitative Methods for Health Services and Outcomes Research	
THS 6102	Decision Making and Economic Evaluation in Health Care	
Elective*		
One 3-credit elective course.		
COHM 6107	Economics of Health Care Systems	

*COHM 6107 is strongly recommended for the elective. An alternate elective may be approved by the program director.

GRADUATE CERTIFICATE IN INTEGRATIVE MEDICINE

THE GRADUATE PROGRAM IN INTEGRATIVE MEDICINE PREPARES PHYSICIANS AND HEALTH PRACTITIONERS IN ADVANCED PRINCIPLES AND PRACTICES OF WELLNESS AND LIFESTYLE MEDICINE. THE CURRICULUM IS TAUGHT BY INTERNATIONALLY RECOGNIZED LEADERS FROM THE CLINICAL AND RESEARCH SCIENCES, INCLUDING NOBEL-PRIZE WINNERS AND NASA SCIENTISTS, WITH A FOCUS ON PREVENTIVE, PROGNOSTIC, AND PATIENT-CENTRIC APPROACHES TO CARE.

Visit the program website (<https://smhs.gwu.edu/integrative-medicine/integrative-medicine-programs/graduate-certificate/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 21 credits in required courses.

Code	Title	Credits
Required		
INTM 6201	Foundations in Integrative Medicine	
INTM 6202	Self-Care Methods for Health Care Professionals	
INTM 6203	Nutritional Metabolism and Environmental Exposure	
INTM 6204	Metabolic Networks in Integrative Medicine	
INTM 6205	Clinical Genomics, Proteomics, and Metabolomics	
INTM 6206	Legal and Medical Ethics in Integrative Medicine	
INTM 6207	Business of Integrative Medicine and Health Care	
INTM 6210	Practical Application of Integrative Medicine I	

GRADUATE CERTIFICATE IN REGULATORY AFFAIRS

The regulation of clinical research is in itself a dynamic and emergent field. It brings together the science in which products—drugs, devices, biologics and vaccines—and treatment protocols are developed for improved global health care. Both the master's degree and graduate certificate programs prepare scientists and regulatory professionals to manage the key elements of the clinical research regulatory process.

The certificate program is ideal for the scientist with an advanced degree who may be just entering the regulatory affairs profession within industry or the government sector. The certificate requires 18 semester hours in regulatory affairs course work. The certificate coursework is transferable to the MSHS degree.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

All credits earned in this program are transferable to the master of science in health sciences in the field of regulatory affairs (<http://bulletin.gwu.edu/medicine-health-sciences/graduate-programs/ms-regulatory-affairs/>) degree program.

Code	Title	Credits
Required		
HSCI 6263	Biostatistics Translational Research	

RAFF 6201 Introduction to Global Regulatory Affairs

RAFF 6202 Regulatory Drug Biologics

RAFF 6203 Regulatory Device Diagnostics

RAFF 6204 Clinical Research for Regulatory Affairs

RAFF 6205 Regulatory Affairs Compliance

Visit the program website (<https://healthsciencesprograms.gwu.edu/program/the-george-washington-university-regulatory-affairs-certificate-graduatecertificate-1527569596799/>) for additional program information.

POST-BACCALAUREATE CERTIFICATE IN BLOOD BANKING FOR MEDICAL LABORATORY SCIENCE

The online post-baccalaureate certificate in blood banking for medical laboratory science is designed to teach you the ins and outs of testing, storing and transporting blood for transfusions. You'll learn how to test blood for viruses, identify blood types and antibodies, and separate blood into its component parts, such as red and white blood cells and plasma. This certificate can be completed in as little as one year and allows you to qualify to sit for the ASCP Technologist in Blood Banking (BB) exam.*

When you complete this certificate program, you'll be able to:

- Apply principles of traditional and molecular laboratory procedures to perform diagnostic analyses
- Correlate laboratory data and quality control data to assess patient test results
- Apply knowledge of laboratory science principles as they relate to human disease diagnosis
- Maintain a safe work environment
- Comply with laboratory safety regulations and regulatory policies
- Apply ethical decision-making to issues related to clinical laboratory practice

REQUIREMENTS

Students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum. The clinical practicum usually is taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical

laboratory eight hours per day (daytime hours), five days per week. Students must be able to fulfill the necessary time requirement for the practicum.* Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/certificate/curriculum/blood-banking/>) for additional program information.

Completion of the certificate qualifies the graduate to take the Technologist in Blood Banking examination offered by national certifying agencies.

The following requirements must be fulfilled: 16 credits in required courses, including the clinical practicum.

Code	Title	Credits
Required		
MLS 4141	Immunology and Serology	
MLS 4158	Laboratory Management and Operations	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4160	Blood Bank Practicum	

*Clinical rotations, lasting between one to four weeks each, are completed at an approved clinical site.

POST-BACCALAUREATE CERTIFICATE IN CHEMISTRY FOR MEDICAL LABORATORY SCIENCE

The online post-baccalaureate certificate in clinical chemistry for medical laboratory science is designed to provide the knowledge and hands-on skills needed to become a certified technologist in clinical chemistry. Students learn how to use chemistry to evaluate patient health, study DNA and examine tissue, along with developing laboratory procedures that help physicians make earlier, more precise patient diagnoses and determine treatment.

This certificate can be completed in as little as one year and allows students to qualify to sit for the Technologist in Chemistry (C) exam offered by national certifying agencies. Students who complete this certificate program learn to:

- Apply principles of traditional and molecular laboratory procedures to perform diagnostic analyses.
- Correlate laboratory and quality control data to assess patient test results.
- Apply knowledge of laboratory science principles as they relate to human disease diagnosis.
- Maintain a safe work environment.

- Comply with laboratory safety regulations and regulatory policies.
- Apply ethical decision making to issues related to clinical laboratory practice.

REQUIREMENTS

Students complete required courses either on a part-time or full-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taught online, with the exception of the clinical practicum. The clinical practicum is usually taken on a full-time basis upon completion of didactic coursework. Students are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Admitted students must be able to fulfill the necessary time requirement for the practicum.* Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/certificate/curriculum/chemistry/>) for additional program information.

The following requirements must be fulfilled: 19 credits in required courses, including the practicum.

Code	Title	Credits
Required		
MLS 4141	Immunology and Serology	
MLS 4145	Clinical Biochemistry I	
MLS 4151	Molecular Diagnostics	
MLS 4161	Clinical Biochemistry Practicum	
MLS 4146	Clinical Biochemistry II	
MLS 4158	Laboratory Management and Operations	

Clinical rotations are completed at an approved clinical site and vary in length, lasting between 1 to 4 weeks each.

POST-BACCALAUREATE CERTIFICATE IN CLINICAL MICROBIOLOGY

REQUIREMENTS

The following requirements must be fulfilled: 13 credits in required courses.

Code	Title	Credits
Required		
MLS 4119	Parasitology, Mycology, and Virology	

MLS 4121	Applied Microbiology
MLS 4164	Clinical Microbiology Practicum
MLS 4179	Microbiology Laboratory Operations

POST-BACCALAUREATE CERTIFICATE IN HEMATOLOGY FOR MEDICAL LABORATORY SCIENCE

The online post-baccalaureate certificate in hematology for medical laboratory science is designed for students looking to be at the forefront of blood-related disease detection and treatment. Students learn to collect and test blood and its elements, establish procedures vital to the processing of these blood samples, and use the latest biomedical instruments and molecular techniques to investigate and determine the causes of disease.

Completion of this certificate qualifies students to take the Technologist in Hematology (H) exam offered by national certifying agencies. Students who complete this certificate program learn to:

- Apply principles of traditional and molecular laboratory procedures to perform diagnostic analyses.
- Correlate laboratory and quality control data to assess patient test results.
- Apply knowledge of laboratory science principles as they relate to human disease diagnosis.
- Maintain a safe work environment.
- Comply with laboratory safety regulations and regulatory policies.
- Apply ethical decision making to issues related to clinical laboratory practice.

POST-BACCALAUREATE CERTIFICATE IN MEDICAL LABORATORY SCIENCE

In the post-baccalaureate certificate in medical laboratory science program, students complete required courses either on a full- or part-time basis. Courses in the major are designed to broaden the student's foundation in the sciences in preparation for the clinical phase of the program. All courses are taken through distance learning, with the exception of the four months of clinical practica. The clinical practica are usually taken on a full-time basis upon completion of didactic coursework. Students typically are in a clinical laboratory eight (daytime) hours per day, five days per week. Students must be able to fulfill the necessary time requirement for the practica. Visit the program website (<https://smhs.gwu.edu/medical->

[laboratory-sciences/programs/certificate/curriculum/mls/](#)) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits in required courses, including the practica.

Code	Title	Credits
Didactic courses		
MLS 4141	Immunology and Serology	
MLS 4145	Clinical Biochemistry I	
MLS 4146	Clinical Biochemistry II	
MLS 4116	Clinical Bacteriology I	
MLS 4117	Clinical Bacteriology II	
MLS 4119	Parasitology, Mycology, and Virology	
MLS 4130	Hematology I	
MLS 4131	Hematology II	
MLS 4158	Laboratory Management and Operations	
MLS 4150	Immunohematology	
MLS 4151	Molecular Diagnostics	
MLS 4159	Capstone Seminar	
Practicum courses		
MLS 4160	Blood Bank Practicum	
MLS 4161	Clinical Biochemistry Practicum	
MLS 4162	Hematology Practicum	
MLS 4164	Clinical Microbiology Practicum	
MLS 4165	Urinalysis Practicum	
MLS 4166	Coagulation Practicum	

POST-BACCALAUREATE CERTIFICATE IN MICROBIOLOGY FOR MEDICAL LABORATORY SCIENCE

The online post-baccalaureate certificate in microbiology for medical laboratory science is designed for those seeking to advance their career and become board certified as a laboratory technologist. Program participants learn to analyze blood, urine, tissue and other body specimens to detect,

diagnose and treat disease, as well as the latest molecular techniques to investigate and determine the causes of disease.

Coursework may be completed on a full- or part-time basis. The clinical practicum is usually taken on a full-time basis upon completion of didactic coursework. Program participants are typically in a clinical laboratory eight hours per day (daytime hours), five days per week. Students must be able to fulfill the time requirement for the practicum*.

The certificate program teaches students what they need to qualify to sit for the ASCP Medical Laboratory Scientist (MLS) exam*.

Those who complete the program coursework and hands-on practicum will be prepared to:

- Apply principles of traditional and molecular laboratory procedures to perform diagnostic analyses.
- Correlate laboratory data and quality control data to assess patient test results.
- Apply knowledge of laboratory science principles as they relate to human disease diagnosis.
- Maintain a safe work environment.
- Comply with laboratory safety regulations and regulatory policies.
- Apply ethical decision making to issues related to clinical laboratory practice.

REQUIREMENTS

The following requirements must be fulfilled: 19 credits in required courses, including the practicum.

Code	Title	Credits
Required		
MLS 4116	Clinical Bacteriology I	
MLS 4117	Clinical Bacteriology II	
MLS 4119	Parasitology, Mycology, and Virology	
MLS 4141	Immunology and Serology	
MLS 4151	Molecular Diagnostics	
MLS 4158	Laboratory Management and Operations	
MLS 4164	Clinical Microbiology Practicum	

*Clinical rotations are completed at an approved clinical site and vary in length, lasting between one to four weeks each.

Visit the program website (<https://smhs.gwu.edu/medical-laboratory-sciences/programs/certificate/curriculum/microbiology/>) for additional program information.

POST-BACCALAUREATE CERTIFICATE IN MOLECULAR DIAGNOSTIC SCIENCES

Given the rise of commercialized, at-home DNA testing kits and recently proven medical capabilities particularly in cancer diagnosis and treatment, the need for diagnostic molecular scientists who can ethically and properly manage the challenges of molecular testing and the data it provides is great.

The post-baccalaureate certificate in molecular diagnostic sciences is designed to help students launch their laboratory careers with a curriculum dedicated to the up-and-coming field of molecular diagnostic testing. This online program gives students the knowledge and hands-on experience to work with DNA, RNA, proteins, and lipids to detect, diagnose, and monitor disease and select optimal therapies.

Program participants learn the specific clinical laboratory techniques to detect and identify biomarkers at the nucleic acid levels in major areas of medicine including genetic disorders, infectious diseases, cancer, pharmacogenetics, and identity testing. Through a series of online coursework and a clinical practicum, they complete the certificate ready for a career in helping people get well through effective testing and diagnostics.

Graduates of the molecular diagnostic science certificate program are prepared to work as technologists in a diagnostic molecular laboratory, public health laboratory, research institution, law enforcement agency, the molecular section of hospital laboratories, reference laboratory, biotechnology firm, or pharmaceutical company. They are prepared to:

- Take the Molecular Biology (MB) Board of Certification examination offered by the American Society for Clinical Pathology (ASCP).
- Explain the methods of collection, transport, and handling of various specimen types for molecular analysis.
- Apply molecular-based testing for laboratory utilization and clinical decisions for patient/client outcomes.
- Implement preventive and corrective maintenance programs for equipment and assays.
- Troubleshoot and evaluate appropriate actions for problem resolution.

REQUIREMENTS

The following requirements must be fulfilled: 24 credits in required courses.

Code	Title	Credits
MLS 4158	Laboratory Management and Operations	

MLS 4170	Introduction to Molecular Biology
MLS 4171	Human Genetics
MLS 4172	Molecular Diagnostics Capstone
MLS 4217	Molecular Techniques
MLS 4242	Applications of Molecular Testing
MLS 4266	Molecular Diagnostics Practicum

POST-BACCALAUREATE CERTIFICATE IN PRE-MEDICINE

The post-baccalaureate pre-medicine program offers two tracks for individuals who want to pursue a career in medicine, but have not taken core science courses. Through personalized advising, standardized test (MCAT or GRE) preparation, and access to clinical and research experiences, the program prepares graduates to successfully apply to medical school or a physician assistant (PA) program. Each track is an intensive year-long, face-to-face, cohort program offered at the GW Virginia Science and Technology Campus (VSTC) in Ashburn, VA.

The one-year program is designed to provide future health professionals with foundational coursework, standardized test preparation, and access to real-world experience necessary for a successful medical school or PA program application. Students who successfully complete the program will receive a post-baccalaureate pre-medicine certificate.

REQUIREMENTS

The post-baccalaureate certificate in pre-medicine is designed to provide students with the foundational coursework, standardized test preparation, and access to real-world experience necessary for a successful medical school application. This full-time program, which can be completed in 12 months, is offered at GW's Virginia Science and Technology Campus (VSTC). Visit the program website (<https://smhs.gwu.edu/postbac-premed/>) for additional program information.

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
HSCI 3101	General Chemistry I	
HSCI 3102	General Chemistry II	
HSCI 3103	Organic Chemistry I	
HSCI 3105	Biochemistry	

HSCI 3201	Biology I
HSCI 3202	Biology II
HSCI 3301	Physics I
or HSCI 3501	Human Anatomy and Physiology I
HSCI 3302	Physics II
or HSCI 3502	Human Anatomy and Physiology II
HSCI 3401	Current Topics in Health Care I
HSCI 3402	Current Topics in Health Care II
Electives	
3-4 credits of elective coursework:	
HSCI 2503	Survey of Medical Terminology
HSCI 3104	Organic Chemistry II
HSCI 3107	Introduction to Biochemical Pharmacology
HSCI 3117	Principles of Biostatistics for Health Sciences
Other elective courses may be approved by the program.	

SCHOOL OF NURSING

Dean P. Jeffries

Senior Associate Dean for Academic Affairs P. Slaven-Lee

Assistant Deans for Programs M. Echevarria, K. Griffin, C. Padovano, M. Tanner

Established in 2010, the George Washington University School of Nursing (GW Nursing) has a proven record of innovation, entrepreneurship and leadership. GW Nursing educates and inspires nurses to provide high-quality, compassionate, person-centered health care. It develops leaders who actively engage in health promotion, patient advocacy, and health care innovation, and prepares nurse educators to pursue quality and advance the profession.

GW Nursing programs include the bachelor of science in nursing (BSN), master of science in nursing (MSN), doctor of nursing practice (DNP), doctor of philosophy in the field of nursing (PhD), and post-master's and graduate certificates. These programs emphasize the integration of nursing practice, research and policy with a strong focus on solving practical problems. This approach promotes strong nursing practice and leadership skills in GW Nursing graduates.

Vision

Compelled by the belief that all people deserve quality health care, we aspire to be trusted advocates for the advancement of societal well-being in the clinic, community and statehouse.

Mission

Prepare leaders and providers to improve the health of all people by leveraging our presence in the nation's capital.

Diversity Statement

We cultivate excellence in teaching, learning, research and service through equal access to resources, opportunities and advancement for all members of our community. We foster a culture in which we acknowledge, discuss and address privilege to increase success among marginalized people. Our community is committed to the promotion of equity and social justice.

Values

GW Nursing supports and upholds GW's values, which guide our students, faculty, and staff to strengthen and improve our community. These values include:

- Integrity. We are honest and fair in our words and actions
- Collaboration. We achieve more by engaging others in shared processes and decision-making.
- Respect. We value people as individuals and treat them with fairness, compassion and care.
- Excellence. We achieve distinction through knowledge and innovation.

- Openness. We are accessible, receptive and share information freely.
- Diversity. We value and include people from different cultures, backgrounds and perspectives in the pursuit of our common goals.
- Courage. We encourage risk-taking, learning from failure and perseverance in our pursuit of excellence.

Accreditation

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Schools. The BSN, MSN, DNP and post-graduate advanced practice registered nurse certificate programs are accredited by the Commission on Collegiate Nursing Education (<https://www.aacnursing.org/CCNE/>). The BSN program is approved by the Virginia Board of Nursing (<https://www.dhp.virginia.gov/Boards/Nursing/>) and the MSN and DNP programs are approved by the District of Columbia Board of Nursing. (<https://dchealth.dc.gov/bon/>)

REGULATIONS

Admission

To be considered for admission to any GW Nursing program, an applicant must complete the online application and pay an \$80 fee on the TargetX (https://gw.force.com/TX_SiteLogin/?startURL=%2FTargetX_Portal__PB) platform application. Unofficial transcripts must be submitted from each academic institution attended, regardless of whether credit was earned. Detailed application information is available on the school website at nursing.gwu.edu. Applicants should refer to the individual program descriptions for details on prerequisites and supporting documentation, which varies by program. It is the responsibility of applicants to ensure that all required application materials are submitted by the designated deadlines. Official copies of all transcripts are required upon matriculation. All records become the property of GW Nursing and are not returned. In addition, admitted applicants may need to submit information from a criminal background check, drug screen, physical examination and evidence of required immunizations and health insurance coverage depending on the program option.

Conditional Admission

Admission with conditions may be offered at the discretion of the admissions committee and the program dean. The terms of admission are outlined in the letter of admission from GW Nursing. Students enrolled in clinical-based programs must complete a criminal background check and drug screen prior to enrollment in a clinical course. Criminal background checks and drug screens are conducted through CastleBranch® (<https://www.castlebranch.com/>). Students matriculating in clinical programs must also complete the pre-clinical

requirements outlined in the Clinical Compliance Management section of the GW Nursing Bulletin.

Advance Tuition Deposit

Upon notification of admission, the student is required to officially accept the offer of admission on the TargetX (https://gw.force.com/TX_SiteLogin/?startURL=%2FTargetX_Portal__PB) platform and submit an advance tuition deposit of \$500.00. The deposit is credited toward tuition and is nonrefundable. Failure to pay this deposit may result in the revocation of a student's offer of admission.

International Applicants

International applicants should refer to related policies on the GW Bulletin. Applicants whose native language is not English or who are not citizens of countries where English is an official language must submit test scores from either Test of English as a Foreign Language (TOEFL) or academic International English Language Testing System (IELTS). The following are the minimum scores for admission consideration:

- TOEFL: 600 on paper-based; 100 on Internet-based
- Academic IELTS: an overall band score of 7.0, with no individual band score below 6.0

The language test requirement may be waived for applicants who hold a degree from an accredited college or university located in a country in which English is the official language and also the language of instruction at the institution.

U.S. Citizens Living Abroad

GW Nursing welcomes applications from citizens of the United States who are living abroad. Students living abroad are required to attend all simulation-based learning events on campus that are included in the plan of study. Nurse practitioner students living abroad are expected to complete required clinical hours with a minimum of three different clinical preceptors. Clinical and practicum placements must be approved by the program director and the assistant dean for the MSN or DNP program. Students who fail to meet clinical objectives may be required to travel to the U.S. for additional remediation and supervision prior to program completion.

Non-Degree Seeking Students

A student who wishes to take individual courses at GW Nursing must obtain permission to register as a non-degree seeking student. The application should be submitted on the TargetX (https://gw.force.com/TX_SiteLogin/?startURL=%2FTargetX_Portal__PB) platform. The assistant dean of student affairs in conjunction with the appropriate program dean determines whether the applicant will be granted permission to register as a non-degree seeking student. Permission to take individual courses, if granted, is generally limited to a total of 6 credits of non-clinical coursework, excluding the GW Nursing-offered undergraduate prerequisite courses. Admission to take courses as a non-degree seeking

student does not guarantee admission to any GW Nursing academic program.

Readmission

Students who were previously registered in a GW Nursing program but did not register during the immediately preceding semester (summer sessions excluded) must apply for readmission. Students who have attended other academic institutions while not enrolled at GW Nursing must have official transcripts sent directly to the GW Nursing Office of Student Affairs from each institution attended. Applications for readmission are considered based on regulations currently in effect. Upon readmission, the student is subject to the regulations and requirements in place at the time of readmission. Readmission is not guaranteed.

Change of Specialty

A change of specialty request is treated like a new application for admission. The student must complete the same application process and meet the same deadlines as other prospective students. Requests are considered during the normal admission cycle and occur only during the specialties' regular admission term. There may be circumstances when the program director can make an exception to the timeline, in consultation with the program dean and Assistant Dean of Student Affairs. All deadlines for program- or track-specific clinical placement deadlines apply. Students already enrolled at GW Nursing do not receive preferential treatment in the selection process; their applications are considered along with all other applicants.

Student Progression

Course Withdrawal (p. 1103)

After the fourth week of classes, a dropped course is considered a withdrawal and a notation of *W* will appear on the transcript. Students may withdraw three weeks prior to the last day of the course. Course start date and end dates may be found on the Schedule of Classes (<https://my.gwu.edu/mod/pws/>). <https://my.gwu.edu/mod/pws/>

Leave of Absence

A leave of absence (LOA) is a temporary period of non-attendance available to continuing students. A student who must interrupt active pursuit of the degree may petition the Senior Associate Dean for Academic Affairs, through the assistant/associate dean of the respective program, for an LOA for a specified period of time, limited to a maximum of one calendar year. The LOA must be requested and approved by submitting the Leave of Absence and Continuous Enrollment Registration form (<http://nursing.gwu.edu/forms/>) to the program director and assistant dean of the respective program on or before the first day of the term in which the leave of absence is to be taken, and the date of return from the LOA must also be recorded on this form. The period of time designated as an LOA does not count toward the time of completion of the respective program. If the request is

approved, the student must register for absence LOA in each semester, following regular registration procedures.

Degree candidates who discontinue their studies without being granted an LOA and students granted leave who do not return to active study at the close of the period of approved absence must reapply for admission and are subject to the regulations and requirements in effect when they reenroll. The right to use university facilities is suspended while the leave is in effect. If required courses are not available at the time of a student's return from an LOA, the student will be placed on continuous enrollment status for the semester.

Return from Leave of Absence

Students returning from LOA must complete a Return from Leave of Absence (<http://nursing.gwu.edu/forms/>) form. If the program director imposes any conditions on the student's return from an LOA, they communicate the conditions to the student in writing and send copies to the Assistant Dean for Student Affairs and the Director of Student Services.

A hold is placed on the student's registration until the program director confirms in writing to the Director of Student Services that all conditions have been met for the student's return. If no conditions have been imposed by the program director for return from an LOA, students are not required to receive approval to return if they are returning within the predetermined period. Exceptions to this LOA policy must be approved by the assistant program dean in consultation with the Senior Associate Dean for Academic Affairs and the Assistant Dean of Student Affairs.

Transfer Credit

Undergraduate Students

Advanced standing may be awarded for appropriate non-nursing coursework completed at other accredited institutions, provided minimum grade requirements have been met. The minimum acceptable grade is 'C' for coursework to be applied toward an undergraduate degree. GW Nursing reserves the right to determine course equivalency and degree applicability. Students awarded advanced standing may need to take additional courses to satisfy credit requirements for degree conferral. BSN students may not transfer any nursing course to GW Nursing. Applicants or admitted students are counseled by the program dean and/or student affairs staff that nursing courses completed at other academic institutions are not eligible for transfer into their GW Nursing program of study. Up to nine 9 credits in the GW Nursing BSN program are eligible to be applied to the MSN program. The completed credits are eligible to be used for the graduate program within five years of graduation. Students completing the registered nurse to bachelor of science in nursing option may have up to nine 9 credits applied to the MSN program at GW Nursing.

Graduate Students

Up to 6 credits of coursework may be accepted as transfer credit for graduate students, provided the coursework was completed within the past five years at an accredited college or university with a minimum grade of B. A limited amount of

additional transfer credit may be approved upon petition to the assistant dean for the MSN or DNP program. GW Nursing reserves the right to determine course equivalency and degree applicability.

Degree candidates who are currently enrolled at this institution and plan to take courses at other accredited institutions for transfer credit must secure prior approval from the assistant dean for the MSN or DNP program and the Senior Associate Dean for Academic Affairs.

Gap Analysis

Applicants to certificate and graduate programs should request a gap analysis at the time of their application. GW Nursing gap analysis is performed by the director of the certificate, MSN or DNP specialty in which the student is enrolled to determine courses necessary to complete the degree or certification requirements. The gap analysis is part of the student's permanent record.

Financial Regulations

GW Nursing adopted the following financial regulations for the academic year covered by this Bulletin. Costs are expected to increase in subsequent years. Visit the University Financial Fees and Regulations website (<http://bulletin.gwu.edu/fees-financial-regulations/>) for additional information.

Drop-Refund Schedule

Drop-Refund schedule for on-campus students (BSN only)

Withdrawal	Percentage
On or before the end of the first week of classes	90%
On or before the end of the second week of classes	60%
On or before the end of the third week of classes	40%
On or before the end of the fourth week of classes	25%
After the fourth week of classes	None

Drop-Refund schedule for off-campus students (online)

Withdrawal	Percentage
On or before the end of the second week of classes	90%
On or before the end of the fourth week of classes	50%
After the fourth week of classes	None

Drop-Refund Schedule for Oregon Residents (Online Courses Only)

Oregon residents enrolled in an online education course are allowed a modified tuition refund policy in order to meet Oregon State Mandate OAR 583-030-0035(18)(c). An Oregon student who withdraws from an online course is eligible for a partial refund through the middle week of the term. Refunds are based on unused instructional time and are prorated on a weekly basis. Students must be current residents of Oregon at the time of course registration and withdrawal to be eligible for this modified refund policy.

Fall and Spring term (15 weeks) for (Oregon Residents Only)

Withdrawal	Percentage
During the first week of classes	100%
On or before the end of the second week of classes	87%
On or before the end of the third week of classes	80%
On or before the end of the fourth week of classes	74%
On or before the end of the fifth week of classes	67%
On or before the end of the sixth week of classes	60%
On or before the end of the seventh week of classes	50%
On or before the end of the eighth week of classes	50%
After the eighth week of classes	None

Summer session (10 weeks), Oregon Residents

Withdrawal	Refund
During the first week of classes	100%
On or before the end of the second week of classes	80%
On or before the end of the third week of classes	70%
On or before the end of the fourth week of classes	60%
On or before the end of the fifth week of classes	50%
After the fifth week of classes	None

Refund policies of the university are in conformity with guidelines for refunds adopted by the American Council on Education. Federal regulations require that financial aid recipients use such refunds to repay financial aid received for attendance that semester. This policy applies to institutional aid as well.

In no case is tuition reduced or refunded because of absence from classes. Authorization to withdraw and certification for work done is not given to a student who does not have a clear financial record.

Financial Aid

GW offers financial assistance to all eligible students from a variety of resources. Financial aid consists of awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans and employment based on academic achievement and demonstrated financial need. GW Nursing scholarships are only applicable to tuition and must be accepted for the term in which they were offered. Scholarships cannot be deferred to future semesters.

Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable to the extent that it exceeds the allowable costs of tuition, fees and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants or awards from more than one source, the

combined amount may not exceed tuition charges; institutional aid is adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who are at least half-time, meet the minimum grade-point average for particular awards and are not financially encumbered by any other office of the university. Applications for institutional or federal aid may not be processed if the relevant tax returns have not been filed in accordance with the IRS Code. Documents submitted as part of aid applications become the property of GW and may not be returned. Federal regulations require that GW report suspected cases of fraud or misrepresentation to the appropriate federal, state and local authorities.

Information on financial aid is assumed to be accurate at the time the current academic year GW Bulletin is published. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

Health and Safety

Health and Accident Insurance

All GW students are required to have health and accident insurance. Students who fail to maintain such insurance may be placed on LOA without tuition refund. Undergraduate students are automatically enrolled in GW's student health insurance program through Aetna. Students who have acquired their own insurance must waive the GW student health insurance each academic year and have this item removed from their bill. Graduate students must submit verification of health insurance coverage to the GW Nursing Clinical Placement Team. (<https://nursing.gwu.edu/directory/>)

Verification of Health Status

GW Nursing requires all students to complete a full physical examination within twelve months prior to the beginning of clinical courses.

Compliance with HIPAA and OSHA Guidelines

The sites at which students pursue their clinical experience must comply with federal guidelines for the education of employees regarding prevention of the spread of bloodborne pathogens and patient privacy; therefore, such sites require that all students provide evidence of relevant annual training. Students must complete the required university module on HIPAA.

Immunization Requirements

It is the law in the District of Columbia that all students under the age of 26 have a record on file with GW Medical Services (<https://studenthealth.gwu.edu/>) documenting immunity to measles, mumps, and rubella (two immunizations with the initial dose given after the first birthday or positive titers), varicella (chickenpox—by immunization, documented history of disease, or positive titers), hepatitis B series, meningococcal vaccine (or

meningitis waiver), and a current tetanus/diphtheria booster (within 10 years prior to the beginning of the semester).

In addition, GW Nursing requires all clinical students to submit verification of health and immunization status prior to commencing any clinical coursework. All undergraduate and graduate students in clinical programs must submit the required documentation to Castle Branch (<https://www.castlebranch.com/>). All students must have a hepatitis screening test (see immunization policy (<https://registrar.gwu.edu/vaccination-requirements/>)). Students are responsible for providing proof of immunity to measles, mumps, rubella, and varicella by titer. Students must show documentation of Tdap (Tetanus, diphtheria, acellular pertussis) within the past seven years. Skin testing for tuberculosis exposure (PPD) is required on an annual basis. Annual influenza Immunization is required. GW Medical Services is available to provide any needed inoculations on a fee-for-service basis.

Undergraduate students who have not provided proof of necessary immunization by the end of the second week of classes may be removed from classes and are not permitted to register for the subsequent semester until such proof is provided. Graduate students are not permitted to enroll in clinical courses without completion of immunization requirements.

The sites at which students pursue their clinical experience must comply with federal guidelines for the education of employees regarding prevention of the spread of blood borne pathogens and patient privacy; therefore, such sites require that all students provide evidence of relevant annual training. Students must complete the required university module on HIPAA.

Academic Regulations

Accommodations for Disability

Reasonable accommodations are made for applicants with disabilities who can meet the requirements noted below after review by the GW Office of Disabilities Services. These accommodations must be accomplished without altering the essential requirements of the nursing curriculum. Inability to meet the technical standards throughout program enrollment necessitates further review which may delay or terminate progression and/or enrollment in the program.

Any need for special accommodations must be addressed specifically by the student with the GW Office of Disability Services. Only the GW Office of Disability Services can recommend accommodations or state the specific accommodations that faculty members will provide. Coursework undertaken prior to the student's application and approval for special accommodation is not subject to special accommodation. Such accommodations are not applied retroactively to completion of that process.

Technical and Academic Standards for Nursing Students

Technical standards are a necessary component to the complex discipline of nursing that all students must meet with or without reasonable accommodations. Students wishing to enter GW Nursing bachelor of science in nursing (BSN), master of science in nursing (MSN) and doctor of nursing practice (DNP) programs must demonstrate that they can meet these technical standards and continue to do so throughout their education program.

GW Nursing is committed to equal access for all persons in its programs, facilities, and employment without regard to race, color, religion, national origin, sex, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. The University abides by the Americans with Disabilities Act, Section 504 of the Rehabilitation Act of 1973 and other applicable statutes and regulations relating to equality of opportunity.

GW Nursing curricula leading to the eligibility for licensure as a registered nurse or advanced practice registered nurse require students to engage in diverse, complex, and specific experiences. Cognitive, affective, psychomotor, physical, and social abilities are required to satisfactorily perform these functions, which are essential to the successful completion of requirements for GW Nursing degree programs (BSN, MSN, DNP) and post-master's certificates. These abilities also are necessary to ensure the health and safety of patients, self, faculty and other healthcare providers. As outlined below, these functions comprise the technical standards performance requirements for students.

Technical standards include, but are not limited to, the following:

Motor Skills

- General: The student must have motor functions sufficient for the execution of movements needed to provide general care and treatment to patients in all health care settings.
- Specific: Student must possess the motor skills necessary to executing assessment and therapeutic procedures such as inspection, palpation, percussion, auscultation, and other diagnostic maneuvers and procedures. Such actions require coordination of both gross and fine muscular movements, equilibrium, and functional uses of the senses of touch, vision and hearing.
- Specific: The student must be able to perform basic life support (including CPR), transfer and position patients, and position and re-position self around patients. The student must also be able to operate equipment typically found in the health care environment (IV pumps, cardiac monitor, and electric and manual blood pressure equipment, safe patient handling equipment, etc.).

Sensory/Observation

- General: The student must be able to acquire information presented through demonstration and experience in the basic and nursing sciences.
- Specific: The student must be able to observe the patient accurately, at a distance and close at hand, and observe nonverbal communications when performing nursing assessments and interventions or administering medications. The student must be able to perceive the signs of disease and infection as manifested through physical examination. Such information may be derived from visual inspection and images of the body surfaces, palpable changes in various organs and tissues, and auditory information (patient voice, heart tones, bowel and lung sounds, etc.)

Communication

- General: The student must have the ability to communicate effectively and sensitively with other students, faculty, staff, patients, family, and other professionals.
- Specific: The student must be able to express their ideas and feelings clearly and demonstrate a willingness and ability to give and receive feedback. The student must be able to convey or exchange information at a proficiency level sufficient to obtain a health history, identify problems presented, explain alternative solutions, and give directions during treatment and post-treatment. The student must be able to effectively communicate in English through verbal, written, and electronic formats, with the ability to retrieve information from various sources of literature and computerized databases. The student must be able to communicate verbally in English in classroom presentations, seminars, simulation, practicum sites, practicum conferences, and online formats. The student must be able to process and communicate information on the patient's status with accuracy in a timely manner to members of the health care team. The appropriate communication also may rely on the student's ability to make a correct judgment seeking supervision and consultation in a timely manner.

Cognitive

- General: The student must be able to measure, calculate, reason, prioritize, analyze, integrate, and synthesize information and act with integrity and judgment (ability to manage impulsivity). The student must have the ability to sustain attention and memory to maintain patient safety.
- Specific: The student must be able to read and comprehend extensive written materials. The student also must be able to evaluate and apply information and engage in critical thinking in the classroom, lab, and clinical setting within the time constraints unique to each setting.

Behavioral/Emotional

- General: The student must possess the emotional health required for the effective use of their intellectual abilities, the exercise of good judgment, and the prompt completion

of all responsibilities attendant to the nursing care of patients and families.

- Specific: The student must be able to maintain mature, sensitive, and effective relationships with patients, students, faculty, staff, and other professionals in all circumstances, including highly stressful situations. They must have the emotional stability to function effectively under stress and to adapt to an environment that may change rapidly without warning and/or in unpredictable ways. The student must be able to experience empathy for the situations and circumstances of others and effectively communicate that empathy. They must know how their own values, attitudes, beliefs, emotions, and experiences affect their perceptions and relationships with others. The student must be able and willing to examine their behavior when it interferes with productive individual or team relationships. The student must possess skills and experience necessary for effective and harmonious relationships in diverse academic and work environments.
- Specific: The student must be able to meet School of Nursing attendance requirements. The student must be able to satisfy all requirements set forth by clinical affiliation agreements as well as any additional requirements of any clinical setting. The student must uphold professional nursing standards related to the student's scope of practice.

Professional Conduct

- General: The student must possess the ability to reason morally and practice nursing in an ethical manner.
- Specific: The student must be willing to learn and abide by professional standards of practice. They must possess attributes that include compassion, empathy, altruism, integrity, honesty, responsibility, and tolerance. The student must be able to engage in patient care delivery in all settings and be able to deliver care to all patient populations, including, but not limited to, children, adolescents, adults, individuals with disabilities, medically compromised patients, and vulnerable adults.

Scholarship Requirements

All students must maintain satisfactory academic progress in attempted coursework to be eligible to continue enrollment in their program. Undergraduate students must maintain a minimum grade-point average of 2.8 during their degree program and receive no more than one notation of *Z* or *W* in any given semester. A minimum grade of *B* is required in clinical courses and a minimum grade of *C* is required in didactic courses.

Graduate students must maintain a minimum grade-point average of 3.0 (3.3 for DNP) during their degree program and receive no more than one notation of *Z* or *W* in any given semester. A minimum grade of *B* is required in clinical courses and a minimum grade of *C* is required in didactic courses. Students must also earn a minimum grade of *B* in NURS 6220, NURS 6234, and NURS 6222. For DNP and PhD students a

minimum grade of *B* is expected in every course, including electives.

Although transfer credit may be assigned, courses taken at other institutions are not considered in computing the grade-point average. Symbols that may appear on the transcript include *CR* (Credit); *AU* (Audit) *P* (Pass); *NP* (No Pass); *I* (Incomplete); *IPG* (In Progress); *W* (Authorized Withdrawal); and *Z* (Unauthorized Withdrawal). These symbols are not included in determining the GPA. A student who earns a grade below *B* in a clinical course cannot progress in the clinical portion of the program until that course is successfully completed. Both grades remain on the student's transcript and are calculated in the final grade-point average.

Time to Program Completion

Students admitted to the GW Nursing BSN program are expected to complete all program requirements and graduate in four semesters, including summer sessions, from the point of matriculation. If a student falls out of progression because of a course failure or course withdrawal, the student will have a total of six semesters to complete all degree requirements and graduate. If the student does not graduate within six semesters, they are subject to academic dismissal from the program. These time limits do not apply to students on approved LOAs and/or those who are deployed for military duty.

Students admitted to a GW Nursing MSN program are allowed no more than four and a half years (thirteen semesters, including summer sessions) from the point of matriculation to complete all degree requirements and graduate. Students admitted to the GW Nursing APRN Certificate Program are allowed no more than two and a half years (eight semesters, including summer sessions) to complete the AGPCNP or FNP Certificate; and three years (six semesters, including summer sessions) to complete the AGACNP or PHMNP certificate. These time limits do not apply to students on approved LOAs and/or those who are deployed for military duty.

Students admitted to a GW Nursing DNP program who entered through the post-BSN to DNP pathway are allowed no more than seven years (twenty-one semesters, including summer sessions) from the point of matriculation to complete all degree requirements and graduate. Students who entered through the post-MSN to DNP pathway are allowed no more than five years (fifteen semesters, including summer sessions) from the point of matriculation to complete all degree requirements and graduate. These time limits do not apply to students on approved LOAs and/or those who are deployed for military duty.

Students admitted to the GW Nursing PhD program must have their doctoral dissertation written and defended within seven years (21 semesters, including summer sessions) from the point of matriculation. Exceptions to the seven-year limit are rarely given and only with compelling evidence that the student has made all practical efforts to complete within seven years. A student must be admitted to candidacy, which follows

successful PhD dissertation defense, within four years (twelve semesters, including summer sessions) after matriculation in the PhD program and at least one academic year before the date on which the degree is to be conferred. The student must complete all program requirements within three years (nine semesters, including summer sessions) following admission to candidacy.

If it becomes apparent that a student will not complete all degree requirements and graduate within the time allowed, the student may petition GW Nursing for an extension of time to complete their degree. To request an extension of time, students must complete a Request for Policy Exception (<https://nursing.gwu.edu/forms/>) form and submit the form to their program dean for review. If the request is approved, the student must maintain appropriate registration during the authorized period of the extension. An LOA is not permitted during the approved extension period.

Academic Probation

Undergraduate students who fail to achieve a cumulative GPA of 2.8, or who have more than one notation of *Z* or *W* in each semester, are placed on academic probation for a period of one semester. Students on academic probation are required to meet with their academic advisor to develop an Academic Success Plan. Students must submit the Academic Success Plan to their appropriate program dean and meet with their academic advisor prior to registration for the next semester to ensure progress is being made. While on probation, a student must achieve at least a 2.8 term GPA in each subsequent semester, be continuously enrolled or on an approved leave of absence or continuous enrollment, and not receive any unsatisfactory course grades as outlined in the Scholarship Requirements. While on probation, undergraduate students may register for no more than 13 credits per semester, unless approved by the program director and program dean.

Graduate students who fail to achieve a cumulative GPA of 3.0 (3.3 for DNP) or who have more than one notation of *Z* or *W* in each semester, are placed on academic probation for a period of one semester. Students on academic probation are required to meet with their academic advisor to develop an Academic Success Plan. Students must submit the Academic Success Plan to their appropriate program dean and meet with their academic advisor prior to registration for the next semester to ensure progress is being made. While on probation, a student must achieve at least a 3.0 (3.3 for DNP) term GPA in each subsequent semester, be continuously enrolled or on an approved leave of absence or continuous enrollment, and not receive any unsatisfactory course grades as outlined in the Scholarship Requirements.

Dismissal

A student who fails a required course must repeat the course. Students are only allowed to repeat a required course once. When a student earns an unsatisfactory grade in a required course a second time or earns two or more unsatisfactory

grades in one term the student is academically dismissed from the program. Notification of academic dismissal is communicated to the student in writing by the program dean, with copies to the senior associate dean for academic affairs, the assistant dean of student affairs and program director.

The dismissal notification letter is maintained in the official student record. It is the student's responsibility to maintain current information (address, phone number, email address, emergency contact, etc.) with GW Nursing and the University.

Additional specific conditions warranting academic dismissal include, but are not limited to:

- Two instances of academic probation.
- Failure to meet the requirements of an Academic Success Plan while on academic probation.
- Failure to complete all degree or certificate requirements within the time limit.
- Academic misconduct resulting in academic jeopardy or probation imposed as the result of a judicial board prehearing or hearing.
- Violation of professional comportment standards.
- Failure to meet the terms of a provisional admission.

Academic dismissal is final and may not be appealed. Students may reapply to the School of Nursing one calendar year from the time of dismissal.¹

Procedures on the Evaluation of Professional Comportment

Students enrolled in GW Nursing programs are required to conform to all rules, regulations and policies outlined in the GW Bulletin. In addition to the GW Bulletin, GW Nursing students must adhere to the regulations outlined below.

As members of the health care community, GW Nursing students are expected to behave in a manner consistent with the principles and obligations inherent to professional practice. Some behaviors or patterns, either during the didactic or clinical phase, may raise concerns as to the student's suitability to continue in the program of study. Inappropriate behaviors for a nursing student may include, but are not limited to, breaching patient confidentiality, using illegal drugs or abusing controlled substances, becoming sexually involved with a patient, undertaking a procedure or scope of practice beyond that of a student, disobeying or showing disrespect for others, threatening verbal or physical behavior toward others—including students, faculty or patients—showing a judgmental attitude toward patients, or revealing a lack of concern or compassion in practice. The process described below is intended to address behaviors that are unacceptable to GW Nursing and raise questions about the student's fitness for the practice of nursing.

When a problem with professional comportment (other than academic dishonesty) regarding a student is perceived, the observer communicates this concern to the relevant program

director. If the communication is verbal, it must be confirmed immediately by a signed written statement or else it is not pursued further. Upon receiving such a communication, the program director creates a confidential file in which all documents pertaining to the matter will be placed. The contents of the file are preserved for a period of time not less than five years from the date of separation or graduation from GW Nursing. Access to this file is restricted to the student under consideration, the program director, the assistant dean for the program, the Senior Associate Dean for Academic Affairs, the Dean, the Assistant Dean of Student Affairs and their staff, the GW Nursing Ad Hoc Committee, if one is constituted, and attorneys for GW and the student.

The assistant dean for the program notifies the student in writing that they have received a communication from an individual who perceives that the student has a problem with professional comportment. The notice includes a copy of these procedures. The assistant dean for the program meets informally with the student as soon as possible. At that meeting, or as soon thereafter as possible, the assistant dean for the program may do one or more of the following:

- Advise the student.
- Recommend that the student seek professional assistance, at the student's expense.
- Gather additional information through contacts with the student, their peers, faculty, professional consultants, and/or any other source deemed to have relevant information. With the student's concurrence, they may be referred for a medical, psychiatric, and/or psychological evaluation. With student consent, the written report from the health care provider will be included in the student case file.
- Refer the case to a GW Nursing Ad Hoc Committee ("Ad Hoc Committee").

An Ad Hoc Committee and its Chair is named by the assistant dean for the program. The Ad Hoc Committee, including the Chair, consists of three GW Nursing faculty members and the assistant dean of student affairs. The assistant dean for the program notifies the student, in writing, of the composition of the Ad Hoc Committee. The student is allowed ten calendar days from the mailing of this notice to object to any faculty member appointed to the Ad Hoc Committee. Such objection must be sent to the assistant dean for the program in writing. The assistant dean for the program, at their sole discretion, determines whether an objection warrants the appointment of one or more different persons to the Ad Hoc Committee. The Ad Hoc Committee investigates the allegation. The Ad Hoc Committee reviews the student's confidential file and interviews him or her.

The student under review and/or the student's advisor may attend the information gathering sessions. The information gathering sessions are transcribed. The student and/or their advisor may submit written questions to be answered by persons interviewed by the Ad Hoc Committee, but the

procedure regarding their questioning is left to the sole discretion of the Ad Hoc Committee, including whether the questions submitted by the student and/or their advisor are modified and/or posed to the persons interviewed. The student also may suggest persons be interviewed by the Ad Hoc Committee, but the decision to interview such persons is left to the sole discretion of the Ad Hoc Committee. The student may speak on their behalf and may submit other material. The student's advisor may not speak. The materials and/or testimony to be considered and the weight to be given to them are left to the sole discretion of the Ad Hoc Committee. The student and the student's advisor cannot be present when the Ad Hoc Committee meets in executive session.

Meetings of the Ad Hoc Committee are confidential. Minutes of the Ad Hoc Committee are placed in the student's confidential file upon the completion of the Ad Hoc Committee's review. The Chair and all members are required to be present for all meetings of the Ad Hoc Committee. The Ad Hoc Committee makes its final recommendation(s) to the assistant dean for the program. Such recommendation(s) are in writing and shall include findings of fact and the reasons for the recommendation(s). There is no required format for the recommendation(s). The content of the recommendation(s), including the nature and specificity of the findings and reasons, is left to the sole discretion of the Ad Hoc Committee. The Chair may review and sign the final recommendation(s) on behalf of the Ad Hoc Committee. The recommendation(s) could include, but is (are) not limited to, one or more of the following:

- Advising the student.
- Recommending that the student seek professional assistance, at the student's expense.
- Recommending conditions with which the student must comply in order to continue in GW Nursing.
- Recommending suspension from GW Nursing.
- Recommending dismissal from GW Nursing.

The Ad Hoc Committee must agree that its recommendation(s) is (are) supported by a preponderance of the evidence (more likely than not). The Ad Hoc Committee shall make an additional recommendation regarding whether the confidential file will be made part of the student's permanent academic record. The Ad Hoc Committee forwards its recommendation(s) to the Senior Associate Dean for Academic Affairs.

The Senior Associate Dean for Academic Affairs reviews the student's confidential file and the recommendation(s) of the Ad Hoc Committee. The Senior Associate Dean for Academic Affairs, at their sole discretion, may meet with the student prior to making their determination. The Senior Associate Dean for Academic Affairs takes whatever action they deem appropriate, including dismissal of the student from GW Nursing. The Senior Associate Dean for Academic Affairs informs the student in writing of their decision.

The student shall have fifteen calendar days in which to appeal the decision of the Senior Associate Dean for Academic Affairs. Such appeal shall be in writing sent to the GW Nursing Dean. The scope of this appeal is limited to the Dean or their designee's determination as to whether the procedures set forth in these procedures have been complied with. Failure to appeal the decision shall be deemed a waiver of any and all rights to challenge the Senior Associate Dean for Academic Affairs decision and shall be deemed an acceptance of the decision.

The Dean or their designee make a decision in the written record of the proceedings. Their decision is final. At any time during the process, if the student in question selects an attorney as their advisor, GW will have its attorney present. The student, therefore, is required to inform the assistant dean for the program seven days in advance of the hearing if counsel is to be present.

Evaluation of Academic Performance

Faculty members are responsible for evaluating the performance of students in a meaningful, useful and timely manner and for assigning grades on a basis that is rational, just and unbiased. The authority for assignment of grades rests with faculty members in the respective programs.

Appeal Procedures for Cases of Alleged Improper Academic Evaluation

The purpose of this process is to resolve student assertions of "cases of Alleged Arbitrary or Capricious Academic Evaluation" in the form of a course grade in the School of Nursing (SON) and in accordance with the GW Guide to Student Rights and Responsibilities.

Nature of grievances covered under this process—This policy and procedure pertains to a student assertion of arbitrary or capricious assignment of course grade (a "grade grievance"). Cases of academic dishonesty are not included here (see Statement of Student Rights and Responsibilities: Code of Academic Integrity), nor are allegations of illegal discrimination (see Statement of Student Rights and Responsibilities: Student Grievance Procedures).

Instructor responsibilities—It is the responsibility of the course instructor to provide a syllabus (or course outline) to each student in a course at the beginning of the semester that clearly sets forth the instructor's grading policy in the course. It is also the responsibility of the instructor to adhere to the grading policy stated in the syllabus, or, if changes are made, to announce and implement them in a manner that is not prejudicial to the evaluation any student receives from the course instructor.

Student responsibilities—It is the responsibility of the student to communicate clearly with the instructor and on a timely basis about any grading issues in a course. If the student is not clear about the syllabus, the grading policy or a grade on a

student assignment or other work product, the student should immediately initiate a discussion with the instructor.

Confidentiality—Students, faculty, instructors, academic administrators, and University employees shall maintain the confidentiality of matters related to grade grievances, in a manner consistent with University policies, including the Privacy of Student Records policy, and applicable privacy laws.

File retention—It shall be the responsibility of the SON Departments and Dean's Office to retain files regarding disputes beginning with a student's "Notification of Grade Grievance" filing. These files shall be retained for two academic years, and then discarded. No materials will be placed in individual student files in program offices, nor will notations be made on academic transcripts. See section above for instructor record retention requirements.

SON process: Appeal procedures for cases of alleged improper academic evaluation.

The only grounds for a grade appeal request is arbitrary and capricious grading, meaning that the grading standard was not properly applied. Arbitrary and capricious grading is considered in the event the assignment of the course grade is based upon something other than performance in the course; the assignment of the course grade is made based upon the unreasonable application of standards different from the standards that were applied to other students in that course; or when the assignment of the course grade is based upon a substantial and unreasonable departure from the written academic standards for that course. In the event a student believes the grade has been assigned in an arbitrary or capricious manner, a Grade Appeal Form (<https://nursing.gwu.edu/forms/>) may be submitted.

Students who believe that a grade or evaluation is capricious and/or arbitrary may use the following appeal procedures.

I. Attempt resolution with the relevant faculty member and the student's program director.

- a) The student must complete Section 1 of the Grade Appeal Form and submit this written appeal to the relevant faculty member within five calendar days of the time the grade is posted, with a copy to the program director.
- b) The faculty member will review the student's Grade Appeal and complete Section 2 of the form. Upon completion, the faculty member will submit the form to the program director with the student in copy.
- c) A review shall be conducted by the program director, consulting with the student and respective faculty member(s) involved with the grade or evaluation under review as the program director finds appropriate. If the program director is the faculty member who assigned the grade or evaluation under review, then a senior academic official conducts the review process.

d) Following the program director's review, the program director's decision will be input in Section 3 of the Grade Appeal Form. The completed Grade Appeal Form will be provided to the student and the faculty member.

II. Escalate the appeal to the senior associate dean for academic affairs.

- a) If a mutually satisfactory resolution is not achieved in Step 1, the student may, within five calendar days of the decision of the program director (or senior academic official, if applicable) being rendered, appeal to the senior associate dean for academic affairs.
- b) The student must submit to the senior associate dean for academic affairs a written letter of appeal, accompanied by the completed Grade Appeal Form used in Step 1 and any other supporting documentation that the senior associate dean for academic affairs permits.
- c) Appeal requests are reviewed by the senior associate dean for academic affairs, consulting with the student and all respective faculty members involved with the grade or evaluation under review, as the senior associate dean for academic affairs finds appropriate, to determine whether the grading procedures employed were fair, equitable, objective, and consistent. Appeal requests may be referred to the ASAC Progression Sub-Committee by the senior associate dean for academic affairs to provide additional guidance and recommendations.
- d) The senior associate dean for academic affairs (or delegate) will render a decision in writing to the student with the student's program director in copy. The decision of the senior associate dean of academic affairs is final.

Prerequisites and Corequisites

Students who want to take courses that have prerequisites must successfully complete prerequisites before the term in which they take the next course. When taking a course with a co-requisite, students must take the co-requisite during the same term as the course that requires it. Students should consult their plan of study and/or their syllabi for course-specific prerequisites and/or co-requisites.

Independent Study

The purpose of an independent study is to increase the student's exposure to and involvement in nursing research or practice under the direction of a faculty mentor. The student is responsible for identifying and initiating a contract with a faculty member involved in, or who has expertise in, their practice or research project area. Input from the student's advisor is required before the plan for independent study is finalized. The faculty mentor for an independent study must be qualified to teach at the appropriate level (doctoral for doctoral degrees), have expertise in the area of the independent study focus, and be an associate or regular member of the faculty. The faculty mentor can academically supervise the

independent study while the student works with the non-regular faculty. The student and faculty mentor must establish mutually agreed upon objectives and evaluation criteria. The agreement is recorded in an Independent Study Contract, and a signed copy is forwarded to the assistant dean of the student's program with a copy to the Assistant Dean of Student Affairs. Credit for independent study can vary from 1 to 3 credits per semester, depending on the program, the nature of the objectives, and requirements. Credit value is calculated as fifty to seventy clinical hours equaling 1 semester credit for practicum/clinical. One hour per week, for fifteen weeks in a semester, equals 1 semester credit for didactic coursework. At the completion of the independent study, students must meet with their faculty mentor for a final evaluation. The faculty mentor submits a grade when the student is deemed to have satisfactorily completed the independent study objectives. Independent studies may not extend beyond the semester of enrollment.

Audit

GW Nursing undergraduate students who have a cumulative grade-point average of at least 3.0 may take graduate-level non-clinical courses for audit. Written approval from the course instructor, advisor and associate deans for the MSN and DNP programs is required. Enrollment in a graduate-level course does not in any way imply subsequent GW Nursing approval for credit toward a graduate degree. Graduate-level tuition and fees apply. Students are responsible for additional costs.

Course Waiver

If a student takes a course at an institution other than GW, they must apply for a waiver to substitute a course if the course is in a GW Nursing required plan of study. The number of credits is not transferred to GW Nursing and the student will need to make up the waived number of credits. A course waiver must be requested in writing and must include justification for the request from the student's program director, who meets with the student to discuss how the waiver may affect their plan of study. For undergraduate students, the course waiver must be requested upon admission to the program and can only be for a pre-nursing course. No nursing courses can be waived based upon coursework at another institution. The student must have earned a grade of "B" or better in the course to be eligible for a waiver. MSN and DNP students must provide the program director with a course description or syllabus of the previously taken course, along with a transcript showing the grade the student received. The program director will make a recommendation regarding the waiver request. The student must then submit the program director's recommendation, waiver request, official transcript and course description to the assistant dean of their program. The advisor, the student, and program director are notified of the decision in writing. All students receiving course waivers will be required, with advisement, to take another course that will provide the appropriate number of credits to compensate for the waived course.

Relocation During Program of Study

Graduate students relocating during their program of study must contact their GW Nursing program director to discuss ramifications of moving to a state where GW Nursing does not operate or operates on a restricted basis. Students planning to relocate to a state where GW Nursing does not operate or operates on a restricted basis (LA, ND, AL, NY, TN), will not be able to complete their program of study as planned. Students should inform their program director and program associate of any planned relocation as soon as possible.

Advising and Mentoring

Each GW Nursing student is assigned a professional academic advisor in the Office of Student Affairs and a dedicated faculty mentor. The relationship is established to assure that the student is progressing satisfactorily in the program. Students enrolled in undergraduate, graduate, or certificate programs must meet with their professional academic advisor, in person or electronically, to review a program of study, listing all coursework required for the degree or certificate, including applicable transfer credit. Changes to the program of study can be made through petition to the program director. Professional academic advisors provide office hours and opportunities for advising by appointment. Should any other non-academic concerns (i.e., personal bereavement or medical issues) arise that hinders a student's academic success in their degree program, the student should first discuss the issue with their assigned professional academic advisor. The professional academic advisor may refer the student to the program director, program dean, the assistant dean for student affairs, or to one of the university services for consultation. Students may meet with their assigned faculty mentor at any point to discuss academic concerns or to solicit advice on career trajectory. Clinical MSN and BSN-DNP students are assigned a clinical experience faculty mentor to ensure successful completion of clinical requirements.

PhD advisors, mentors, and the dissertation chairperson: The advisor is assigned to the student at admission. The advisor provides guidance throughout the doctoral program and introduces students to the broader network of potential mentors. Students will form a network of formal and informal mentors, whose roles may include short-term research supervision, consultation, or dissertation committee membership. By the completion of semester four and with advisor assistance, the student will designate the dissertation chair. The primary advisor may serve as chair, or another GW faculty member may assume the role.

Changes in Course Enrollment

A student may not substitute one course for another without the approval of the program director and the assistant dean for the program. After the deadlines for adding or dropping courses, a student must obtain the permission of the course instructor, the program director, and the assistant dean for the program to withdraw from a course. Students are subject to all GW financial regulations with respect to change in

course enrollment as outlined in the GW Bulletin. Any refunds of tuition follow the guidelines related to Tuition Refunds described above.

Honor Society

The GW Nursing Phi Epsilon chapter is a chartered member of Sigma Theta Tau International, the national honor society of nursing. GW Nursing students who meet the qualifications specified by the constitution of Sigma Theta Tau are eligible for membership and may be nominated by an assistant dean for the program, faculty member or a Sigma Theta Tau member.

Graduate Student Clinical and Practicum Policies

Licensure

Graduate students, as well as RN to MSN students, must hold an active, unencumbered RN license in the state where they are completing their clinical rotation. This may require students to obtain additional RN licensure during their GW Nursing program. Students are responsible for understanding the terms and limitations of their RN license. Some states participate in the Nurse Licensure Compact (NLC) which gives multistate rights to RNs residing in a member state.

The GW Nursing Clinical Placement Team does not search the State Board of Nursing websites or NURSYS to obtain or verify a student's license. Students are not permitted to complete clinical hours in the states where GW Nursing does not operate. Students must allow adequate time before a clinical rotation to obtain any additional RN licenses for a clinical rotation and are responsible for submitting documentation to the GW Nursing Clinical Placement Team.

Students planning to complete clinical rotations outside of the United States must contact the GW Nursing Clinical Placement Team to verify licensure requirements. Any clinical hours accrued in the absence of the appropriate licensure are not counted toward the total number of hours required in the program of study.

Clinical Compliance Management

GW Nursing partners with a thorough background screening program called CastleBranch®. This service, in collaboration with the GW Nursing Clinical Placement Team, facilitates drug testing services. This service provides GW Nursing with the ability to assure safe student clinicians and keeps our clinical programs in compliance with the necessary regulations, accreditations and standards. Documentation of the following is required prior to starting clinical rotations:

- Criminal background check
- Urine drug test
- Proof of current RN license if applicable (in any and all states where you intend to complete clinical)
- Proof of current CPR certification (AHA or ARC)

- Proof of current personal health insurance (copy of health insurance card)
- Physical examination
- Immunization records: HepB, MMR, Varicella, Tdap, Seasonal flu, Meningococcal
- Annual TB test (PPD, QFT or chest X-ray if positive PPD or allergic)
- Verification of OSHA training
- Verification of HIPAA training
- Digital Photo

Students are not permitted to enter the clinical setting until all required items have been submitted to CastleBranch®. Entering the clinical setting prior to completing CastleBranch® requirements may be grounds for dismissal from their program of study. Any clinical hours accrued in the absence of required documentation are not counted toward the total number of hours required in the program of study.

Clinical Site Specific Requirements

In addition to GW Nursing clinical requirements, clinical sites may have additional requirements. Students are responsible for meeting these requirements prior to starting the clinical rotation. Students are expected to notify the GW Nursing Clinical Placement Team when all additional requirements have been met. Students are not permitted to start the clinical rotation until all site-specific requirements have been met and reported to the placement team. Any clinical hours accrued prior to meeting these requirements are not counted toward the total number of hours required in the program of study.

Clinical Rotation Data Forms and Deadlines

All nurse practitioner (NP) students are expected to submit a Clinical Rotation Data form (<http://nursing.gwu.edu/forms/>) indicating where and when they intend to start a clinical rotation, the clinical preceptor and other site-specific information. A new data form must be submitted for each rotation, regardless if the student has been with the preceptor or at the clinical site previously. Rotation data forms must be submitted by the semester deadlines posted in the Blackboard nurse practitioner community. Delay in form submission may result in a delay in the clinical placement or inability to place a student in time to meet course requirements.

Delay in Clinical Placement

Students who have not submitted a rotation data form 30 days in advance of the start of the semester are not permitted to enroll in the clinical course. Students who have not met clinical requirements and/or have not been cleared for clinical placement due to failure to secure a clinical site by the mid-semester [week five of a ten-week term; week seven of a fifteen-week term] are required to withdraw from the clinical course. A grade of "W" is awarded and the student is expected to repeat the course.

Notification of Clearance to Begin a Clinical Rotation

Once clinical requirements have been met and all required legal documents have been processed, students are notified by the GW Nursing Clinical Placement Team via email that they have been cleared to begin the clinical rotation. Clearance is sent to the student's GW email account. Permission to begin clinical may only be granted by the GW Nursing Clinical Placement Team. Students who enter the clinical setting prior to receiving clearance from the GW Nursing Clinical Placement Team may be dismissed from their program of study. Any clinical hours accrued prior to receiving clearance from the GW Nursing Clinical Placement Team are not counted toward the total number of hours required in the program of study.

Required Components of a Clinical Placement

Prior to submitting a Clinical Rotation Data form (<http://nursing.gwu.edu/forms/>), students are expected to discuss their plans for completing clinical hours with their clinical advisor. Students who have not yet been assigned a clinical advisor (those preparing to enter their first clinical course) should review the clinical requirements that can be found in the Blackboard GW Nursing nurse practitioner community. All Clinical Rotation Data forms are reviewed by faculty prior to initiation of the placement process to ensure appropriateness of the site. Clinical clearance includes the following:

- Faculty approval of site and preceptor
- A fully executed clinical affiliation agreement between GW Nursing and the clinical site
- Receipt of preceptor information
- An active, unencumbered RN license for the student in the state of the clinical site
- All GW Nursing preclinical requirements have been completed and uploaded to CastleBranch®
- All state regulatory requirements
- All site-specific requirements

Clinical Site Withdrawal

All nurse practitioner (NP) students are expected to submit a Clinical Rotation Data Form indicating where and when they intend to start a clinical rotation, the clinical preceptor data, and other site-specific information. Once a student submits a Clinical Rotation Data form (<http://nursing.gwu.edu/forms/>) to the GW Nursing Clinical Placement Team, it is the student's responsibility to notify the GW Nursing Clinical Placement Team if they no longer intend to complete clinical hours at that clinical site. In order to do so, students must complete the Clinical Site Withdrawal form (<http://nursing.gwu.edu/forms/>). Completion of this form informs the GW Nursing Clinical Placement Team that they should no longer devote resources to securing the clinical placement. GW Nursing works to enhance relationships with clinical site administrators and preceptors. Students are therefore required to notify the

clinical site directly if they no longer intend to complete clinical hours at that site. If the clinical site notifies GW Nursing that the site can no longer accept the student, a member of the GW Nursing Clinical Placement Team contacts the student directly.

Change of Preceptor

All GW Nursing graduate students must work with a licensed preceptor at an approved clinical site. The GW Nursing Clinical Placement Team reviews and verifies the credentials of all preceptors. When a student is notified of a change in the preceptor by a clinical site, they are required to complete the Preceptor Change form (<http://nursing.gwu.edu/forms/>). This form is required to:

- Change preceptor - This form should be used when the submitted preceptor can no longer precept a student and has been replaced by another preceptor at the same site.
- Add another preceptor - This form should be used when a student has more than one preceptor at the same site.
- Remove preceptor - This form should be used when the submitted preceptor can no longer precept a student and another preceptor has not yet been assigned.

The Preceptor Change form is to be used only after a Clinical Rotation Data form (<http://nursing.gwu.edu/forms/>) has been submitted for a clinical placement. Students must complete this form for any and all preceptor changes. Students may not begin working with a new preceptor until the form is reviewed and verified by the GW Nursing Clinical Placement Team. Preceptors are also required to submit information to the school. It is imperative that students notify the GW Nursing Clinical Placement Team of all preceptor changes to ensure timely and accurate clinical placement.

Formal Complaints

Purpose: provide a policy and procedure for filing a complaint arising from a person(s) internal or external to GW Nursing. All information regarding the complaint shall be kept confidential. Those investigating a complaint may only discuss it with those individuals who are immediately involved in the dispute. If GW Nursing deems a complaint to be "inappropriate" under this policy, the person submitting the complaint will be notified of a more appropriate avenue to pursue for resolution.

Non-Academic Complaint

A non-academic complaint is an allegation by a student concerning (1) a GW employee or affiliate, (2) a GW student, (3) administrative policies, procedures, regulations or requirements or (4) a service or activity.

If a student believes that they have been discriminated against on the basis of race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression in any of the policies, procedures, programs or activities of or by any individual employed by or acting in an official capacity for The George Washington University, please

see The George Washington University Guide to Student Rights and Responsibilities

Academic Complaint

An academic complaint is a formal complaint regarding a grade or evaluation of a student's performance. Faculty members are responsible for determining the curriculum of a course, for developing appropriate methods of evaluating student learning, for evaluating fairly, for upholding academic standards, and for enforcing policies concerning academic honesty. (See GW Code of Academic Integrity). To initiate a formal academic complaint, students should follow the procedures outlined in the Appeal Procedures for Cases of Alleged Improper Academic Evaluation in the GW Nursing Bulletin.

¹ Effective fall 2020, School of Nursing students can no longer appeal a dismissal. *Updated November 9, 2020.*

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science in Nursing (<http://bulletin.gwu.edu/archives/2019-2020/nursing/bs-nursing/>)
- Registered Nurse to Bachelor of Science in Nursing (<http://bulletin.gwu.edu/archives/2019-2020/nursing/rn-to-bsn/>)

MASTER'S

Master's programs

- Master of Science in Nursing in the field of adult-gerontology acute care nurse practitioner (p. 1127)
- Master of Science in Nursing in the field of adult-gerontology primary care nurse practitioner (p. 1127)
- Master of Science in Nursing in the field of family nurse practitioner (p. 1128)
- Master of Science in Nursing in the field of nurse-midwifery (p. 1129) (collaborative program between GW School of Nursing and Shenandoah University (<http://www.su.edu/nursing/nursing-graduate-programs/nurse-midwifery-programs/>))
- Master of Science in Nursing in the field of nursing leadership and management (p. 1129)
- Master of Science in Nursing in the field of psychiatric mental health nurse practitioner (p. 1130)

DOCTORAL

Doctoral programs

- Doctor of Nursing Practice in the field of adult-gerontology acute care practitioner (p. 1131)
- Doctor of Nursing Practice in the field of adult-gerontology primary care practitioner (p. 1132)

- Doctor of Nursing Practice in the field of executive leadership (p. 1133)
- Doctor of Nursing Practice in the field of family nurse practitioner (p. 1133)
- Doctor of Nursing Practice in the field of health policy (p. 1134)
- Doctor of Nursing Practice in the field of nursing practice (p. 1134)
- Doctor of Nursing Practice in the field of psychiatric mental health nurse practitioner (p. 1135)
- Doctor of Philosophy in the field of nursing (p. 1136)

CERTIFICATES

Post-Master's Certificates

- Adult-Gerontology Acute Care Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-adult-gerontology-acute-care-nurse-practitioner/>)
- Adult-Gerontology Primary Care Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-adult-gerontology-primary-care-nurse-practitioner/>)
- Family Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-family-nurse-practitioner/>)
- Psychiatric Mental Health Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-psychiatric-mental-health-nurse-practitioner/>)

Graduate Certificates

- Health Policy and Media Engagement (<http://bulletin.gwu.edu/archives/2019-2020/nursing/health-policy-media-engagement/>)
- Nursing Education (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-nursing-education/>)

FACULTY

Professors J. Geiger-Brown, P. Jeffries, D. Keepnews, A. McNelis, C. Pintz, J. Pulcini, R. Ricciardi, Y.T. Yang

Associate Professors M. Batchelor, L. Briggs, C. Cox, K. Drenkard, A. Darcy-Mahoney, S. Davis, M. Echevarria, M. El-Banna, K. Griffith, J. Hahn, K. Kesten, E. Kurtzman, M. Leslie, K. Malliarakis, A. Pericak, L. Posey, M.J. Schumann, K. Whitt, Q. Zhou

Assistant Professors C. Allen, C. Braungart, K. Dawn, M. Dowling, A. Faraz, A. Glenn, C. Hogg, C. Lang, D. Le, B. Lunsford, J. Murphy, J. Park, M. Rumble, R. Schwindt, M. Venzke, S. Wallington, G. Wiersma

Associate Research Professor D. Lupu

Assistant Research Professor E. Athey

Clinical Professor K. Wyche

Clinical Associate Professor P. Slaven-Lee, M. Tanner

Clinical Assistant Professors A. Bankole, S. Bhati, L. Cassar, R. Mance, N. Marchi, B. Mullins, A.M. O'Brien, C. Reisenberg, L. Rilko, C. Seaton, C. Toulouse

Clinical Education Instructors M. Brown, E. Choma, C. Farina, W. Shanley, K. Stevens, J. Wavelet

Research Instructors L. Wilson

Visiting Professors J. Knestricks, A. Roberson

Visiting Instructor J. Clarke, J. Walsh

Adjunct Professors K. Leoffler, N. Rudner

Adjunct Instructor E. Emard

Adjunct Clinical Professor L. Henrikson

Adjunct Clinical Instructor H. Brown, A. Parks

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NURS 3101. Ethical Foundations of Nursing. 3 Credits.

Ethical theory and principles as they relate to a variety of common ethical and moral dilemmas that challenge nursing professionals in their clinical practice.

NURS 3102. Nutrition for Health Professionals. 3 Credits.

Human nutrition fundamentals and the scientific foundation; nutritional requirements related to changing individual and family needs, food choices, health behaviors, food safety, prevention of chronic disease and nutrition-related public health in the United States and other countries.

NURS 3103. Human Anatomy and Physiology I. 4 Credits.

Fundamental structures and functions as they relate to the human body: homeostasis, anatomical language and body organization, tissues and histology, integumentary; skeletal; muscular; nervous, and endocrine systems. Students should have a basic background in introductory cell/molecular biology before enrolling.

NURS 3104. Human Anatomy and Physiology II. 4 Credits.

Fundamental structures and functions as they relate to the human body: homeostasis, anatomical language and body organization, tissues and histology, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Students should have a basic background in introductory cell/molecular biology before enrolling. Prerequisite: NURS 3103.

NURS 3105. Microbiology for Health Professionals. 4 Credits.

The structural and functional characteristics of microbes; prokaryotic, eukaryotic, and viruses, in the context of human health.

NURS 3106. Introduction to Statistics for Health Professionals. 3 Credits.

A concepts-based course introducing students to the theory, practice, and application of probability and statistics to health care research questions.

NURS 3110W. Transition into the Nursing Profession. 2 Credits.

Values and characteristics of the nursing profession in the context of history and current legal, regulatory, and ethical contexts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

NURS 3111. Health Assessment. 3 Credits.

Knowledge and skills necessary for conducting comprehensive and need-specific health assessments for individuals in both family and community contexts and determining areas in which health promotion activities should be implemented or reinforced. Corequisites: NURS 3112, NURS 3113, NURS 3118 and NURS 3119. Restricted to students enrolled in the bachelor of science in nursing program.

NURS 3112. Nursing Practice and Clinical Reasoning I: Adult and Aging Acute and Chronic Illness. 3 Credits.

Values, knowledge, and competencies at the foundation of safe, evidence-based, and professional holistic nursing care of adults with common medical and surgical needs. Restricted to students in the bachelor of science in nursing program.

NURS 3113. Clinical and Nursing Skills Lab: Adult Medical-Surgical I. 8 Credits.

Values, knowledge, skills, and competencies at the foundation of safe, evidence-based, professional, and holistic nursing care of adults with common medical and surgical needs; critical thinking and communication skills in clinical and laboratory environments. Corequisites: NURS 3111 and NURS 3118. Restricted to students in the bachelor of science in nursing program.

NURS 3114. Nursing Practice and Clinical Reasoning II: Advanced Adult Medical-Surgical. 3 Credits.

Builds on the basic concepts introduced in NURS 3112, incorporating complex, multi-system disease processes; assessing and managing clients/patients in a hospital environment; providing safe, evidence-based professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs. Corequisite: NURS 3116. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3112 and NURS 3113.

NURS 3115. Clinical and Nursing Skills Lab: Adult Medical-Surgical II. 4 Credits.

Safe, evidence-based, professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs; knowledge, skills, and competencies for assessing and managing clients/patients in a hospital environment. Restricted to students enrolled in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3118, NURS 3119 and NURS 3213.

NURS 3116. Nursing Practice and Clinical Reasoning III: Psychiatric Mental Health Nursing. 3 Credits.

Theoretical principles, concepts, and skills needed to provide safe and effective nursing interventions to clients across the lifespan who are experiencing psychiatric and mental health conditions. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118 and NURS 3119.

NURS 3117. Nursing Practice and Clinical Reasoning IV: Maternity and Women's Health Care. 3 Credits.

Nursing interventions used in health promotion, risk reduction, clinical decision making and management of women's health issues, perinatal care of mothers and infants, gynecological health, and men's reproductive health. Includes clinical experiences. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3114, NURS 3115, NURS 3116, NURS 3118, NURS 3119 and NURS 4118.

NURS 3118. Pharmacology I. 2 Credits.

The underlying principles of pharmacology and medication administration. Restricted to students in the bachelor of science in nursing program.

NURS 3119. Pathophysiology. 3 Credits.

Pathophysiology and diagnostic assessments of common disease conditions affecting individuals across the lifespan. Restricted to students in the bachelor of science in nursing program.

NURS 3120. Foundations of Professional Nursing. 6 Credits.

Basic nursing concepts and skills the beginning nurse needs to provide client- and family-centered care to diverse client populations. Prepares students to use the nursing process. Restricted to students in the BSN program.

NURS 3121. Health Assessment and Promotion. 3 Credits.

The knowledge and skills needed to conduct comprehensive and need-specific health assessments. Concepts of health promotion and disease prevention. Restricted to students in the BSN program.

NURS 3122. Principles of Safe Client Care. 2 Credits.

Client safety core concepts and values of professional nursing. Restricted to students in the BSN program.

NURS 3123. Quality Interprofessional Care of the Client. 2 Credits.

Basic concepts of improvement science in nursing and interprofessional health care. Builds on concepts of safety learned in NURS 3122.

NURS 3124. Adult and Geriatric Nursing I. 6 Credits.

Didactic/clinical course focusing on primary, secondary, and tertiary care in the adult and geriatric client. Incorporates the nursing process into the provision of client- and family-centered care. Restricted to students in the BSN program.

NURS 3125. Mental Health Nursing. 3 Credits.

Didactic/clinical course focusing on the application of theories and implementation of evidence-based care for clients with psychiatric/mental health issues. Restricted to students in the bachelor of science in nursing program.

NURS 3213. Adult Medical-Surgical Lab I. 4 Credits.

Values, knowledge, skills, and competencies at the foundation of safe, evidence-based, professional, holistic nursing care of adults with common medical and surgical needs; critical thinking and effective communication skills used in clinical and lab environments to deliver safe, evidence-based care. Laboratory fee. Corequisites: NURS 3111 and NURS 3112.

NURS 4099. Variable Topics. 1-6 Credits.

Assigned topics determined by the School of Nursing. Restricted to students with prior permission of the undergraduate division of the School of Nursing.

NURS 4109. Introduction to Perioperative Nursing. 3 Credits.

The role of the perioperative nurse and the fundamental knowledge, skills, and competencies needed to deliver safe, evidence-based, holistic care within a perioperative setting. Includes clinical experiences. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118, NURS 3119, NURS 3114, NURS 3115, NURS 3116 and NURS 4118.

NURS 4116. Children and Families. 3 Credits.

Focus on families with usual childhood issues and with children who require acute and chronic care. Working with persons of diverse backgrounds, nursing colleagues, and other members of the interdisciplinary team, students prioritize and provide nursing care in hospital and community-based settings. Includes clinical experiences. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118, NURS 3119, NURS 3114, NURS 3115, NURS 3116 and NURS 4118.

NURS 4118. Pharmacology II. 1 Credit.

Principles of pharmacology and mechanisms of action of drug prototypes used in clinical practice. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118 and NURS 3119.

NURS 4119. Patient Safety and Health Care Quality. 3 Credits.

Processes and skills needed to provide safe, quality nursing care, encompassing the five critical competencies: providing safe, patient-centered care; working in interdisciplinary teams; employing evidence-based practice; applying quality improvement; and using informatics. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3114, NURS 3115, NURS 3116 and NURS 4118.

NURS 4121. Nursing Advancement Portfolio. 15 Credits.

Collection of evidences to demonstrate student learning and competency throughout the curriculum as they relate to achievement of nursing baccalaureate program outcomes. The portfolio provides a means of organizing student accomplishments in their academic work and in their pursuit of professional career pathways.

NURS 4122. Capstone: Transition Into Professional Practice. 2 Credits.

Critically analyze, synthesize, and apply knowledge, theories, and concepts learned in the program to make the transition from nursing student to graduate nurse. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3114, NURS 3115, NURS 3116, NURS 3117, NURS 3118, NURS 3119, NURS 4116, NURS 4118, NURS 4119, and NURS 6203.

NURS 4123. Senior Practicum: Transition Into Clinical Practice. 5 Credits.

Students partner with a registered nurse in a clinical setting to synthesize and apply concepts and skills learned in previous coursework in professional practice. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3114, NURS 3115, NURS 3116, NURS 3117, NURS 3118, NURS 3119, NURS 4116, NURS 4118, NURS 4119, and NURS 6203.

NURS 4203. Dynamics of Nursing Leadership and Management. 3 Credits.

Introduction to concepts of nursing leadership and management, showcasing the importance of each, while noting the crucial differences between them.

NURS 4205. Nurse's Role in Health Care Policy. 3 Credits.

Framework for understanding the social, political, economic, and population based dimensions of U.S. health care policy using the "triad" of quality, access, and cost.

NURS 4207. Principles of Nursing Research and Evidence-Based Practice. 3 Credits.

Development of student skills in research and practice-related knowledge necessary to implement evidence-based practice. May be repeated for credit.

NURS 4217. Community and Public Health Nursing. 4 Credits.

Introduction to the principles of community and public health nursing with an emphasis on vulnerable populations. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3212, NURS 3114, NURS 3115, NURS 3116, NURS 3118, NURS 3119 and NURS 4116.

NURS 4417. Community and Public Health Nursing. 3 Credits.

Roles and responsibilities of nurses in community and population-based health. Concepts of community, public health, and health policy affecting culturally diverse and vulnerable populations locally, nationally, and globally. Identifying community health needs and appropriate primary, secondary, and tertiary prevention strategies. Restricted to students in the RN to BSN program.

NURS 6001. Clinical Experience in San Jose, Costa Rica. 0 Credits.

GW students work with nursing students and faculty from Universidad Hispanoamericana to provide basic health care, health screening, and patient education to children and adults in various community facilities and homes in San Jose, Costa Rica. Restricted to students enrolled in the School of Nursing.

NURS 6002. Clinical Experience in Quito, Ecuador. 0 Credits.

In collaboration with Universidad San Francisco de Quito, GW students work with local communities to provide basic health services and health education programs for adults and children in Quito and neighboring areas. Graduate students may have an opportunity to work with local physicians. Restricted to students enrolled in the School of Nursing who are fluent Spanish speakers.

NURS 6003. Clinical Experience in Mukono District, Uganda. 0 Credits.

In collaboration with GW partner Omni Med, students will focus on training volunteer community health workers to screen for hypertension and provide health education programs on topics such as maternal – child health, sanitation and nutrition in Mukono District, Uganda. Restricted to students enrolled in the School of Nursing.

NURS 6004. Clinical Experience in Thomonde, Haiti. 0 Credits.

Students and faculty from the GW's medical, physician assistant, and public health programs work in collaboration with partner organization Project Medishare to provide health services and education and disease prevention programs in rural clinics, schools, and villages in Thomonde, Haiti.

NURS 6005. Clinical Experience in Caracol, Haiti. 0 Credits.

In collaboration with health care providers from GW School of Nursing partner institution Pusan National University Yangsan Hospital, South Korea, and SAE-A Trading Company Ltd., students provide basic health services, health screening and education, and disease prevention programs to individuals and communities attending the medical mission clinic in Caracol, Haiti. Restricted to students enrolled in the School of Nursing.

NURS 6006. Clinical Experience in Maribor, Slovenia. 0 Credits.

In collaboration with the University of Maribor in Slovenia, GW students work with community health care workers to deliver basic nursing care to selected populations in the community. Students have opportunities to research selected health problems and their impact on the health of individuals and communities in Maribor.

NURS 6181. Creativity and Innovation in Health Care. 3 Credits.

The theoretical conceptualizations and practical applications to promote creativity and innovation in generating ideas, identifying opportunities, and solving problems.

NURS 6202. Concepts in Population Health. 3 Credits.

Students integrate and synthesize concepts associated with quality, health promotion, disease prevention, and chronic health problems within communities, the general population, and specific population groups; issues related to culturally diverse and vulnerable populations.

NURS 6203. Nursing Leadership. 3 Credits.

Evidence-based leadership skills as a core competency in nursing to improve patient care quality and strengthen nursing as a profession; theories of leadership, personal leadership, skill building, team building techniques, change, conflict resolution, motivation, and communication skills.

NURS 6204. Health Information and Technology. 3 Credits.

Key issues and concepts related to the use of technology and information management to support the provision of high quality health care and outcomes.

NURS 6205. Health Policy, Quality, and Political Process. 3 Credits.

Health policy process and analysis relevant to the three main components of policy: cost, quality, and access.

NURS 6207. Evidence-Based Practice for Health Care Researchers. 3 Credits.

Methodological issues of health care research; knowledge and skills needed to critically appraise and synthesize research results and evidence-based methods.

NURS 6208. Biostatistics for Health Care Research. 3 Credits.

Basic concepts and modeling approaches used in biostatistics through the use of health care research data.

NURS 6215. Pediatric Adversity and Early Childhood Development and Health. 3 Credits.

How major adversity in childhood can weaken developing brain architecture and impact physical and mental health; the impact of poverty and other social determinants of health on child well-being over the life cycle.

NURS 6220. Advanced Physiology and Pathophysiology. 3 Credits.

System-focused advanced physiology and pathophysiology for analysis of health deviations across the life span.

NURS 6222. Advanced Health Assessment and Diagnostic Reasoning. 4 Credits.

Nurse practitioner and nurse-midwifery students will acquire the knowledge, skills and clinical foundation for advanced health assessment and diagnostic reasoning in the ambulatory health care setting. This course is a prerequisite to all other clinical courses and includes a Campus Learning and Skills Intensive (CLASI).

NURS 6224. Adult/Gerontology Primary Care Nurse Practitioner I: Practice Introduction. 4 Credits.

First clinical practicum course in the adult-gerontology primary care nurse practitioner program; theoretical and practical foundations of common primary care conditions in the adult patient. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6225. Adult/Gerontology Primary Care Nurse Practitioner II: Adolescent and Adult. 8 Credits.

Second clinical practicum course in the adult-gerontology primary care nurse practitioner program. Synthesis and integration of advanced decision making skills including diagnostic reasoning and clinical judgment, health assessment, health promotion, technology, and evidence-based practice. Prerequisites: NURS 6220, NURS 6222, NURS 6224, and NURS 6234.

NURS 6227. Family Nurse Practitioner Clinical Practicum. 1-7 Credits.

Clinical practicum providing foundations of family primary care; focus on chronic health problems faced by families from culturally diverse backgrounds. Corequisites: NURS 6250, NURS 6251 and NURS 6252 Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6229. Adult/Gerontology Primary Care Nurse Practitioner III: Adult, Older/Frail. 8 Credits.

Third clinical practicum course in the adult-gerontology primary care nurse practitioner program; theoretical and evidence-based practice foundations for assessment and management of the patient across the aging continuum. Prerequisites: NURS 6220, NURS 6222, NURS 6224, NURS 6225, and NURS 6234.

NURS 6230. Family Nurse Practitioner I: Lifespan Primary Care/Diagnosis/Management. 4 Credits.

First clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on common and chronic health problems across the lifespan. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6231. Family Nurse Practitioner II: Lifespan Primary Care/Diagnosis/Management. 8 Credits.

Second clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on common and chronic health problems across the lifespan. Prerequisites: NURS 6230.

NURS 6232. Family Nurse Practitioner III: Professional Issues/Diagnosis/Management. 8 Credits.

Third clinically-based course for family nurse practitioner students. Didactic and clinical experiences in primary care focusing on common/chronic problems across the lifespan. Prerequisites: NURS 6220, NURS 6222, NURS 6223, NURS 6230 and NURS 6231.

NURS 6233. Genetics for Health Care Providers. 3 Credits.

Basic scientific principles of genetics and their clinical applications.

NURS 6234. Advanced Pharmacology for Nursing. 3 Credits.

Pharmacologic concepts commonly seen in advanced practice nursing; major pharmacological classes for selected disease states and application in therapeutic decision making to encounters across the lifespan. Prerequisite: NURS 6220.

NURS 6235. Adult-Gerontology Acute Care Nurse Practitioner I: Introduction to Practice. 4 Credits.

First clinical practicum course in the adult-gerontology acute care nurse practitioner program. Scientific underpinnings and practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6236. Adult-Gerontology Acute Care Nurse Practitioner II: Complex and Acute Illness. 8 Credits.

Second clinical course in the adult-gerontology acute care nurse practitioner program. Management of complex, acute stable, and unstable conditions experienced by a variety of age groups from adolescents, to middle-aged adults, to the elderly. Prerequisites: NURS 6220, NURS 6222, NURS 6234, and NURS 6235.

NURS 6237. Adult-Gerontology Acute Care Nurse Practitioner III: Complex and Chronic Disease Mgt Adolesc/Elderly. 8 Credits.

Third clinical practicum course for the adult-gerontology acute care nurse practitioner program. Scientific underpinnings and practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care. Prerequisites: NURS 6220, NURS 6222, NURS 6234, NURS 6235, and NURS 6236.

NURS 6241. The Health Care Enterprise. 3 Credits.

Overview of general management business principles related to health care systems; strategic management of patient-centered care delivery and strategic health care leadership. Same As: HSCI 6241.

NURS 6242. Psychopharmacology. 3 Credits.

Overview of the neurobiological and psychopharmacological principles for the clinical management of psychotropic medications in the treatment of mental illnesses across the lifespan; integrates neuroanatomy, pharmacogenomics, neurophysiology, pathophysiology, biochemistry, pharmacology and behavioral science. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6243. Addiction and Change. 3 Credits.

Principles of addiction and change with a focus on correlating how changes in behavior lead to recovery in addictions. Models of addiction and change, the neurobiology of addiction, behavior change theories and models, and treating addictions through behavioral mechanisms.

NURS 6244. Psychiatric/Mental Health Nursing with Families and Groups Across the Life Span. 3 Credits.

Theoretical and conceptual models related to the developmental and functional processes within family systems, therapy groups, and psychoeducation groups; the PMHNP's scope of practice as it relates to conducting family and group psychotherapy. Concurrent clinical practicum under preceptor and faculty supervision for a minimum of 75 hours over the course of the semester. Prerequisites: NURS 6242 and NURS 6245.

NURS 6245. Psychiatric/Mental Health Diagnostic Assessment Across the Lifespan. 4 Credits.

Theoretical and foundational knowledge for assessing, diagnosing, treating, and managing mental illnesses across the lifespan. Concurrent clinical practicum under the supervision of preceptors and faculty. Students must complete a minimum of 150 clinical hours. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6246. Psychiatric/Mental Health Advanced Practice Nursing with Individuals Across the Life Span. 3 Credits.

Examines, analyzes, and evaluates treatment models and evidence-based interventions for the care of individuals living with acute and chronic mental illnesses across the lifespan. Concurrent clinical practicum under the supervision of preceptors and faculty. Students must complete a minimum of 75 clinical hours. Prerequisites: NURS 6242 and NURS 6245.

NURS 6247. Population-Based Psychiatric/Mental Health Advanced Practice Nursing Across the Life Span. 3 Credits.

Clinical practicum designed to build psychiatric mental health nurse practitioner skills in a variety of clinical settings. Students integrate foundational knowledge from coursework to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: NURS 6242, NURS 6244, NURS 6245, and NURS 6246.

NURS 6248. Integrated Application of Psychiatric/Mental Health Advanced Practice Nursing. 3 Credits.

Clinical practicum. Students develop competency in the psychiatric-mental health nurse practitioner role; integration of foundational knowledge from coursework to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: NURS 6242, NURS 6244, NURS 6245, NURS 6246, and NURS 6247.

NURS 6250. Family Nurse Practitioner I for Nurse Practitioners: Adult Primary Care Diagnosis Management. 2 Credits.

First clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on prevention and common/chronic health problems across the lifespan. Corequisite: NURS 6227.

NURS 6251. Family Nurse Practitioner II for Nurse Practitioners: Lifespan Primary Care Diagnosis Management. 4 Credits.

Second clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on common/chronic health problems across the lifespan. Corequisite: NURS 6227. Prerequisite: NURS 6250.

NURS 6252. Family Nurse Practitioner III for Nurse Practitioners: Lifespan Primary Care Diagnosis Management. 4 Credits.

Third theory course for family nurse practitioner students nationally certified in another APRN population. Covers common acute and chronic problems across the lifespan. Corequisite: NURS 6227. Prerequisites: NURS 6250, NURS 6251.

NURS 6258. Leadership Capstone Practicum I. 3 Credits.

First course in a two-semester mentored internship practicum. Students apply knowledge and refine abilities related to leadership in a setting and practice area mutually agreed upon by the student and instructor. Prerequisites: NURS 6202, NURS 6203, NURS 6204, NURS 6205, NURS 6207, NURS 6241, NURS 6274 and NURS 6295.

NURS 6259. Leadership Capstone Practicum II. 3 Credits.

Second course in a two-semester mentored internship practicum. Students apply knowledge and refine abilities related to leadership in a setting and practice area mutually agreed upon by the student and instructor. Prerequisite: NURS 6258.

NURS 6262. Leadership Coaching in Nursing. 3 Credits.

Client health coaching and leadership and management coaching; theoretical foundations, evidence for leadership coaching in nursing, and applications of coaching in nursing management.

NURS 6263. Teaching and Learning in Health Care. 3 Credits.

Application of instructional design methods to develop, deliver, and evaluate academic and professional health care curricula and education.

NURS 6274. Health Economics and Finance. 3 Credits.

Health care economics, finance, and policy for effective management in a complex health care environment.

NURS 6282. Teaching and Learning in Health Care I: Foundations of Instructional Design. 3 Credits.

Principles of instructional design. Active, authentic learning and assessment methods in academic and health care delivery settings; analyzing needs, defining objectives, and assessing outcomes for learning; strategies to support learner mastery.

NURS 6284. Teaching and Learning in Health Care III: Program and Curriculum Development. 3 Credits.

Design, development, implementation and evaluation of academic, clinical, and professional educational programs in nursing and other health professions; analysis and integration of national, professional and institutional policies, requirements, and standards to develop an outcomes-based curriculum.

NURS 6290. Global Health for Health Care Professionals. 3 Credits.

Global health problems and issues from interdisciplinary and comparative perspectives.

NURS 6291. Advanced Topics. 1-9 Credits.

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NURS 6295. Health Care Quality Process. 3 Credits.

Application of change processes that are critical to improving health quality by integrating theory and implementation; the role of systems assessment and measurement as fundamental to quality improvement.

NURS 6297. Independent Study. 1-9 Credits.

NURS 6298. NP Clinical Completion. 1-5 Credits.

NURS 6299. Nurse Practitioner Technology Enhanced Community Health. 0 Credits.

Prepares students to integrate social determinants of health while using telehealth and digital health technologies to improve care for people living in rural and urban underserved communities.

NURS 8400. Epidemiology and Population Health. 3 Credits.

Integration of population and determinants of health with epidemiological principles. Examination and application of biostatistical and epidemiological methods of analysis. Restricted to students in DNP program. Prerequisites: NURS 6208.

NURS 8401. Organizational Concepts in Nursing. 3 Credits.

Health care delivery systems, the nurse's role in interprofessional/interdisciplinary teams, and organizational development from a nursing perspective.

NURS 8402. Knowledge Management in Nursing. 3 Credits.

The use of knowledge management and information technology as it applies to health care; strategies to improve the efficiency and effectiveness of health care with the use of technology.

NURS 8403. Translating Research into Practice. 3 Credits.

Models and processes of evidence-based practice, strategies to translate evidence into practice, and tools useful for promoting practices in health care settings.

NURS 8405. Health Care Quality Improvement. 3 Credits.

Multidisciplinary background for the science of healthcare quality management; concepts, principles, and philosophy of quality improvement.

NURS 8407. Grant Writing. 3 Credits.

NURS 8409. Health Care Quality Practicum. 3 Credits.

Quality improvement (QI) processes and patient safety theories, models, methods, and tools in health care settings and their application to conceiving and executing a QI project in an organizational setting.

NURS 8410. Executive Presence I. 2 Credits.

NURS 8411. Executive Presence II. 2 Credits.

This is a continuation of Executive Presence I. In this course, the student will examine power shifts in leadership, revisit change as a stimulus for innovation, participate in an interactive session for individuals who can practice communicating their practicum proposals and receiving friendly feedback and constructive input from their peers, and re-evaluate the leadership development plan designed in Executive Presence I.

NURS 8412. HC Finance for Nurse Leaders. 3 Credits.

NURS 8413. Adult-Gerontology Acute Care Nurse Practitioner: Advanced Role Immersion. 3 Credits.

Students develop and integrate bedside with systems and population level competencies; role development, leadership, interdisciplinary collaboration, systems management, and evidenced-based practice are discussed and applied to concurrent clinical experiences; independent practice skills in the context of interdisciplinary teams. Prerequisites: NURS 6235, NURS 6236 and NURS 6237. Recommended background: prior enrollment in NURS 6220, NURS 6234 and NURS 6222.

NURS 8414. DNP Residency. 3 Credits.

Seminar and clinical practicum that focuses on developing and integrating DNP competencies; role development, leadership, interprofessional collaboration, population health, and evidence-based practice; the development of independent practice skills and integration of DNP program outcomes. Prerequisites: NURS 6220, NURS 6222, NURS 6233 and NURS 6234; NURS 6224 or NURS 6230; NURS 6225 or NURS 6231; and NURS 6229 or NURS 6232.

NURS 8416. Entrepreneurship for Nurse Leaders. 3 Credits.

Various aspects of entrepreneurship in the context of the nursing profession.

NURS 8417. Health Policy and Analysis. 3 Credits.

Application of evidence based methods, policy frameworks, cost effectiveness, and cost benefit analysis related to current policy issues.

NURS 8418. Health Care Economics, Finance, and Reimbursement. 3 Credits.

Application of economic concepts to health care financing and reimbursement policy; the effects of historical, current, and emerging models of financing on quality, access, and cost.

NURS 8419. Analytical Methods and Appraisal for Evidence-Based Practice. 3 Credits.

Examination of the merits of common methods and designs for evidence-based practice and practice inquiry. Acquire skills in searching for, critically appraising and grading evidence. Synthesis of research findings to develop practice recommendations. Restricted to students in DNP program. Prerequisites: NURS 6208.

NURS 8420. The Health Policy Process. 3 Credits.

The impact of governmental structures and processes on health policy, access, quality, and cost; the role of nurses in shaping health system change.

NURS 8421. The Legislative and Judicial Processes and Health Policy. 3 Credits.

Health policy legislation and the role of the judiciary. Students develop briefing materials, provide verbal or written testimony, give public comments regarding proposed bills, and assess impact of policy-oriented boards. Includes visits to Capitol Hill or state capitals.

NURS 8422. Health Policy Practicum. 3 Credits.

Students collaborate with a policy expert in a professional organization, government agency, advocacy group, or other entity to develop policy on a specific issue related to cost, quality, or access relevant to patient experience of care.

NURS 8423. The Regulatory Process and Health Policy. 3 Credits.

Knowledge and skills for analyzing rulemaking and regulatory processes that affect health-related issues; workforce scopes of practice; safety of the public; and roles and influence of federal agencies and private organizations charged with implementing newly passed legislation.

NURS 8440. Philosophy of Science and Theories. 4 Credits.
Philosophy of science and scientific methodology in historical context; competing philosophical viewpoints about the nature of scientific knowledge and the implication for knowledge development in nursing science; theoretical foundations of research studies. Restricted to Majors Only.

NURS 8441. Statistics for Health Care Research I. 3 Credits.
Intermediate-level statistics applicable to the analysis of health care data.

NURS 8442. Statistics for Health Care Research II. 3 Credits.
Advanced statistical methods commonly used in health care research. Analysis and interpretation of healthcare data using a variety of statistical techniques, including simple and multiple linear, linear-mixed effects, logistic, and Poisson regression, repeated measures designs, and survival analysis.

NURS 8443. Research Program Development Seminar I. 2 Credits.
Foundational content related to the conduct of research, including research ethics, data management, and modes of new knowledge dissemination. Ethical and other influences that impact the development, implementation, and sharing of discovery science.

NURS 8444. Research Program Development Seminar II. 1 Credit.
Introduction to select professional roles and guidance on preparation for associated responsibilities; forming an effective research team; generating meaningful and impactful scholarship.

NURS 8445. Experimental and Quasi-Experimental Research Designs. 3 Credits.
Formulation of research questions, hypotheses, measurement, sampling, data collection, and statistical approaches for various experimental and quasi-experimental research designs.

NURS 8446. Qualitative Research Design. 3 Credits.
Qualitative methods and designs applicable to translational health science research problems; qualitative epistemology, methods, data collection, and data analysis. Credit cannot be earned for this course and THS 8123.

NURS 8447. Measurement for Health Care Research. 3 Credits.
Measurement theories, principles, and techniques essential for the development and analysis of assessment instruments used in health care research; reliability and validity analysis, generalizability theory, item analysis, linking and scaling procedures, and adjustments for measurement error.

NURS 8448. Systematic Review and Meta-Analysis. 3 Credits.
Systematic reviews and meta-analyses, and their relative utility in answering research questions; formulating questions, defining criteria for including or excluding studies, methods for data extraction, grading the risk for various kinds of bias, and performing a meta-analysis.

NURS 8449. Non-Experimental Research Design. 3 Credits.
Evaluation of secondary data analysis, surveys, case-control studies, cohort studies, and mixed methods approaches.

NURS 8450. Research Rotation. 2 Credits.
Participatory research experience where students and faculty members interact on research-related activities; data collection, data management, data analysis, table and figure preparation, and abstract development.

NURS 8451. Research Practicum. 3 Credits.
Practical experience in an area designated as necessary for additional content expertise, such as systematic review of the literature, survey development, secondary data acquisition and cleaning, or data collection. Student will conduct preliminary research activities in support of the dissertation research. Restricted to doctoral candidates.

NURS 8452. Team Science and Collaboration. 3 Credits.
Measuring team effectiveness by integrating team science, cross-disciplinary research, and methodology; developing research designs to address complex health science problems; and team science and science of team science approaches to promoting team effectiveness. (Same as THS 8103, HSCI 6285).

NURS 8453. Leadership and Health Policy. 3 Credits.
Introduction to integration of health policy and leadership concepts in the use and analysis of research affecting systems and populations; exploration of social, political, and economic principles and theories as they relate to the incorporation of policy analysis and implementation.

NURS 8454. Proposal Development Seminar. 2 Credits.
Faculty supervision and ongoing peer feedback for development of the dissertation proposal.

NURS 8455. Dissertation. 10 Credits.
Culminating research experience for students in the doctoral program in nursing. Following defense of the dissertation proposal, students work with the research advisor and dissertation committee to design and implement a research study, analyze data, and interpret and contextualize findings using the study framework and current state of the science.

NURS 8489. DNP Project Scholarly Inquiry. 3 Credits.
Development of scholarly writing skills, exploration of a phenomenon of interest, and development of skills needed for the responsible conduct of translation of research into practice. Students identify a scholarly topic addressing a practice issue. Restricted to students in DNP program.

NURS 8490. DNP Project Planning. 3 Credits.
Foundational knowledge to support the student in creating a DNP project proposal that includes a project plan, implementation, and evaluation plan. Students identify a practice issue, develop a DNP project plan, and formulate a scholarly project development process. Prerequisite: NURS 8403.

NURS 8491. DNP Project Implementation. 3 Credits.

Implementation of DNP project using leadership, project management, and team building skills. Restricted to DNP students. Prerequisite: NURS 8490.

NURS 8492. DNP Project Evaluation and Dissemination. 3 Credits.

Data collection and evaluation of results from the DNP project using rigorous evaluation criteria and outcome measures. Restricted to DNP students. Prerequisite: NURS 8491.

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Science in Nursing (<http://bulletin.gwu.edu/archives/2019-2020/nursing/bs-nursing/>)
- Registered Nurse to Bachelor of Science in Nursing (<http://bulletin.gwu.edu/archives/2019-2020/nursing/rn-to-bsn/>)

BACHELOR OF SCIENCE IN NURSING

The bachelor of science in nursing (p. 1124) (BSN) is an accelerated, 15-month program for second-degree or eligible military students. The program is offered at the Virginia Science and Technology Campus in Ashburn, Virginia, where students put theory into practice through the school's [Simulation Learning and Innovation Center](https://nursing.gwu.edu/simulation/) (<https://nursing.gwu.edu/simulation/>).

Second-degree students must hold a bachelor's degree in a non-nursing discipline from an accredited institution of higher learning and have taken all prerequisite courses to qualify for the program. Veterans may use their military experience to count toward the minimum of 60 college-level credits and prerequisites. All branches of the military are accepted, no prior medical experience is necessary.

Visit the GW Nursing (<https://nursing.gwu.edu/>) website (<https://nursing.gwu.edu/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 60 credits including the required curriculum and at least 500 clinical hours; clinical hours are a component of some required courses.

General Education and advanced standing

- 3 credits in ethics
- 8 credits in human anatomy and physiology
- 3 credits in microbiology
- 3 credits in nutrition
- 3 credits in statistics
- 3 credits in English composition
- 12 credits in humanities/social sciences
- 3 credits in mathematics

12 credits in natural sciences

Students must complete 60 credits of coursework, including core requirements and electives, in addition to the required curriculum, and at least 500 clinical hours.

The following requirements are applicable to students who matriculated prior to spring 2021:

Code	Title	Credits
Required		
NURS 3110W	Transition into the Nursing Profession	
NURS 3111	Health Assessment	
NURS 3112	Nursing Practice and Clinical Reasoning I: Adult and Aging Acute and Chronic Illness	
NURS 3114	Nursing Practice and Clinical Reasoning II: Advanced Adult Medical-Surgical	
NURS 3115	Clinical and Nursing Skills Lab: Adult Medical-Surgical II	
NURS 3116	Nursing Practice and Clinical Reasoning III: Psychiatric Mental Health Nursing	
NURS 3117	Nursing Practice and Clinical Reasoning IV: Maternity and Women's Health Care	
NURS 3118	Pharmacology I	
NURS 3119	Pathophysiology	
NURS 3213	Adult Medical-Surgical Lab I	
NURS 4116	Children and Families	
NURS 4118	Pharmacology II	
NURS 4119	Patient Safety and Health Care Quality	
NURS 4122	Capstone: Transition Into Professional Practice	
NURS 4123	Senior Practicum: Transition Into Clinical Practice	
NURS 4207	Principles of Nursing Research and Evidence-Based Practice	
or NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 4217	Community and Public Health Nursing	
NURS 6203	Nursing Leadership *	
NURS 6205	Health Policy, Quality, and Political Process *	

Elective

One elective course selected from the following:

NURS 4109	Introduction to Perioperative Nursing
or NURS 6204	Health Information and Technology
or NURS 6290	Global Health for Health Care Professionals
or NURS 6215	Pediatric Adversity and Early Childhood Development and Health

or NURS 6290	Global Health for Health Care Professionals
or NURS 6215	Pediatric Adversity and Early Childhood Development and Health

The following requirements are applicable to students who matriculated in spring 2021 or after:

Code	Title	Credits
NURS 3118	Pharmacology I	
NURS 3119	Pathophysiology	
NURS 3120	Foundations of Professional Nursing	
NURS 3121	Health Assessment and Promotion	
NURS 3122	Principles of Safe Client Care	
NURS 3123	Quality Interprofessional Care of the Client	
NURS 3124	Adult and Geriatric Nursing I	
NURS 3125	Mental Health Nursing	
NURS 4118	Pharmacology II	
NURS 4124	Adult and Geriatric Nursing 2	
NURS 4125	Maternal and Women's Health Nursing	
NURS 4126	Nursing Care of Children and Families	
NURS 4127	Transition to Professional Nursing Practice	
NURS 4203	Dynamics of Nursing Leadership and Management	
NURS 4205	Nurse's Role in Health Care Policy	
NURS 4207	Principles of Nursing Research and Evidence-Based Practice	
NURS 4217	Community and Public Health Nursing	

Elective

One elective course selected from the following:

NURS 4109	Introduction to Perioperative Nursing
or NURS 6204	Health Information and Technology

REGISTERED NURSE TO BACHELOR OF SCIENCE IN NURSING

The online registered nurse (RN) to bachelor of science in nursing (BSN) degree program is available to students with an associate's degree who are eligible to take the National Council Licensure Examination-Registered Nurse (NCLEX-RN). Students enter the program with up to 84 credits in advanced standing, allowing them to progress quickly through the BSN program while continuing to work as professional nurses.

Students must become licensed as a registered nurse within the first semester of matriculation in the program. Students earn 6 graduate credits as part of the program, which may be applied toward the master of science in nursing (MSN) program within five years of the BSN being conferred.

Visit the GW Nursing (<https://nursing.gwu.edu/>) website (<https://nursing.gwu.edu/>) for additional information.

REQUIREMENTS

General education and advanced standing

3 credits in ethics
8 credits in human anatomy and physiology
3 credits in microbiology
3 credits in nutrition
3 credits in statistics
3 credits in English composition
12 credits in humanities/social sciences
3 credits in mathematics
12 credits in natural sciences

The following requirements must be fulfilled by all students in the registered nurse to bachelor of science in nursing program: 36 credits, including 33 credits in required courses (including 15 credits awarded for portfolio review) and one 3-credit elective course.

The following requirements apply to students who matriculated prior to fall 2018:

The following requirements apply to students who matriculated prior to spring 2020:

Code	Title	Credits
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General Education and Advanced Standing

3 credits in ethics

6 to 8 credits in human anatomy and physiology

3 to 4 credits in microbiology

3 credits in nutrition

3 credits in statistics

6 credits in English composition

12 credits in humanities/social sciences

3 credits in mathematics

12 credits in natural sciences

Required

NURS 4119 Patient Safety and Health Care Quality

NURS 4121 Nursing Advancement Portfolio *

NURS 4417 Community and Public Health Nursing

NURS 6202 Concepts in Population Health

NURS 6203 Nursing Leadership

NURS 6205 Health Policy, Quality, and Political Process

NURS 6207 Evidence-Based Practice for Health Care Researchers

or NURS 4207 Principles of Nursing Research and Evidence-Based Practice

Elective

One of the following:

NURS 6204 Health Information and Technology

or NURS 6233 Genetics for Health Care Providers

or NURS 6262 Leadership Coaching in Nursing

or NURS 6274 Health Economics and Finance

or NURS 6290 Global Health for Health Care Professionals

or NURS 6292 Teaching with Technology in the Health Professions

*Assumes that review of a student's professional portfolio results in the awarding of 15 credits.

The following requirements apply to students who matriculated spring 2020 or after:

Code

Title

Credits

General Education and Advanced Standing

3 credits in ethics

6 to 8 credits in human anatomy and physiology

3 to 4 credits in microbiology

3 credits in nutrition

3 credits in statistics

6 credits in English composition

12 credits in humanities/social sciences

3 credits in mathematics

12 credits in natural sciences

Required

NURS 4119 Patient Safety and Health Care Quality

NURS 4121 Nursing Advancement Portfolio *

NURS 4203 Dynamics of Nursing Leadership and Management

NURS 4205 Nurse's Role in Health Care Policy

NURS 4207 Principles of Nursing Research and Evidence-Based Practice

NURS 4417 Community and Public Health Nursing

Electives

Two of the following:

NURS 6202 Concepts in Population Health

NURS 6203 Nursing Leadership

NURS 6204 Health Information and Technology

NURS 6205 Health Policy, Quality, and Political Process

NURS 6207 Evidence-Based Practice for Health Care Researchers

NURS 6233 Genetics for Health Care Providers

NURS 6262 Leadership Coaching in Nursing

NURS 6274 Health Economics and Finance

NURS 6290 Global Health for Health Care Professionals

*Assumes that review of a student's professional portfolio results in the awarding of 15 credits.

MASTER'S PROGRAMS

Master's programs

- Master of Science in Nursing in the field of adult-gerontology acute care nurse practitioner (p. 1127)
- Master of Science in Nursing in the field of adult-gerontology primary care nurse practitioner (p. 1127)
- Master of Science in Nursing in the field of family nurse practitioner (p. 1128)
- Master of Science in Nursing in the field of nurse-midwifery (p. 1129) (collaborative program between GW School of Nursing and Shenandoah University (<http://www.su.edu/nursing/nursing-graduate-programs/nurse-midwifery-programs/>))
- Master of Science in Nursing in the field of nursing leadership and management (p. 1129)
- Master of Science in Nursing in the field of psychiatric mental health nurse practitioner (p. 1130)

MASTER OF SCIENCE IN NURSING IN THE FIELD OF ADULT-GERONTOLOGY ACUTE CARE NURSE PRACTITIONER

The online master of science in nursing (MSN) in adult-gerontology acute care nurse practitioner (AGACNP) program prepares registered nurses to be advanced practice leaders and interprofessional team members providing care for critically ill patients and their families. Acute care nurse practitioners attend to adolescents and adults in a variety of clinical settings, including urgent care centers, critical care units and inpatient medical-surgical or specialty units.

Students are prepared to be eligible to sit for the nationally recognized American Nurses Credentialing Center certification examination for adult-gerontology acute care nurse practitioner. Clinical placements are selected by the program director and carried out in Northern Virginia, Maryland, or Washington, DC. All students attend several on-campus experiences related to MSN coursework and clinical skills development and assessment.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	Health Policy, Quality, and Political Process	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6233	Genetics for Health Care Providers	
NURS 6234	Advanced Pharmacology for Nursing	
NURS 6235	Adult-Gerontology Acute Care Nurse Practitioner I: Introduction to Practice	
NURS 6236	Adult-Gerontology Acute Care Nurse Practitioner II: Complex and Acute Illness	
NURS 6237	Adult-Gerontology Acute Care Nurse Practitioner III: Complex and Chronic Disease Mgt Adolesc/Elderly	
Clinical hours		
Completion of 500 direct patient care hours.		

MASTER OF SCIENCE IN NURSING IN THE FIELD OF ADULT-GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

The master of science in nursing in the field of adult-gerontology primary care nurse practitioner (AGPCNP)

program provides the theoretical and practical foundations for registered nurses to become leaders in their role as advanced practice nurses, specifically working with adolescent (ages 13 and older) and adult patients. With an aging populace, adult-gerontology is an expanding area with abundant opportunities in home health, long-term care, assisted living, and other fields. Program graduates are qualified to sit for the ANCC and AANP certification exams.

Students may choose to enroll in the program on a full- or part-time basis. Students in the AGPCNP option are required to complete three on-campus components related to courses NURS 6222, NURS 6225, and NURS 6229. Students complete 500 clinical hours with an approved preceptor.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	Health Policy, Quality, and Political Process	
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner I: Practice Introduction	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner II: Adolescent and Adult	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner III: Adult, Older/Frail	
NURS 6233	Genetics for Health Care Providers	
NURS 6234	Advanced Pharmacology for Nursing	

Clinical hours

Completion of 500 direct patient care hours.

MASTER OF SCIENCE IN NURSING IN THE FIELD OF FAMILY NURSE PRACTITIONER

The family nurse practitioner program prepares registered nurses for leadership in providing primary care for children and adults alike in any number of clinical settings. With a focus on delivering high-quality, patient-centered primary care, we offer didactic and clinical experiences to prepare you to care for the physical, mental, emotional, social and spiritual health of patients, families and communities.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	Health Policy, Quality, and Political Process	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6230	Family Nurse Practitioner I: Lifespan Primary Care/Diagnosis/Management	
NURS 6231	Family Nurse Practitioner II: Lifespan Primary Care/Diagnosis/Management	

NURS 6232	Family Nurse Practitioner III: Professional Issues/Diagnosis/Management
NURS 6233	Genetics for Health Care Providers
NURS 6234	Advanced Pharmacology for Nursing
Clinical hours	
Completion of 500 direct patient care hours.	

MASTER OF SCIENCE IN NURSING IN THE FIELD OF NURSE-MIDWIFERY

The master of science (MSN) in nursing in nurse-midwifery is a collaboration with Shenandoah University (SU). The program prepares graduates to be eligible to take the American Midwifery Certification Board's national certification examination. The nurse-midwifery degree program at SU is fully accredited by the Accreditation Commission for Midwifery Education.

Core courses required for the MSN are completed at GW, which awards the MSN degree, while the nurse-midwifery didactic and clinical components of the curriculum are fulfilled through SU, which awards the post-graduate certificate in midwifery. Students have access to the resources and experts at both institutions. Offered in a versatile distance learning format, the program allows professional nurses to advance their education while continuing to work. In addition, there are selected on-campus sessions for skills training and education as well as clinical practicums in sites across the country. Students may choose to enroll in the program on a full- or part-time basis.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 47 credits, including 9 credits in professional core, 6 credits in research, and 13 credits in field-specific courses at GW and 19 credits in nurse-midwifery courses at Shenandoah University.

Program Requirements

Code	Title	Credits
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	Health Policy, Quality, and Political Process	

Research

NURS 6207	Evidence-Based Practice for Health Care Researchers
NURS 6208	Biostatistics for Health Care Research

Field-specific

NURS 6220	Advanced Physiology and Pathophysiology
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning
NURS 6233	Genetics for Health Care Providers
NURS 6234	Advanced Pharmacology for Nursing

Courses in nurse-midwifery taken at Shenandoah University*

NM 610 Primary Care of Women
NM 620 Comprehensive Antepartal Care
NM 630 Midwifery Practicum
NM 640 Comprehensive Perinatal Care
NM 651 Integrated Midwifery Internship
NM 652 Evidence Based Practice Project
NM 660 Advanced Nurse Midwifery Role Development

*For more information on Shenandoah University courses, visit the program website (<https://nursing.gwu.edu/msn-nurse-midwifery/>).

MASTER OF SCIENCE IN NURSING IN THE FIELD OF NURSING LEADERSHIP AND MANAGEMENT

The master of science in nursing in nursing leadership and management program, offered online, is designed to prepare graduates for upper-level positions in the field by enhancing the depth and breadth of the practicing clinical professional's knowledge and skills. The program focuses on leadership development by training nurses to think and act strategically, participate in policy decisions, and lead organizations through change and improvement. Students may choose to enroll in the program on a full- or part-time basis.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits including 9 credits in professional core courses, 6 credits in research courses, and 21 credits in field-specific courses.

Students will complete 300 practicum hours in this program.

Code	Title	Credits
Professional core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	Health Policy, Quality, and Political Process	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6204	Health Information and Technology	
NURS 6241	The Health Care Enterprise	
NURS 6258	Leadership Capstone Practicum I	
NURS 6259	Leadership Capstone Practicum II	
NURS 6262	Leadership Coaching in Nursing	
NURS 6274	Health Economics and Finance	
NURS 6295	Health Care Quality Process	

MASTER OF SCIENCE IN NURSING IN THE FIELD OF PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

The master of science in nursing in the field of psychiatric mental health nurse practitioner program offers registered nurses the opportunity to acquire the knowledge and skills to provide care to individuals, families, and groups with psychiatric/mental health needs. The lifespan curriculum is a synthesis of knowledge derived from nursing science, neuroscience, behavioral change theories, motivational theories, learning theories, and other psychotherapeutic frameworks to provide a holistic perspective from which to assess, diagnose, treat, manage, and evaluate acute and chronic mental illnesses. The program covers neuropsychopharmacology, interprofessional collaborative

practice, crisis intervention, trauma-informed care, health policy, family systems theory, psychotherapy, group therapy, care of vulnerable populations, promotion of mental health and prevention of mental illness, substance use and co-occurring disorders, and other mental illnesses across the lifespan.

Upon completion of our program students are eligible to sit for the American Nurses Credentialing Center certification as a Psychiatric/Mental Health Nurse Practitioner (lifespan).

Visit the School of Nursing website (<https://nursing.gwu.edu/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 50 credits, including 9 credits in professional core courses, 6 credits in research, 35 credits in field-specific courses, and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
Professional Core		
NURS 6202	Concepts in Population Health	
NURS 6203	Nursing Leadership	
NURS 6205	Health Policy, Quality, and Political Process	
Research		
NURS 6207	Evidence-Based Practice for Health Care Researchers	
NURS 6208	Biostatistics for Health Care Research	
Field-specific		
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6233	Genetics for Health Care Providers	
NURS 6234	Advanced Pharmacology for Nursing	
NURS 6242	Psychopharmacology	
NURS 6243	Addiction and Change	
NURS 6244	Psychiatric/Mental Health Nursing with Families and Groups Across the Life Span	

NURS 6245 Psychiatric/Mental Health Diagnostic Assessment Across the Lifespan

NURS 6246 Psychiatric/Mental Health Advanced Practice Nursing with Individuals Across the Life Span

NURS 6247 Population-Based Psychiatric/Mental Health Advanced Practice Nursing Across the Life Span

NURS 6248 Integrated Application of Psychiatric/Mental Health Advanced Practice Nursing

Clinical hours

Completion of 500 direct patient care hours.

DOCTORAL PROGRAMS

Doctoral programs

- Doctor of Nursing Practice in the field of adult-gerontology acute care practitioner (p. 1131)
- Doctor of Nursing Practice in the field of adult-gerontology primary care practitioner (p. 1132)
- Doctor of Nursing Practice in the field of executive leadership (p. 1133)
- Doctor of Nursing Practice in the field of family nurse practitioner (p. 1133)
- Doctor of Nursing Practice in the field of health policy (p. 1134)
- Doctor of Nursing Practice in the field of nursing practice (p. 1134)
- Doctor of Nursing Practice in the field of psychiatric mental health nurse practitioner (p. 1135)
- Doctor of Philosophy in the field of nursing (p. 1136)

DOCTOR OF NURSING PRACTICE IN THE FIELD OF ADULT- GERONTOLOGY ACUTE CARE NURSE PRACTITIONER

The DNP adult-gerontology acute care nurse practitioner option prepares graduates to function as doctorally prepared nurses at the highest level of clinical practice, to translate knowledge into practice, to apply policy, as well as design, implement and evaluate innovations to improve health care systems and patient centered outcomes.

This option prepares registered nurses as advanced practice leaders and inter-professional team members providing care for acute and critically ill patients and their families. Acute care NPs attend to adolescents and adults across the continuum of care, including in urgent care centers, critical care units, and

inpatient medical-surgical or specialty units. Acute care offers a high-intensity environment that requires the fast-paced critical thinking skills you will develop in this program.

Clinical placements will be arranged by the program director and will take place in Northern Virginia, Maryland or Washington, D.C. At this time, this program option is only available to applicants who are able to do their clinical rotations in those areas.

ADMISSIONS

Admission Fall - Priority: October 15
deadline:

Recommendation Two letters of recommendation
Requirements:

Prior Transcripts from all post-secondary schools
academic records: attended are required.

Statement of Purpose: A personal statement describing your career goals relative to the doctoral study. You should include a general idea for your DNP project. Your vision for your post-DNP contributions to advance the nursing profession through scholarship and evidence-based practice must be emphasized in the statement. Also, briefly describe your professional nursing practice and indicate any current or previous leadership roles. The applicants with a clear idea of a potential DNP project and the ability of the project to enhance/improve/contribute to nursing practice will be given preference for admission.

Additional Requirements: - Bachelor of Science degree in nursing from a regionally accredited college or university with a preferred minimum cumulative GPA of at least 3.3 on a 4.0 scale.

- Active and unencumbered nursing licensure
- Current resume

International Requirements: The minimum English language scores required are:

Internet-based TOEFL: 100; or

IELTS: An overall band score of 7.0 with individual band scores of 6.0 or higher

Supporting documents not submitted online should be mailed to:

Office of Admissions
45085 University Drive, Suite 201-T
Ashburn, VA 20147

Contact for questions:

nursing@gwu.edu ~ 571-553-0138 (phone)
<https://nursing.gwu.edu/admissions-aid> (<https://nursing.gwu.edu/admissions-aid/>)
9:00 am - 5:00 pm, Monday through Friday

REQUIREMENTS

The following requirements must be fulfilled: 72 credits in required courses.

Code	Title	Credits
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6233	Genetics for Health Care Providers	
NURS 6234	Advanced Pharmacology for Nursing	
NURS 6235	Adult-Gerontology Acute Care Nurse Practitioner I: Introduction to Practice	
NURS 6236	Adult-Gerontology Acute Care Nurse Practitioner II: Complex and Acute Illness	
NURS 6237	Adult-Gerontology Acute Care Nurse Practitioner III: Complex and Chronic Disease Mgt Adolesc/Elderly	
NURS 8400	Epidemiology and Population Health	
NURS 8401	Organizational Concepts in Nursing	
NURS 8402	Knowledge Management in Nursing	
NURS 8403	Translating Research into Practice	
NURS 8405	Health Care Quality Improvement	
NURS 8417	Health Policy and Analysis	
NURS 8418	Health Care Economics, Finance, and Reimbursement	
NURS 8419	Analytical Methods and Appraisal for Evidence-Based Practice	
NURS 8489	DNP Project Scholarly Inquiry	
NURS 8490	DNP Project Planning	
NURS 8491	DNP Project Implementation	
NURS 8492	DNP Project Evaluation and Dissemination	

DOCTOR OF NURSING PRACTICE IN THE FIELD OF ADULT- GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

The DNP adult-gerontology primary care nurse practitioner option prepares graduates to function as doctorally prepared nurses at the highest level of clinical practice, to translate knowledge into practice, to apply policy, as well as design, implement and evaluate innovations to improve health care systems and patient centered outcomes.

This option provides the theoretical and practical foundations necessary for nurses to become advanced practice nurses, specifically in working with adolescent (ages 13 and older) and adult patients. As the United States population ages, adult-gerontology is an expanding area that offers abundant opportunities in palliative care, home health, long-term care, assisted living and others. Students who complete this program option will be eligible to sit for the ANCC and AANP certification exams.

REQUIREMENTS

The following requirements must be fulfilled: 72 credits in required courses.

Code	Title	Credits
NURS 6208	Biostatistics for Health Care Research	
NURS 6215	Pediatric Adversity and Early Childhood Development and Health	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner I: Practice Introduction	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner II: Adolescent and Adult	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner III: Adult, Older/Frail	
NURS 6233	Genetics for Health Care Providers	
NURS 6234	Advanced Pharmacology for Nursing	
NURS 8400	Epidemiology and Population Health	
NURS 8401	Organizational Concepts in Nursing	
NURS 8402	Knowledge Management in Nursing	
NURS 8403	Translating Research into Practice	
NURS 8405	Health Care Quality Improvement	

NURS 8417	Health Policy and Analysis
NURS 8418	Health Care Economics, Finance, and Reimbursement
NURS 8419	Analytical Methods and Appraisal for Evidence-Based Practice
NURS 8489	DNP Project Scholarly Inquiry
NURS 8490	DNP Project Planning
NURS 8491	DNP Project Implementation
NURS 8492	DNP Project Evaluation and Dissemination

DOCTOR OF NURSING PRACTICE IN THE FIELD OF EXECUTIVE LEADERSHIP

The DNP: Executive Leadership (Post-MSN) program option is designed for nursing leaders in senior management positions or those with substantial leadership experience. The program focuses on intrapreneurial and entrepreneurial approaches to leadership and incorporates experiential projects, often within your organization or community. Learn to help navigate our nation's increasingly complex and dynamic health care environment.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 43 credits

All DNP students are expected to complete a minimum of 1,000 post-baccalaureate practice hours as part of their academic program. Most advanced practice RN students will already have completed 500 hours in their master of science in nursing (MSN) program and the remaining 500 hours are included in the curriculum requirements for the DNP.

Code	Title	Credits
Required		
NURS 6181	Creativity and Innovation in Health Care	
NURS 6202	Concepts in Population Health	
NURS 8401	Organizational Concepts in Nursing	
NURS 8402	Knowledge Management in Nursing	
NURS 8403	Translating Research into Practice	
NURS 8405	Health Care Quality Improvement	

NURS 8410	Executive Presence I
NURS 8411	Executive Presence II
NURS 8412	Health Care Finance for the Nurse Leader
NURS 8416	Entrepreneurship for Nurse Leaders
NURS 8417	Health Policy and Analysis
NURS 8418	Health Care Economics, Finance, and Reimbursement
NURS 8490	DNP Project Planning
NURS 8491	DNP Project Implementation
NURS 8492	DNP Project Evaluation and Dissemination

DOCTOR OF NURSING PRACTICE IN THE FIELD OF FAMILY NURSE PRACTITIONER

The DNP: Family Nurse Practitioner option prepares graduates to function as doctorally prepared nurses at the highest level of clinical practice, to translate knowledge into practice, to apply policy, as well as design, implement and evaluate innovations to improve health care systems and patient centered outcomes.

This option prepares registered nurses for leadership in primary care settings for treating families and individuals of all ages. This option offers didactic and clinical experiences that prepare you to deliver high-quality, patient-centered primary care.

We recommend that you have some clinical experience before starting this program option, but it is not required. Due to the rigorous nature of this program option and the clinical hours required, we strongly recommend that you not work full-time while pursuing this degree.

REQUIREMENTS

The following requirements must be fulfilled: 72 credits in required courses.

Code	Title	Credits
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	

NURS 6230	Family Nurse Practitioner I: Lifespan Primary Care/Diagnosis/Management
NURS 6231	Family Nurse Practitioner II: Lifespan Primary Care/Diagnosis/Management
NURS 6232	Family Nurse Practitioner III: Professional Issues/Diagnosis/Management
NURS 6233	Genetics for Health Care Providers
NURS 6234	Advanced Pharmacology for Nursing
NURS 8400	Epidemiology and Population Health
NURS 8401	Organizational Concepts in Nursing
NURS 8402	Knowledge Management in Nursing
NURS 8403	Translating Research into Practice
NURS 8405	Health Care Quality Improvement
NURS 8417	Health Policy and Analysis
NURS 8418	Health Care Economics, Finance, and Reimbursement
NURS 8419	Analytical Methods and Appraisal for Evidence-Based Practice
NURS 8489	DNP Project Scholarly Inquiry
NURS 8490	DNP Project Planning
NURS 8491	DNP Project Implementation
NURS 8492	DNP Project Evaluation and Dissemination

DOCTOR OF NURSING PRACTICE IN THE FIELD OF HEALTH POLICY

If you want the tools that will empower you to advance meaningful change in an increasingly complex health care system, a DNP in Health Policy is for you. Gain in-depth knowledge of the legislative, regulatory, and judicial processes that shape health policy. Deepen your understanding of the economic forces, research evidence and political developments that directly affect health care and the nursing profession. Develop new perspectives on effective advocacy and learn about the roles of nurses and other health professionals in improving access and advancing the health of patients, families and populations.

This distance-based program combines academic study with hands-on experience in addressing real-world policy issues. Graduates of the DNP Health Policy program can apply their policy expertise in any number of ways, from advancing within their current institutions/practice to roles such as

working for government agencies, legislative offices, research organizations, consumer groups, or professional associations as policy analysts, advocates or consultants.

The GW School of Nursing is known for its focus on health policy and our faculty include respected leadership in the field. The School also houses the GW Center for Health Policy and Media Engagement. Located in the nation's capital, our proximity to federal agencies, Congress, national health care associations, and other policy-makers provides an "only at GW" experience and a unique opportunity to prepare for a career in health policy.

REQUIREMENTS

The following requirements must be fulfilled: 42 credits in required courses.

Code	Title	Credits
Required		
NURS 6202	Concepts in Population Health	
NURS 8401	Organizational Concepts in Nursing	
NURS 8402	Knowledge Management in Nursing	
NURS 8403	Translating Research into Practice	
NURS 8405	Health Care Quality Improvement	
NURS 8417	Health Policy and Analysis	
NURS 8418	Health Care Economics, Finance, and Reimbursement	
NURS 8420	The Health Policy Process	
NURS 8421	The Legislative and Judicial Processes and Health Policy	
NURS 8422	Health Policy Practicum	
NURS 8423	The Regulatory Process and Health Policy	
NURS 8490	DNP Project Planning	
NURS 8491	DNP Project Implementation	
NURS 8492	DNP Project Evaluation and Dissemination	

DOCTOR OF NURSING PRACTICE IN THE FIELD OF NURSING PRACTICE

The doctor of nursing in nursing practice (DNP) in the field of nursing practice is designed for nursing professionals

interested in improving patient care, affecting health policy, and being nursing leaders. The program emphasizes key nursing competencies and innovation, with options for focusing in areas including clinical practice, policy, and leadership.

Visit the program website (<https://nursing.gwu.edu/nursing-practice-dnp/>) for additional information

REQUIREMENTS

The following requirements must be fulfilled: 43 credits, including 37 credits in required courses and 6 credits in elective courses.

All DNP students are expected to complete a minimum of 1,000 post-baccalaureate practice hours as part of their academic program. Most advanced practice RN students will already have completed 500 hours in their master of science in nursing (MSN) program and the remaining 500 hours are included in the curriculum requirements for the DNP.

Code	Title	Credits
Required		
NURS 6202	Concepts in Population Health	
NURS 8401	Organizational Concepts in Nursing	
NURS 8402	Knowledge Management in Nursing	
NURS 8403	Translating Research into Practice	
NURS 8405	Health Care Quality Improvement	
NURS 8417	Health Policy and Analysis	
NURS 8418	Health Care Economics, Finance, and Reimbursement	
NURS 8490	DNP Project Planning	
NURS 8491	DNP Project Implementation	
NURS 8492	DNP Project Evaluation and Dissemination	
Electives		
6 credits in elective courses selected with the advisor's approval.		

DOCTOR OF NURSING PRACTICE IN THE FIELD OF PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

The DNP: Psychiatric Mental Health Nurse Practitioner option prepares graduates to function as doctorally prepared nurses

at the highest level of clinical practice, to translate knowledge into practice, to apply policy, as well as design, implement and evaluate innovations to improve health care systems and patient centered outcomes.

This option offers registered nurses the opportunity to expand their scope of practice to include the care of individuals, families and groups with psychiatric and mental health needs.

Our lifespan curriculum is a synthesis of knowledge derived from nursing science, neuroscience, behavioral change theories, motivational theories, learning theories and other psychotherapeutic frameworks to provide a holistic perspective from which to assess, diagnose, treat, manage and evaluate acute and chronic mental illnesses.

You will learn about neuropsychopharmacology, interprofessional collaborative practice, crisis intervention, trauma-informed care, health policy, family systems theory, psychotherapy, group therapy, care of vulnerable populations, promotion of mental health and prevention of mental illness, substance use and co-occurring disorders, and other mental illnesses across the lifespan.

REQUIREMENTS

The following requirements must be fulfilled: 72 credits in required courses.

Code	Title	Credits
NURS 6208	Biostatistics for Health Care Research	
NURS 6220	Advanced Physiology and Pathophysiology	
NURS 6222	Advanced Health Assessment and Diagnostic Reasoning	
NURS 6233	Genetics for Health Care Providers	
NURS 6234	Advanced Pharmacology for Nursing	
NURS 6242	Psychopharmacology	
NURS 6243	Addiction and Change	
NURS 6244	Psychiatric/Mental Health Nursing with Families and Groups Across the Life Span	
NURS 6245	Psychiatric/Mental Health Diagnostic Assessment Across the Lifespan	
NURS 6246	Psychiatric/Mental Health Advanced Practice Nursing with Individuals Across the Life Span	
NURS 6247	Population-Based Psychiatric/Mental Health Advanced Practice Nursing Across the Life Span	

NURS 6248	Integrated Application of Psychiatric/ Mental Health Advanced Practice Nursing
NURS 8400	Epidemiology and Population Health
NURS 8401	Organizational Concepts in Nursing
NURS 8402	Knowledge Management in Nursing
NURS 8403	Translating Research into Practice
NURS 8405	Health Care Quality Improvement
NURS 8417	Health Policy and Analysis
NURS 8418	Health Care Economics, Finance, and Reimbursement
NURS 8419	Analytical Methods and Appraisal for Evidence-Based Practice
NURS 8489	DNP Project Scholarly Inquiry
NURS 8490	DNP Project Planning
NURS 8491	DNP Project Implementation
NURS 8492	DNP Project Evaluation and Dissemination

DOCTOR OF PHILOSOPHY IN THE FIELD OF NURSING

To meet the demands of a growing health workforce, the nursing profession needs to increase the supply of doctorally prepared faculty and researchers trained to educate the next generation. The national shortage of faculty is reaching critical proportions, resulting in a significant impact on educational programs and their capacity to educate future generations of nursing students.

GW Nursing offers a low-residency PhD in nursing with opportunities to collaborate with faculty on subjects such as nursing education, symptom management, health equity, health services and more. Students will be prepared as nurse scientists and faculty with an emphasis on research. A dissertation and comprehensive exam is required.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

Code	Title	Credits
Core		
NURS 8440	Philosophy of Science and Theories	

NURS 8441	Statistics for Health Care Research I
NURS 8442	Statistics for Health Care Research II
NURS 8443	Research Program Development Seminar I
NURS 8445	Experimental and Quasi-Experimental Research Designs
NURS 8446	Qualitative Research Design
or THS 8123	Qualitative Methods in Translational Health Sciences
NURS 8447	Measurement for Health Care Research
NURS 8448	Systematic Review and Meta-Analysis
NURS 8449	Non-Experimental Research Design
NURS 8450	Research Rotation
NURS 8451	Research Practicum
NURS 8452	Team Science and Collaboration
or THS 8103	Principles of Collaboration and Team Science
NURS 8453	Leadership and Health Policy
NURS 8454	Proposal Development Seminar
NURS 8455	Dissertation

Electives

Students take a minimum of 6 elective credits in elective course designed to inform their dissertation research. Elective options are available through the DNP program or another GW school if such courses align with the student's research interests. Those options are also listed below.

NURS 6291	Advanced Topics
NURS 8404	
NURS 8405	Health Care Quality Improvement
NURS 8407	Grant Writing
PPPA 8022	Econometrics for Policy Research II
PPPA 8164	Seminar on Program Evaluation
PUBH 8404	Advanced Topics: Health Systems and Health Policy Research
PUBH 8405	Advanced Topics: Health Economics Research
PUBH 8416	Study Design & Evaluation Methods

PUBH 8419	Measurement in Public Health and Health Services
THS 8109	Implementation Science and Innovation Leadership
THS 8212	Teaching Strategies in the Health Professions
THS 8127	Systematic Reviews of Health Care Innovations

CERTIFICATE PROGRAMS

Post-Master's Certificates

- Adult-Gerontology Acute Care Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-adult-gerontology-acute-care-nurse-practitioner/>)
- Adult-Gerontology Primary Care Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-adult-gerontology-primary-care-nurse-practitioner/>)
- Family Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-family-nurse-practitioner/>)
- Psychiatric Mental Health Nurse Practitioner (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-psychiatric-mental-health-nurse-practitioner/>)

Graduate Certificates

- Health Policy and Media Engagement (<http://bulletin.gwu.edu/archives/2019-2020/nursing/health-policy-media-engagement/>)
- Nursing Education (<http://bulletin.gwu.edu/archives/2019-2020/nursing/pmc-nursing-education/>)

GRADUATE CERTIFICATE IN HEALTH POLICY AND MEDIA ENGAGEMENT

Embark on a focused, high-powered journey through the underpinnings of the political, executive and judicial processes and strategies essential to effective regulatory and legislative implementation. This 15-credit graduate certificate opportunity is available online for health-related professionals from various disciplines, including nursing, public health, medicine, law, business, public administration and more.

Highlights

Contribute to actual policymaking processes at the grassroots, state and federal levels in legislative and regulatory environments or within the justice system. Build an in-depth understanding of media as a policy stakeholder, analyze media accuracy and bias and engage with traditional and social media platforms to influence policy. Sharpen media and communication skills that include interviews, oral testimony, public comments, and opinion

pieces while shaping policy with local, state and federal decision-makers.

Apply a variety of tools and tactics as you explore and apply health care financing and reimbursement principles and strategies to policy solutions.

Develop skills to better engage in meaningful and productive dialogues with your colleagues while serving on a board or committee seat.

Gain access to a growing array of resources and learning opportunities through the GW Nursing Center for Health Policy and Media Engagement led by Executive Director Jean Johnson, and supported Senior Policy Service Professor Diana Mason.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
NURS 8417	Health Policy and Analysis	
NURS 8418	Health Care Economics, Finance, and Reimbursement	
NURS 8420	The Health Policy Process	
NURS 8421	The Legislative and Judicial Processes and Health Policy	
NURS 8423	The Regulatory Process and Health Policy	

POST-MASTER'S CERTIFICATE IN ADULT-GERONTOLOGY ACUTE CARE NURSE PRACTITIONER

The post-master's certificate in adult-gerontology acute care nurse practitioner program prepares registered nurses to be advanced practice leaders and interprofessional team members to provide care for acute and critically ill patients and their families in settings such as urgent care centers, critical care units, and inpatient medical-surgical or specialty units. Offered on a part-time basis, the certificate can be completed in three semesters.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 20 credits in required courses and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
NURS 6235	Adult-Gerontology Acute Care Nurse Practitioner I: Introduction to Practice	
NURS 6236	Adult-Gerontology Acute Care Nurse Practitioner II: Complex and Acute Illness	
NURS 6237	Adult-Gerontology Acute Care Nurse Practitioner III: Complex and Chronic Disease Mgt Adolesc/Elderly	
Clinical hours		
Completion of 500 direct patient care hours.		

POST-MASTER'S CERTIFICATE IN ADULT-GERONTOLOGY PRIMARY CARE NURSE PRACTITIONER

The post-master's certificate in adult-gerontology primary care nurse practitioner is designed for advanced practice nurses who wish to expand their scope of practice. Coursework includes didactic and clinical experiences that focus on the primary care needs of patients, families, and communities from adolescence through adulthood.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 20 credits in required courses and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
NURS 6224	Adult/Gerontology Primary Care Nurse Practitioner I: Practice Introduction	
NURS 6225	Adult/Gerontology Primary Care Nurse Practitioner II: Adolescent and Adult	
NURS 6229	Adult/Gerontology Primary Care Nurse Practitioner III: Adult, Older/Frail	

Clinical hours

Completion of 500 direct patient care hours.

POST-MASTER'S CERTIFICATE IN FAMILY NURSE PRACTITIONER

The Family Nurse Practitioner Certificate allows masters-prepared nurses to expand their scope of practice across the lifespan. This program option features an array of didactic and clinical experiences that focus on the primary care needs of patients, families and communities.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 20 credits in required courses and completion of 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
NURS 6227	Family Nurse Practitioner Clinical Practicum	
NURS 6250	Family Nurse Practitioner I for Nurse Practitioners: Adult Primary Care Diagnosis Management	
NURS 6251	Family Nurse Practitioner II for Nurse Practitioners: Lifespan Primary Care Diagnosis Management	
NURS 6252	Family Nurse Practitioner III for Nurse Practitioners: Lifespan Primary Care Diagnosis Management	
Clinical hours		
Completion of 500 direct patient care hours.		

POST-MASTER'S CERTIFICATE IN PSYCHIATRIC MENTAL HEALTH NURSE PRACTITIONER

The post-master's certificate in psychiatric mental health nurse practitioner is a part-time, online program designed to give advanced practice registered nurses the opportunity to expand their scope of practice to include the care of individuals, families, and groups with psychiatric and mental health needs.

Visit the [GW Nursing website \(https://nursing.gwu.edu/\)](https://nursing.gwu.edu/) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 22 credits in required courses and 600 clinical hours with a minimum of 500 direct patient care hours.

Code	Title	Credits
Required		
NURS 6242	Psychopharmacology	
NURS 6244	Psychiatric/Mental Health Nursing with Families and Groups Across the Life Span	
NURS 6243	Addiction and Change	
NURS 6245	Psychiatric/Mental Health Diagnostic Assessment Across the Lifespan	
NURS 6246	Psychiatric/Mental Health Advanced Practice Nursing with Individuals Across the Life Span	
NURS 6247	Population-Based Psychiatric/Mental Health Advanced Practice Nursing Across the Life Span	
NURS 6248	Integrated Application of Psychiatric/Mental Health Advanced Practice Nursing	
Clinical hours		
Completion of 500 direct patient care hours.		

COLLEGE OF PROFESSIONAL STUDIES

Acting Dean M. Feuer

Associate Deans A. Ashkar, K.C. Homayounpour

The College of Professional Studies (CPS) offers an expanding range of degree programs leading to associate's, bachelor's, and master's degrees in professional studies, along with a variety of certificate programs.

CPS's innovative programs are typically co-developed through collaboration among University content specialists and outside partners—government agencies, professional associations, consulting organizations, and business and industry leaders.

Programs draw from multiple academic disciplines and are delivered in flexible formats: face-to-face on campus, through distance learning, or a blend of both.

By combining University faculty experts with accomplished practitioners, CPS is a catalyst for academic innovation, constructing credentials for the workforce that uphold the University's rigorous standards of academic excellence and respond to the needs of a wide variety of professionals. Professional studies degree and certificate programs are also offered to organizational clients under contract and can be presented in flexible formats, including series of short classroom-based modules and distance learning.

New programs not included in this bulletin may be found at the College of Professional Studies website (<https://cps.gwu.edu>).

CPS manages facilities and services for off-campus programs offered by other schools of the University. The staff of instruction includes members of the full-time faculty of the University and academically qualified adjunct faculty from the professional community. All University off-campus offerings in Maryland are approved by the Maryland State Board for Higher Education; those in Virginia are certified by the State Council of Higher Education for Virginia.

REGULATIONS

Enrollment Status

Once a student begins a degree or certificate program they are expected to be enrolled continuously and actively engaged in fulfilling the requirements for the degree each semester of the academic year until the degree is conferred or certificate completed. For the fall and spring semesters, students must register for one or more credits to maintain enrollment status. A student who must interrupt active pursuit of the degree or certificate may petition the Dean, through the Program Director, for a leave of absence for a specified period of time, generally limited to one calendar year. If the petition is approved, the student must register for Leave of Absence in each fall and spring semester, following regular registration

procedures. Students not wishing to enroll in courses for a summer session must notify the Program Director and Office for Student Engagement of such intent prior to the beginning of that summer session. Students who discontinue their studies without being granted a leave of absence and students granted leaves who do not return to active study at the close of the period of approved absence must apply for readmission and are subject to the regulations and requirements then in force.

Time Limits

A full-time student is allowed a maximum of three calendar years from the date of the first registration as a degree student (excluding time spent enrolled exclusively in English for Academic Purposes courses) to complete all degree requirements; a part-time student is allowed a maximum of five calendar years. The time limit does not include any period of registration as a non-degree student before admission to degree candidacy or any period spent on approved leave of absence. Students who do not complete degree requirements within the time allowed will have their degree candidate status terminated; such students may be readmitted to degree candidate status under conditions specified by the Program Director and approved by the Dean.

Scholarship Requirements

Undergraduate students must maintain a minimum cumulative grade-point average of 2.0. and graduate students must maintain a minimum grade-point average of 3.0. If a student's GPA falls below the required minimum, they are placed on academic probation and allowed one semester in which to raise the GPA to the required minimum; any such student who does not raise their GPA to the required minimum in one semester will be dismissed from the program. If it is mathematically impossible for the student's GPA to reach the required minimum in one semester, they are dismissed from the program without a probationary period.

See Grades under University Regulations (p. 27) for undergraduate and graduate grading systems.

Grade of F

A student who receives a grade of *F* is subject to dismissal from the program. If the student wishes to remain enrolled, they must present cause for consideration by the Program Director and to the Dean as to why continued study should be permitted. A student who receives a grade of *F*, if permitted to remain in the program, must repeat the course in which the failing grade was received and achieve a passing grade as well as maintain the minimum required GPA. Once a grade of *F* has been received it remains a part of the student's permanent record and is calculated into the grade-point average. Students may be granted permission to repeat a failed course only one time. Failure to receive permission to remain in the program and retake the failed course or to achieve a passing grade after having been permitted to repeat a failed course will result in dismissal from the program.

Incompletes

The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given to the instructor for the student's inability to complete the required coursework during the semester in which the course was taken. At the discretion of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. The instructor and student must sign an Incomplete Agreement, available through the Office of the Dean, which sets forth the requirements and due dates for successful completion of the course. The coursework must be completed within the designated time period agreed upon by the instructor and student in the Incomplete Agreement, but no more than one calendar year from the end of the semester in which the course was taken. All students who receive an Incomplete must remain continuously during the semester(s) in which the coursework is being completed. If not registered in other courses during this period, the student must register for Continuous Enrollment.

When work for the course is completed, the instructor completes a grade change form and submits it to the Office of the Registrar. The final grade replaces the symbol of *I*. If work for the course is not completed within the designated time period, the grade is converted to a grade of *F*, Failure, 0 quality points, and the grade-point average is recalculated and academic standing reassessed.

Transfer Credits

Transfer credit that is accepted and applied to a student's GW academic record counts toward the number of credits completed only. The grades from these courses are not used in calculating a student's GW grade-point average. The College of Professional Studies reserves the right to determine course equivalency and degree applicability.

Undergraduate students

Subject to individual program requirements, transfer credit may be awarded for coursework completed at other accredited institutions provided minimum grade requirements have been met and the coursework is appropriate to the degree. No more than 60 credits from a regionally accredited institution may be accepted for transfer. Coursework completed at another institution must have received a grade of *C* or above to be accepted for transfer credit.

Graduate students

A maximum of one-quarter of the credits required for the degree may be approved for transfer to a graduate program in the College of Professional Studies from credit earned while enrolled as a non-degree student at GW or from another degree-granting school of this University or another accredited college or university. For transfer credit to be approved, all of the following conditions must be met: the coursework must be

from an accredited institution and must have been taken within the two years prior to matriculation; it must be approved as part of the student's program of studies; it must not have been applied to the completion of requirements for another degree; it must be post-baccalaureate graduate-level coursework; and the student must have received a minimum grade of *B* in each course for which transfer credit is requested. Requests for transfer credit must be submitted in writing and approved by the Program Director and the Dean prior to or during the student's first year in the program. An official transcript of the coursework must be on file before the request can be considered.

Provisional Admission

Applicants with credentials that do not meet the minimum standards for the program of study, but who nonetheless show promise of successful work, are occasionally granted provisional admission by the Program Director/admissions committee. During the period of provisional status, students must meet the requirements set forth in their admission letter. Students who do not meet these requirements are dismissed from the program.

Readmission

The College of Professional Studies does not review any application for readmission to a program by a student who was dismissed from the same or any other program at the College or course of study at the University until at least one year after the student was dismissed. Students unable to achieve the required minimum GPA in one semester are not considered for readmission to the program.

Withdrawing From a Course

Undergraduate Students

Undergraduate students in the College of Professional Studies may withdraw from any or all undergraduate courses in the College through the last day of scheduled classes in a specific course. In order to withdraw from a course the student must submit a Registration Transaction Form (https://registrar.gwu.edu/sites/registrar.gwu.edu/files/downloads/reg_transaction_form.pdf) (RTF) to the Office for Student Engagement, but no supporting documentation is required. The Office for Student Engagement will process the RTF unless dropping the course would result in the student taking fewer credits than they are required to take. A course from which a student successfully withdraws will be assigned a notation of *W* (Authorized Withdrawal). Failure to withdraw by the stated deadlines can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

Graduate Students

After the end of the eighth week of classes in a fifteen-week semester, or after the end of the third week of classes in a course scheduled over eight or fewer weeks, graduate students who wish to withdraw from a course must obtain the written permission of the Program Director and the Dean

by submitting a petition for academic exception. A course from which a student successfully withdraws will be assigned a notation of *W* (Authorized Withdrawal). Failure to withdraw by the stated deadlines can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

See Adding, Dropping, and Withdrawing from Courses under [University Regulations \(http://bulletin.gwu.edu/university-regulations/\)](http://bulletin.gwu.edu/university-regulations/) for additional information governing all CPS students.

Academic Integrity

The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community are presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels, possibly resulting in dismissal from the program together with other University sanctions. The University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) can be found at the Office of Academic Integrity (<http://studentconduct.gwu.edu/>).

UNDERGRADUATE

Bachelor's completion programs

- Bachelor of Professional Studies with a major in cybersecurity (p. 1143)
- Bachelor of Professional Studies with a major in homeland security (p. 1144)
- Bachelor of Professional Studies with a major in information technology (p. 1145)

Combined programs

- Dual Bachelor of Arts with a major in political communication and Master of Professional Studies in the field of political management (p. 1146)
- Dual Bachelor of Arts with a major in political science and Master of Professional Studies in the field of legislative affairs (p. 1146)
- Dual Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 1146)

- Dual Bachelor of Professional Studies with a major in information technology and Master of Science in the field of information systems technology (p. 1146)

GRADUATE

Master's programs

- Master of Professional Studies in the field of cybersecurity strategy and information management (p. 1147)
- Master of Professional Studies in the field of homeland security (p. 1150)
- Master of Professional Studies in the field of law firm management (p. 1153)
- Master of Professional Studies in the field of paralegal studies (p. 1155)
- Master of Professional Studies in the field of publishing (p. 1157)
- Master of Professional Studies in the field of sustainable urban planning (p. 1159)

Offered by the Graduate School of Political Management, through the College of Professional Studies:

- Master of Professional Studies in the field of legislative affairs (p. 1164)
- Master of Professional Studies in the field of political management (p. 1167)
- Master of Professional Studies in the field of political communication and governance (p. 1172) *Offered in Spanish only*
- Master of Professional Studies in the field of strategic public relations (p. 1173)

CERTIFICATES

Graduate certificates

The College of Professional Studies offers the following graduate certificates. In addition to those listed, graduate certificates in political management and strategic governance and in strategic communications campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

- California paralegal studies (p. 1162)
- Community advocacy (p. 1174)
- Digital communications (p. 1175)
- Digital politics (p. 1175)
- Global public relations (p. 1176)
- Healthcare corporate compliance (p. 1163)
- PACs and political management (p. 1176)
- Paralegal studies (p. 1163)
- Sustainable urban planning (p. 1163)

Additional information is available on the College of Professional Studies website (<https://cps.gwu.edu>).

FACULTY

Program Directors A.N. Ashkar, T. Belt, C. Burgat, J. Delinski, J. Garrett, R. Izurieta, E. Lammert, T.E. Marsh, L. Matos, L. Parnell, E. Rule, J. Thorpe, C.P. Uthoff, J. Warren, S. White, S. Whitehead

Professors C.J. Deering, T. Belt, M. J. Dallek

Associate Professors A.N. Ashkar, S.E. Billet, L.M. Brown, M. Cornfield, R. Izurieta, E. Lammert, T.E. Marsh, L.J. Parnell, J. Warren, S. White, S.L. Wiley

Visiting Associate Professor S. Whitehead

Assistant Professors C. Burgat, J. Delinski, N. Dinello, N.K. Houghtby-Haddon, E. Rule, C.P. Uthoff

Associate Research Professors L.R. Matos

Instructor J.L. Robinson

For additional faculty information see the CPS faculty directory (<https://cps.gwu.edu/faculty-directory/>).

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
 - Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
 - Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
 - The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
-
- College of Professional Studies (CPS) (p. 1467)
 - Advocacy in the Global Environment (PSAD) (p. 1753)
 - Cybersecurity Strategy and Information Management (PSCS) (p. 1754)
 - Healthcare Corporate Compliance (PSHC) (p. 1756)
 - Homeland Security (PSHS) (p. 1757)
 - Integrated Information, Science, and Technology (PSIS) (p. 1759)
 - Landscape Design (PSLD) (p. 1760)
 - Law Firm Management (PSLM) (p. 1761)
 - Legislative Affairs (LGAF) (p. 1675)
 - Paralegal Studies (PSLX) (p. 1762)
 - Political Management (PMGT) (p. 1736)
 - Publishing (PSPB) (p. 1766)
 - Public Leadership (PSPL) (p. 1763)

- Public Relations (PSPR) (p. 1765)
- Urban Sustainability (PSUS) (p. 1769)

UNDERGRADUATE PROGRAMS

Bachelor's completion programs

- Bachelor of Professional Studies with a major in cybersecurity (p. 1143)
- Bachelor of Professional Studies with a major in homeland security (p. 1144)
- Bachelor of Professional Studies with a major in information technology (p. 1145)

Combined programs

- Dual Bachelor of Arts with a major in political communication and Master of Professional Studies in the field of political management (p. 1146)
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- Dual Bachelor of Arts with a major in political science and Master of Professional Studies in the field of political management (p. 1146)
- Dual Bachelor of Professional Studies with a major in information technology and Master of Science in the field of information systems technology (p. 1146)

BACHELOR OF PROFESSIONAL STUDIES WITH A MAJOR IN CYBERSECURITY

Director: S. White

The bachelor of professional studies with a major in cybersecurity program is intended for students with associate's or non-technical bachelor's degrees who are looking for entry-level positions and advancement in the field of cybersecurity.

The cybersecurity program provides students with skills and knowledge necessary to be successful in the IT security industry. The program's core curriculum includes courses related primarily to specialty areas identified by the National Institute of Standards and Technology (NIST) and the National Initiative for Cybersecurity Education (NICE).

Upon completion of the program, students are able to understand and implement cybersecurity requirements to protect computers, applications, and networks from unauthorized and malicious users or software. In addition, the curriculum covers cryptography, cyber forensics, and network security. The program will also address supporting concepts of information system security which are integral parts of cybersecurity.

Visit the program website (<https://cps.gwu.edu/cybersecurity-bachelors/>) for more information.

REQUIREMENTS

Students completing this program will have satisfied GW's university-wide general education requirement, which includes 22 credits in the following areas:

1. Mathematics or statistics (3 credits)
2. Natural or physical science with lab (4 credits)
3. Humanities (3 credits)
4. Social and behavioral sciences (6 credits)
5. Written communication or composition (6 credits)

In addition, students take a minimum of 60 credits at GW, comprising 15 required courses.

Code	Title	Credits
Required		
PSCS 2301	Cyber Investigation	
PSCS 2302	Digital Forensics	
PSCS 2303	Compliance and Risk Management	
PSCS 2304	Incident Response	
PSCS 3100	Principles of Cybersecurity	
PSCS 3103	Ethics, Law, and Policy	
PSCS 3107	IP Security and VPN Technology	
PSCS 3109	Network Security	
PSCS 3111	Information Technology Security System Audits	
PSCS 3113	Topics in IT Security Defense Countermeasures	
PSCS 3117	Project Management in Information Technology	
PSCS 4102	Intrusion Detection and Vulnerability Management	
PSCS 4103	Securing Operating Systems	
PSCS 4110	Data Communication and Networking Technologies	
PSCS 4202	Cyber Attack Tools and Techniques	

BACHELOR OF PROFESSIONAL STUDIES WITH A MAJOR IN HOMELAND SECURITY

OVERVIEW

Director J. Delinski

The bachelor of professional studies with a major in homeland security is intended for working professionals and community college graduates to complete their bachelor's degree. The degree enhances a student's job application potential, promotion prospects, and/or second career opportunities in today's job market. The subject of homeland security is currently at the forefront of study by law enforcement officials, security professionals, current and former military personnel, intelligence analysts, and government contractors. The knowledge, skills, and abilities needed to succeed in these positions require cutting-edge education and training. The degree will appeal to a wide range of first responders and intelligence analysts who wish to continue their education by studying the latest trends and industry best practices.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 22 credits in general education courses, 38 credits in elective courses, and 60 credits in core courses.

Code	Title	Credits
General education *		
22 credits in general education coursework completed at a regionally accredited institution of higher education:		
3 credits in arts and humanities		
6 credits in behavior or social science		
6 credits in English composition		
4 credits in physical or natural science with lab		
3 credits in quantitative and logical reasoning		
Electives *		
38 credits in elective courses.		
Required core courses **		
60 credits in core courses, to be completed at GW. *		
PSHS 3150	Transnational Threats and Security	
PSHS 3151	Combating Domestic Terrorism	
PSHS 3152	Cyber Terrorism	

PSHS 3160	Crisis and Emergency Planning
PSHS 3161	Intelligence Data Analysis
PSHS 3162	Crime Scene Investigation
PSHS 3170	Infrastructure Protection
PSHS 3171	Introduction to Forensic Science
PSHS 3172	Computer Crime Investigation
PSHS 4180	Security Threat Assessments
PSHS 4181	Incident Management
PSHS 4182	Emergency Public Health Issues
PSHS 4190	Capstone Project
PSHS 4191	Ethical Dilemmas in Policing
PSHS 4192	Media, Public Relations, and Crisis Communication

*General education and elective courses may be completed at any regionally accredited institution. A minimum grade of C is required for transfer credit to be approved. General education and elective coursework may be completed before, during, or within five years of completing the other requirements for the bachelor's degree.

**Core courses are offered during the fall and spring semesters and summer sessions.

BACHELOR OF PROFESSIONAL STUDIES WITH A MAJOR IN INFORMATION TECHNOLOGY

Program Director J. Garrett (Interim)

The bachelor of professional studies with a major in information technology (IT) program offers a unique educational opportunity for working professionals and community college graduates who wish to complete a bachelor's degree. Through an innovative curriculum that combines science, technology, and business, the program prepares students for the IT industry with strong scientific foundations and hands-on practice.

The IT program can be completed within two academic years (four semesters and one summer session). Students graduate with a firm grounding in problem solving, analytical thinking, written communication, and technical knowledge in information technology and computing. The knowledge acquired in the program is relevant to a number of fields, such as information technology, technology management and consulting, network administration and network security, health IT, and data analytics.

See the program website (<http://cps.gwu.edu/bachelors-completion/>) for additional information.

REQUIREMENTS

The BPS in information technology is a degree completion program that requires successful completion of 120 credits, 60 of which must be completed at GW. Up to 60 credits can be transferred from coursework taken at other regionally accredited institutions of higher education. The program is designed for individuals who currently hold an associate's degree or have earned at least 60 credits towards their undergraduate degree.

Students completing this program will have satisfied GW's university-wide general education requirement, which includes 22 credits in the following areas:

Mathematics or statistics (3 credits)
 Natural or physical science with lab (4 credits)
 Humanities (3 credits)
 Social and behavioral sciences (6 credits)
 Written communication or composition (6 credits)

Code	Title	Credits
Required		
Foundational courses		
PSIS 2101	Writing and Communication in the IT Field I	
PSIS 2102	Writing and Communication in the IT Field II	
PSIS 2103	Statistical Sciences and Data Analysis I	
PSIS 2104	Statistical Sciences and Data Analysis II	
PSIS 2105	Programming and Computing Foundations I	
PSIS 2106	Programming and Computing Foundations II	
PSIS 3122	Ethics in Science and Technology	
PSIS 4142	Relational Databases and Their Design	
PSIS 4191	Capstone Project and Senior Thesis I	
PSIS 4192	Capstone Project and Senior Thesis II	
Core courses *		
6 courses (24 credits) selected from the following:		
PSIS 4137	Alternative Energy Sources	
PSIS 4138	Introduction to Health Information Technology	

PSIS 4141	Computer and Telecommunication Networks
PSIS 4144	Information and Network Security
PSIS 4145	Software Systems Development Processes
PSIS 4152	Entrepreneurship and Technology Venture Creation
PSIS 4161	Data Visualization
PSIS 4195	Undergraduate Research
PSIS 4199	Special Topics

*Not all core courses are offered each year. See department for course availability.

DUAL BA WITH A MAJOR IN POLITICAL COMMUNICATION AND MPS IN THE FIELD OF POLITICAL MANAGEMENT

OVERVIEW

The School of Media and Public Affairs (<https://smpa.gwu.edu/>) (SMPA) and the Graduate School of Political Management (<https://gspm.gwu.edu/>) (GSPM) offer a combined BA/MPS degree program for undergraduate students who are interested in careers in the field of political management. The program allows students to take a specified number of graduate credits as part of their undergraduate degree, thereby allowing both degrees to be earned more quickly and at a lower cost. Students pursuing the combined program must meet all requirements of their respective SMPA program. To meet the requirements of the combined program, students take 6 credits in graduate-level courses as part of their BA program of study.

Consult the School of Media and Public Affairs (<https://smpa.gwu.edu/>) for admissions requirements and more details.

DUAL BA WITH A MAJOR IN POLITICAL SCIENCE AND MPS IN THE FIELD OF LEGISLATIVE AFFAIRS

The Department of Political Science and the Graduate School of Political Management work in cooperation to offer a dual bachelor of arts with a major in political science (p. 403) and master of professional studies in the field of legislative affairs (p. 1164) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for

the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://gspm.gwu.edu/dual-degree-programs/>) for additional information.

DUAL BA WITH A MAJOR IN POLITICAL SCIENCE AND MPS IN THE FIELD OF POLITICAL MANAGEMENT

The Department of Political Science and the Graduate School of Political Management work in cooperation to offer a dual bachelor of arts with a major in political science (p. 403) and master of professional studies in political management (p. 1167) degree program. The program allows students to take 9 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the department's graduate adviser early in their junior year. Visit the program website (<https://politicalscience.columbian.gwu.edu/dual-degree-political-science-political-management/>) for additional information.

DUAL BPS WITH A MAJOR IN INFORMATION TECHNOLOGY AND MPS IN THE FIELD OF INFORMATION SYSTEMS TECHNOLOGY

The College of Professional Studies and GW School of Business offer a dual bachelor of professional studies in information technology (p. 1145) and master of science in information systems technology (<http://bulletin.gwu.edu/business/information-systems-technology-management/ms-information-systems-technology/>) degree program. The program allows students to take 6 graduate credits as part of their undergraduate program, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

Students interested in the dual degree program should confer with the graduate adviser early in their junior year.

GRADUATE PROGRAMS

Master's programs

- Master of Professional Studies in the field of cybersecurity strategy and information management (p. 1147)

- Master of Professional Studies in the field of homeland security (p. 1150)
- Master of Professional Studies in the field of law firm management (p. 1153)
- Master of Professional Studies in the field of paralegal studies (p. 1155)
- Master of Professional Studies in the field of publishing (p. 1157)
- Master of Professional Studies in the field of sustainable urban planning (p. 1159)

Offered by the Graduate School of Political Management, through the College of Professional Studies:

- Master of Professional Studies in the field of legislative affairs (p. 1164)
- Master of Professional Studies in the field of political management (p. 1167)
- Master of Professional Studies in the field of political communication and governance (p. 1172) *Offered in Spanish only*
- Master of Professional Studies in the field of strategic public relations (p. 1173)

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF CYBERSECURITY STRATEGY AND INFORMATION MANAGEMENT

Program Director E. Lammert,

Associate Director C. Uthoff

With the precipitous rise in global cyber crime, espionage and terrorism, it is little surprise that cybersecurity is now the number one national security issue we face. Yet as these agents of chaos seem to multiply by the minute, we're facing a crucial shortage of cybersecurity leaders who can take on this fight. To solve the cybersecurity problem, we must fill this critical gap.

Designed in consultation with key government, military and law enforcement organizations, our cybersecurity strategy and information management master's program scrutinizes issues of law, policy and leadership expressly to create the next generation of cybersecurity's strategic leaders. With a degree that can be completed in as little as 16 months, you will learn from the field's top experts about the strategies and practices that protect critical information and make sure that the world's digital infrastructure remains secure.

Visit the program website (<https://cps.gwu.edu/masters-cybersecurity-strategy-information-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required:		
PSCS 6244	Information Systems Protection	
PSCS 6245	Cybersecurity Law and Policy	
PSCS 6246	Cyber Intelligence and Strategic Analysis	
PSCS 6247	Cyber Defense Strategy	
PSCS 6248	Introduction to Cyber Conflict	
PSCS 6255	Information Management for Justice and Public Safety Professionals	
PSCS 6256	Application of Technology to Data Analytics	
PSCS 6257	Enterprise Architecture and Standards	
PSCS 6258	Information Sharing and Safeguarding	
PSCS 6259	Strategic Information Technology Investment and Performance Management	
PSHS 6260	Methods of Analysis in Security	
PSHS 6270	Capstone Project	

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSCS 2101. Writing and Communication in a Technical Field. 4 Credits.

The fundamentals of reading and writing with a clear sense of purpose and audience. How academic writing in virtually any subject area and on virtually any topic represents a formal engagement with larger scholarly debates. The writing process, including prewriting, drafting, and revision as well as basic research methods. Making clear oral presentations. (Same as PSIS 2101).

PSCS 2102. Fundamentals of Information Technology and Computing. 4 Credits.

Basic concepts of programming including elementary data types (numeric types, strings, lists, and files), control flow, functions, objects, loops, and methods are covered. Designing, maintaining, and implementing programs in a modern programming language. (Same as PSIS 2105).

PSCS 2301. Cyber Investigation. 4 Credits.

The investigative framework and tools needed for the investigation of cyber crime. Crimes that involve computer technology; procedural and tactical issues associated with the prosecution of cyber crime.

PSCS 2302. Digital Forensics. 4 Credits.

An introduction to digital forensic science and the systematic process of acquiring, authenticating, and analyzing digital evidence. Forensic methods and laboratories; tools, techniques, and methods used to perform computer forensics and investigation; and emerging technologies. Theoretical and practical experience using forensic equipment and software.

PSCS 2303. Compliance and Risk Management. 4 Credits.

Data protection from a risk management perspective. Data retention; security and protection technologies; technology requirements for compliance, governance, and data security; the importance of e-discovery for civil litigation; the impact of third-party services in conjunction with data protection; and data processing facets, such as the role of tiering and server and storage virtualization.

PSCS 2304. Incident Response. 4 Credits.

Principles and techniques for detecting and responding to current and emerging computer security threats. Data breaches, advanced malware, and targeted attacks. Law and policy related to incident response.

PSCS 2305. Practicum: Incident Response Techniques. 2 Credits.

Students integrate and apply acquired knowledge and technical skills in computer laboratory settings with a focus on cyber investigation and incident response techniques.

PSCS 3100. Principles of Cybersecurity. 4 Credits.

Basic principles and concepts in information security and information assurance; technical, operational, and organizational issues of securing information systems.

PSCS 3103. Ethics, Law, and Policy. 4 Credits.

Overview of ethical, legal and policy issues related to the impact of modern technology on society; ethical theories and decision making, professional responsibility and codes of ethics, copyright and intellectual property, information accountability, freedom of information and privacy, the Internet and considerations associated with information sharing and social networking.

PSCS 3107. IP Security and VPN Technology. 4 Credits.

Risks associated with an organization's network being connected to the public Internet; defensive technologies, types of encryption, enterprise firewalls, intrusion detection/prevention, and access control technologies; active threat agents and exploitation techniques used to compromise the digital infrastructure.

PSCS 3109. Network Security. 4 Credits.

Security aspects of networks and network technology; intrusion detection, virtual private networks (VPN), and firewalls; types of security threats, security policy design and management; and security technologies, products, and solutions.

PSCS 3111. Information Technology Security System Audits. 4 Credits.

Theory, methodology, and procedures related to IT system audits; proper audit procedures for discovering system vulnerabilities; documenting findings according to the standards of compliance based auditing.

PSCS 3113. Topics in IT Security Defense Countermeasures. 4 Credits.

Theory, methodology, and practical experience relating to IT defense countermeasures; system vulnerabilities and how adversaries can exploit them. Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

PSCS 3117. Project Management in Information Technology. 4 Credits.

Concepts and basic functions of the project management body of knowledge, including scope, quality, time, cost, risk, procurement, human resource, and communication management and integration of these functions into a project management system; roles and responsibilities of various project staff.

PSCS 4102. Intrusion Detection and Vulnerability Management. 4 Credits.

The use of intrusion detection systems (IDS) as part of an organization's overall security mechanisms; implementation and testing of IDS security plans, security monitoring, intrusion detection, alarm management, analysis of events and trends, and vulnerability management.

PSCS 4103. Securing Operating Systems. 4 Credits.

The security techniques and technologies integrated into Microsoft operating systems, which are a frequent target of attacks; primary threats and protection mechanisms developed by Microsoft and others; tools used to defend against known risks and vulnerabilities; client and server operating systems, OS hardening, application security, and Active Directory.

PSCS 4104. Securing Network Devices. 4 Credits.

Key network components and devices that need to be secured in order to protect networks from attack; practical and theoretical perspectives on network protection technologies; weaknesses and vulnerabilities; mitigation strategies; viruses, worms and other threats.

PSCS 4105. Cyber Defense Techniques Practicum. 2 Credits.

Working with cybersecurity experts and other qualified computer laboratory personnel, students integrate, apply, and strengthen acquired knowledge and technical skills in laboratory settings.

PSCS 4110. Data Communication and Networking Technologies. 4 Credits.

Overview of the networking technologies deployed by modern enterprises. Hardware and software used to transfer information from source to destination, including switches, routers, firewalls, Ethernet, and the TCP/IP protocols suite. (Same as PSIS 4141).

PSCS 4190. Capstone Project. 4 Credits.

Students use the knowledge and skills acquired throughout the program to conduct significant, independent research or work on a real-life project relevant to their interest in the security field. (Same as PSIS 4190).

PSCS 4201. Cyber Threats and Exploitations Analysis. 4 Credits.

This course will focus on identifying, managing and mitigating cyber threats that an organization could face at any given time. Current and emerging cyber threats will be discussed and examples from real cyber attacks will be analyzed. Students will use various threat modeling tools and cyber intelligence techniques to simulate real counter-threat designs.

PSCS 4202. Cyber Attack Tools and Techniques. 4 Credits.

Linux-based introduction to traditional and contemporary attack tools and technologies used by threat actors. Constructing an effective computer network defense.

PSCS 4203. Analysis of the Intelligence Cycle. 4 Credits.

The intelligence cycle and sources. Target modeling and organizational analysis; quantitative and predictive techniques. The role of intelligence collectors, consumers, and analysts in developing a conceptual model of the intelligence target.

PSCS 4204. Computer Network Attack and Exploitation. 4 Credits.

Cyber attacks orchestrated by computer networks to distract, deny, degrade, or destroy other computer networks or information within large computer systems. Developing standardized attack scenarios to be used against specific targets and providing operational planning to conduct network attacks.

PSCS 4205. Practicum: Cyber Attack Techniques. 2 Credits.

Students integrate and apply acquired knowledge and technical skills in computer laboratory settings. Various cyber attack tools and techniques, including penetration testing and ethical hacking.

PSCS 6244. Information Systems Protection. 3 Credits.

Major areas of information security, including risk management, cybercrime, cyber conflict, and the technologies involved in both cyber attacks and information systems protection; root causes of insecurity in information systems and the processes involved in creating, implementing, and maintaining an information security program. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6245. Cybersecurity Law and Policy. 3 Credits.

Law and policy perspectives on the federal government's response to cyber threats; legal concepts relating to investigation and enforcement activities; application of traditional laws of armed conflict in cyberspace; and national security concerns. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6246. Cyber Intelligence and Strategic Analysis. 3 Credits.

National and international cyber strategies, law, and policy as they relate to cyber intelligence efforts with a review of current cyber threats to national security; identification of strategic, operational, and tactical cyber intelligence efforts, the cyber threat landscape, and intelligence-led policing relative to cyber enforcement and investigation. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6247. Cyber Defense Strategy. 3 Credits.

The fundamentals of cyber defense strategy; understanding the organization's threatscape and building a threat matrix to prioritize and monetize cyber security defense needs; creating a sound cyber defense strategy through efficient use of known security management practices and establishing a management program to implement the defense strategy. Restricted to students in the MPS in CSIM program or with the permission of the instructor. Prerequisite: None.

PSCS 6248. Introduction to Cyber Conflict. 3 Credits.

The emerging concept of cyber conflict, its history over the last 25 years, and its integration into government and military strategies; technical, tactical, and strategic use of information technology between state and non-state actors; cyber conflict as an evolving phenomenon. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6255. Information Management for Justice and Public Safety Professionals. 3 Credits.

Application of information management techniques to justice and public safety fields; governance structure, emerging modes of communication within and outside organizations, and processes that enable managers to make timely decisions. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6256. Application of Technology to Data Analytics. 3 Credits.

Strategic application of technology to data analysis; introduction to leading edge software, including predictive and spatial analytics; principles of data visualization and application of analytics and visualization to solving justice and public safety problems; data collection, analysis, and production of usable information output. Restricted to students in the MPS in cybersecurity strategy and information management program.

PSCS 6257. Enterprise Architecture and Standards. 3 Credits.

Current and emerging trends in enterprise architecture domains; technology environments, including software, hardware, networks, applications, data, communications, and other relevant architecture disciplines; service-oriented architecture and similar innovations; conventions, principles, and practices for creating enterprise architectures; contemporary standards-based architectures for system development; industry guidelines and standards. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6258. Information Sharing and Safeguarding. 3 Credits.

Key principles of privacy and safeguarding of information; how information is shared among government agencies, outside the federal government, and between the government and the private sector. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6259. Strategic Information Technology Investment and Performance Management. 3 Credits.

The effective use of information technology within organizations; integration of IT in business processes, performance measurement, cost benefits analysis, and program evaluation; cross-disciplinary and comprehensive with examples from federal, justice and public safety, and industry organizations. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6260. Methods of Analysis in Security. 3 Credits.

Methods and problems of data collection in security fields with a focus on cybersecurity related issues and readings; analytical design, instrument utilization, sampling, and measurement; data analysis techniques. Restricted to students in the MPS in CSIM program.

PSCS 6270. Capstone Project. 3 Credits.

Designed to help participants refine their conception of leadership in and knowledge of the cybersecurity field. Students must have completed the MPS in CSIM program curriculum before enrolling in this course. Restricted to students in the MPS in CSIM program.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF HOMELAND SECURITY

Program Director E. Lammert

The master's of professional studies degree in homeland security provides a pioneering education on counter-terrorism, intelligence analysis, emerging security threats, and relevant legislation, enhancing the implementation of security practices in both public and private sectors.

This program offers innovative professional development opportunities for individuals involved in public and private safety sectors, have experience in law enforcement, emergency management, corporate security, transportation security, fire service, public safety, public health preparedness, or the military. Students are taught by acknowledged leaders in the field of homeland security who bring firsthand experience to the classroom, providing a strong focus on practical experience and strategic application of knowledge.

Visit the program website (<https://cps.gwu.edu/homelandsecurity/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits in required courses.

Code	Title	Credits
Required		
PSHS 6240	Political Violence and Terrorism	
PSHS 6241	Globalization of Threats and International Security	
PSHS 6242	Security and Civil Liberties	
PSHS 6243	Intelligence and Strategic Analysis	
PSHS 6244	Information Systems Protection	
PSHS 6250	Strategic Planning and Budgeting	
PSHS 6251	Inter-Agency Cooperation	
PSHS 6252	Emergency Management and Crisis Communication	
PSHS 6253	Managing the Politics of Leadership	

PSHS 6254	Strategic Change Management
PSHS 6260	Methods of Analysis in Security
PSHS 6270	Capstone Project

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSHS 3150. Transnational Threats and Security. 4 Credits.

Understanding global threats to U.S. national security interests and potential responses. How criminal groups, terror organizations, and gangs operate on a global scale. Questions long-held legal norms such as the rule of law and sovereignty. Restricted to student in the BPS in homeland security program. Prerequisites: N/A.

PSHS 3151. Combating Domestic Terrorism. 4 Credits.

Provides an in-depth look at methods used to conduct attacks within U.S. borders. Topics include lone wolf, directed and coordinated attacks. Restricted to students in the BPS in homeland security program.

PSHS 3152. Cyber Terrorism. 4 Credits.

Analysis of tactics used effectively by cyber terrorists via the internet and social media platforms to spread propaganda and radicalize and recruit individuals to fight for their causes. Restricted to student in the BPS in homeland security program.

PSHS 3160. Crisis and Emergency Planning. 4 Credits.

Presents an all-hazards approach to crisis and emergency planning. Starting with the strategic assessment of common man-made and natural hazards, students examine planning strategies in the urban environment, the incident command system (ICS), and industry standards for response and recovery operations. Restricted to students in the BPS in homeland security program.

PSHS 3161. Intelligence Data Analysis. 4 Credits.

The intelligence cycle and explains many of the issues relating to the use of criminal intelligence for the purpose of securing the homeland. Restricted to students the BPS in homeland security program.

PSHS 3162. Crime Scene Investigation. 4 Credits.

Basic considerations, guidelines, and procedures that help investigating police officers avoid oversight, ensure thoroughness of the search, and comply with legal and scientific principles in the identification, collection, and transportation of physical evidence. Restricted to students in the BPS in homeland security program.

PSHS 3170. Infrastructure Protection. 4 Credits.

Specific security measures that may be used to protect critical infrastructure, public facilities, public gatherings, and open spaces. Restricted to students in the BPS in homeland security program.

PSHS 3171. Introduction to Forensic Science. 4 Credits.

Forensics and its role in criminal investigations. Physical evidence collection and preservation techniques; how different disciplines intersect with crime investigations; and courtroom procedures related to the legal use of scientific evidence. Restricted to students in the BPS in homeland security program.

PSHS 3172. Computer Crime Investigation. 4 Credits.

Introduction to the investigation of computer-based crimes and its importance to the law enforcement community on a transnational level. Review of the history of computer crime, associated terminology, and the types of crimes committed in cyberspace. Restricted to students in the BPS in homeland security and BPS in police and security studies programs.

PSHS 4180. Security Threat Assessments. 4 Credits.

Identification of security vulnerabilities of specific critical infrastructure. Identifying international, domestic, and cyber threats, analyzing intelligence data, and applying this information to a security threat assessment. Restricted to students in the BPS in homeland security program.

PSHS 4181. Incident Management. 4 Credits.

Introduction to basic concepts in management of critical incidents; its historical birth in wildland firefighting and its rebirth and reformation in the aftermath of 9/11 in Homeland Security Presidential Directive #5 (HSPD-5). Successes and failures in incident management and their implications in shaping future processes and procedures. Restricted to students in the BPS in homeland security and BPS in police and security studies programs.

PSHS 4182. Emergency Public Health Issues. 4 Credits.

Comprehensive introduction to public health emergency preparedness and response, including bioterrorism threats and events. Recognizing, responding to, and managing natural and unnatural public health emergencies. Restricted to students in the BPS in homeland security program.

PSHS 4190. Capstone Project. 4 Credits.

Application of the knowledge, skills, and abilities acquired in the BPS in homeland security program. Conduct case study involving a high-profile criminal case, perform independent analysis of the case, and prepare a written report and presentation. Restricted to student in the BPS in homeland security and BPS in police and security studies programs.

PSHS 4191. Ethical Dilemmas in Policing. 4 Credits.

Issues related to use of force, misconduct, and corruption. The historical foundation of ethics and moral philosophy. Restricted to students in the BPS in homeland security and BPS police and security studies programs.

PSHS 4192. Media, Public Relations, and Crisis Communication. 4 Credits.

Best practices for interacting with the media and other key stakeholders, spokesperson techniques for communicating during a crisis situation, and strategic messaging. Restricted to students in the BPS in homeland security program.

PSHS 6240. Political Violence and Terrorism. 3 Credits.

The evolution of terrorism and politically motivated violence; causes and origins in regional, national, and international terrorist and insurgent groups and so-called terrorist states; trends in terrorist modus operandi, including asymmetric attacks; formulating effective counterterrorist strategies. Restricted to students in the MPS in homeland security program.

PSHS 6241. Globalization of Threats and International Security. 3 Credits.

The intersection of globalization and national and international security; how globalization may create new threats while amplifying existing threats; the relationship of specific forms of globalized threat to globalization; responses of states and non-state actors to such threats; the role of international organizations. Restricted to students in the MPS in homeland security program.

PSHS 6242. Security and Civil Liberties. 3 Credits.

Examination of U.S. government activities designed to protect the security of American citizens while balancing those interests against citizens' civil liberties; limitations placed on government activities by the First and Fourth Amendments of the Constitution; complexities associated with the characterization of criminals and terrorists. Restricted to students in the MPS in homeland security program.

PSHS 6243. Intelligence and Strategic Analysis. 3 Credits.

The structure and components of the national intelligence community and law enforcement communities; international intelligence comparison; analysis of intelligence policies and strategies at the international, national, and regional levels. Restricted to students in the MPS in homeland security program.

PSHS 6244. Information Systems Protection. 3 Credits.

Exploration of the major areas of information security including risk management, cybercrime, cyberconflict, and the technologies involved in both cyberattacks and information systems protection; creating, implementing, and maintaining an information security program; root causes of insecurity in information systems.

PSHS 6250. Strategic Planning and Budgeting. 3 Credits.

The adaptation of strategic planning and performance measures beyond budgeting by government agencies dealing with long-term security issues; integrative approach to strategic planning and management, focusing on the implementation, evaluation, and oversight of strategy and policy; development of budgets, accountability plans, and risk management to ensure compliance with stated goals; analytical tools and techniques that inform organizational strategies and actions. Restricted to students in the MPS in homeland security program.

PSHS 6251. Inter-Agency Cooperation. 3 Credits.

In-depth study of interagency cooperation issues relevant to the U.S. Department of Homeland Security's organizational structure; cooperative initiatives through mutual assistance agreements and regional, national, and international structures; technology interoperability, legal, and interorganizational challenges. Restricted to students in the MPS in homeland security program.

PSHS 6252. Emergency Management and Crisis Communication. 3 Credits.

The role of crisis communications in the overall management of emergency operations; critical communications tasks, functions, and operations of the emergency operations center, incident command, and associated emergency personnel; strategies and tactics to enhance and promote effective crisis communications among government emergency managers. Restricted to students in the MPS in homeland security program.

PSHS 6253. Managing the Politics of Leadership. 3 Credits.

The role of power and influence in organizations; complexity and challenges of developing political strategies and mobilizing the political support and resources needed to implement objectives. Restricted to students in the MPS in homeland security program.

PSHS 6254. Strategic Change Management. 3 Credits.

The challenges, techniques, burdens, and successes associated with initiating and implementing major change within organizations; the process of organizational change from multiple theoretical perspectives. Restricted to students in the MPS in homeland security program.

PSHS 6260. Methods of Analysis in Security. 3 Credits.

Methods and problems of data collection in security fields; analytical design, instrument utilization, sampling, and measurement; data analysis techniques. Restricted to students in the MPS in homeland security program.

PSHS 6270. Capstone Project. 3 Credits.

Students refine their conception of leadership and knowledge of the homeland security field. Participants experience leadership in action and enhance independent learning while working in both small and large group dynamics. Restricted to students enrolled in the PSHS cohort. Prerequisites: All the curriculum in the PSHS must be completed before registering for this course.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LAW FIRM MANAGEMENT

This program is not accepting applications at this time.

Law Firm Management program provides law firm professionals with the business and leadership knowledge they need to succeed in the fast-growing law firm industry. Program faculty consists of professors from the GW School of Business and adjunct professors who are experts in their legal fields.

Students have attended the program from law firms of varying sizes located throughout the United States, Canada, Asia, the Middle East and Europe. Professional administrators from Arnold & Porter Kaye Scholer; DLA Piper; Jones Day; Vinson and Elkins; Morgan, Lewis & Bockius; Patterson Belknap; Hogan Lovells; Weil Gotshal; and Skadden Arps; as well as companies providing services to law firms, have attended the program.

All students have professional administrative experience in law firms or related settings. Positions held by students include: Administrator, Executive Director, Chief Operating Officer, Director of Human Resources, Director of Professional Development, Marketing Manager, Operations Manager, Finance Director, IT Manager, Managing Partner, Practice Group Leaders, Library, Senior Paralegals, Knowledge Management, and Counsel.

The Master of Professional Studies in Law Firm Management is a 30-credit program that can be completed in 18 months. The program combines Distance Learning and Short-Term Residencies at the GW Alexandria Graduate Education Center. The program begins each summer.

Visit the program website (<https://cps.gwu.edu/law-firm-management/>) for additional information.

REQUIREMENTS

This program is not accepting applications at this time.

The following requirements must be fulfilled: 30 credits in required courses.

Code	Title	Credits
PSLM 6201	Theories, Principles, and Practices of Law Firm Management	
PSLM 6202	Applying Strategic and Business Planning	
PSLM 6203	Practical Applications of Law Firm Management	
PSLM 6204	Principles of Leadership	

PSLM 6205	Application of Leadership Frameworks
PSLM 6206	Strategic Leadership for Sustainability and Change
PSLM 6207	Process Improvement in Law Firms
PSLM 6208	Legal Technology and Knowledge Management

See CPS regulations (p. 1140) for additional information regarding enrollment status and time limits.

FACULTY

Director C. Leonard

COURSES

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PSLM 5099. Variable Topics. 1-99 Credits.

PSLM 6201. Theories, Principles, and Practices of Law Firm Management. 6 Credits.

PSLM 6202. Applying Strategic and Business Planning. 3 Credits.

Team projects using a simulated law firm case study, including practice group and office profitability analysis, market assessments, creation of strategic plans, and merger analyses. Prerequisite: PSLM 6201.

PSLM 6203. Practical Applications of Law Firm Management. 3 Credits.

Presentation of strategic plans, analyses, and recommendations developed in PSLM 6202 before a panel of faculty, managing partners, and law firm professionals. Prerequisite: PSLM 6202.

PSLM 6204. Principles of Leadership. 6 Credits.

An intensive course focused on theories and principles of leadership within firms, including leading organizational change. Prerequisite: PSLM 6203.

PSLM 6205. Application of Leadership Frameworks. 3 Credits.

Concepts and frameworks that highlight leadership roles in firms. Prerequisite: PSLM 6204.

PSLM 6206. Strategic Leadership for Sustainability and Change. 3 Credits.

Integration of the content of PSLM 6204 and PSLM 6205 through a focus on strategic leadership. Prerequisite: PSLM 6205.

PSLM 6207. Process Improvement in Law Firms. 3 Credits.

Development of charters for major projects in law firms, applying skills pertaining to managing change and conflict. Prerequisite: PSLM 6206.

PSLM 6208. Legal Technology and Knowledge Management. 3 Credits.

Key elements of knowledge management, including development of a knowledge management strategy. Prerequisite: PSLM 6207.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LAW FIRM MANAGEMENT

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FACULTY

Director C. Leonard

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PSLM 5099. Variable Topics. 1-99 Credits.

PSLM 6201. Theories, Principles, and Practices of Law Firm Management. 6 Credits.

PSLM 6202. Applying Strategic and Business Planning. 3 Credits.

Team projects using a simulated law firm case study, including practice group and office profitability analysis, market assessments, creation of strategic plans, and merger analyses. Prerequisite: PSLM 6201.

PSLM 6203. Practical Applications of Law Firm Management. 3 Credits.

Presentation of strategic plans, analyses, and recommendations developed in PSLM 6202 before a panel of faculty, managing partners, and law firm professionals. Prerequisite: PSLM 6202.

PSLM 6204. Principles of Leadership. 6 Credits.

An intensive course focused on theories and principles of leadership within firms, including leading organizational change. Prerequisite: PSLM 6203.

PSLM 6205. Application of Leadership Frameworks. 3 Credits.

Concepts and frameworks that highlight leadership roles in firms. Prerequisite: PSLM 6204.

PSLM 6206. Strategic Leadership for Sustainability and Change. 3 Credits.

Integration of the content of PSLM 6204 and PSLM 6205 through a focus on strategic leadership. Prerequisite: PSLM 6205.

PSLM 6207. Process Improvement in Law Firms. 3 Credits.

Development of charters for major projects in law firms, applying skills pertaining to managing change and conflict. Prerequisite: PSLM 6206.

PSLM 6208. Legal Technology and Knowledge Management. 3 Credits.

Key elements of knowledge management, including development of a knowledge management strategy. Prerequisite: PSLM 6207.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PARALEGAL STUDIES

Program Director T. Marsh

The master of professional studies in the field of paralegal studies is an advanced credential for those who wish to lead the profession in a variety of settings such as law, finance, insurance, consulting, and health care. The program curriculum balances a focus on analysis and critical thinking with the applied skills that employers seek, such as written and oral communication, research, and managing complex tasks and teams.

Students complete the 32-credit program in four semesters.

GW's College of Professional Studies also offers an 18-credit graduate certificate in paralegal studies (p. 1163), which is completed in two semesters.

The 24-credit graduate certificate California paralegal studies (p. 1162) complies with the law mandating that paralegals practicing in California must possess certain credentials. The certificate includes a highly recommended course on California law, practice, and ethics and typically is completed in three or four semesters.

Credits earned in both graduate certificate programs may be applied toward master's degree requirements.

The dual master of professional studies in paralegal studies and graduate certificate in healthcare corporate compliance (p. 1163) provides a solid legal education and coursework in healthcare corporate compliance that is accredited by the Compliance Certification Board (<https://www.compliancecertification.org/AboutCCB.aspx>).

Students may attend classes in the evenings at the GW Graduate Education Center in Alexandria, VA, at GW's Foggy Bottom Campus in Washington, DC, or online.

Visit the program website (<https://cps.gwu.edu/paralegal-studies-master-professional-studies/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 32 credits in required courses.

Code	Title	Credits
Required		
PSLX 6210	American Jurisprudence	
PSLX 6211	Legal Research and Writing	
PSLX 6212	Litigation	
PSLX 6214	Administrative Law	
PSLX 6215	Government Contracts Law	
PSLX 6223	Contracts	
PSLX 6224	Advanced Legal Writing	
PSLX 6225	Business Entities	
PSLX 6226	International Law	
PSLX 6227	Intellectual Property Law	
PSLX 6294	Independent Research in Legal Studies	
PSLX 6298	Paralegal Practicum	

See CPS regulations for additional information regarding enrollment status and time limits.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLX 3210. Introduction to the U.S. Legal System. 4 Credits.

Introduction to the U.S. legal system. Foundations of law, issue spotting and legal writing, the Federal Rules of Civil Procedure, rules of court, ethics and professionalism, and the unauthorized practice of law.

PSLX 5099. Variable Topics. 1-99 Credits.

PSLX 6210. American Jurisprudence. 3 Credits.

An introduction to the foundations, theories, history, and applications of the American legal system; local, state, and federal courts and sources of law; and ethics and professionalism issues of especial importance to paralegals.

PSLX 6211. Legal Research and Writing. 3 Credits.

Fundamentals of legal research using print and online tools.

PSLX 6212. Litigation. 3 Credits.

Legal technology and the rules of court, procedure, and evidence; technical and substantive skills necessary for effective litigation support.

PSLX 6213. Corporations and Contracts Law. 3 Credits.

PSLX 6214. Administrative Law. 3 Credits.

An introduction to administrative and regulatory law; history and development of administrative law; agency, due process, agency actions, administrative investigation and hearings, and judicial review.

PSLX 6215. Government Contracts Law. 3 Credits.

The law of procuring, forming, and executing government contracts, including drafting and litigation; competition requirements, contract changes, and contract terminations; researching and drafting documents common to a government contracts practice.

PSLX 6223. Contracts. 3 Credits.

Contract elements, their attendant legal ramifications, and the processes necessary to make such determinations. Development of legal reasoning skills in evaluating issues arising from contract law.

PSLX 6224. Advanced Legal Writing. 3 Credits.

Advanced legal writing techniques and drafting for legal practice. Legal writing in plain English; strategies for effective writing; emphasis on legal memoranda, legal correspondence, and preparing and drafting legal pleadings and documents for court. Refines and advances skills in written legal analysis and legal citation.

PSLX 6225. Business Entities. 3 Credits.

Overview of business organizations, including partnerships, limited liability companies, and corporations. Key concepts applicable to business organizations, including regulation, business formation, document preparation. Application of legal analysis within the context of business entities and other topics applicable to paralegals in all disciplines.

PSLX 6226. International Law. 3 Credits.

Introduction and survey of international law, including international trade law and litigation. Rules and principles governing relations among sovereign states, international organizations, and sources of international law. Analysis of the rules and customs for handling international trade. International courts and tribunals; overview of the treaties, customary principles, and institutional structures governing international human rights law.

PSLX 6227. Intellectual Property Law. 3 Credits.

Introduction to the legal structure of an intellectual property practice. Trademarks, copyrights, and patents and the supporting practice concomitant to each element. Analysis of the processes, supporting documentation, laws, and rules regarding patent prosecution and litigation. This course complements and builds upon the legal issues and analysis introduced in the courses on contracts, business entities, and litigation.

PSLX 6228. California Law and Practice. 3 Credits.

Overview of the state of California's government and court structures, rules of court, litigation support procedures and technology, and professional ethics. May be used to satisfy the California paralegal continuing legal education requirement.

PSLX 6294. Independent Research in Legal Studies. 2 Credits.

Guided, independent research to demonstrate the higher level of competency in research, analysis, writing, and oral presentation. Restricted to students in the MPS in paralegal studies programs.

PSLX 6298. Paralegal Practicum. 3 Credits.

Students work in legal environments while completing their studies, taking active roles to obtain, manage, and maximize the value of their positions. Restricted to students in the MPS in paralegal studies program.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF PUBLISHING

Program Director J. Warren

Designed for current and aspiring professionals, including post-bachelor and post-graduate students with degrees in other disciplines, the master of professional studies (MPS) in publishing program offers evening courses at GW's convenient Alexandria Graduate Education Center and Online, allowing students to complete the degree in two years while working. The curriculum is regularly reviewed by faculty, which includes nationally and internationally recognized leaders in print and digital publication. This ensures that the MPS provides a solid background for entry into all areas of publishing. Professionals already in the field of publishing can use this program to enhance their careers with exposure to the latest technological advances.

To earn the MPS, students must complete 30 credit hours. Core coursework provides a broad foundation of the entire industry, regardless of method of delivery (book, journal, or online), with five tracks focusing on professional roles: editorial, business, design, marketing, and technology. Tracks focusing on professional roles: business & marketing, editorial, or technology & design.

Visit the program website (<http://cps.gwu.edu/publishing/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 16 credits in required courses and 14 credits in elective courses.

Code	Title	Credits
Required		
PSPB 6201	Book and Journal Publishing	
PSPB 6203	Business of Publishing	
PSPB 6205	Copyright Law in Print and Cyberspace	
PSPB 6207	Marketing Strategies	
PSPB 6232	Production Management	
PSPB 6251	Fundamentals of Electronic Publishing	
PSPB 6281	Ethics in Publishing	
At least one course in each of the following groups:		
Editorial group		

PSPB 6261 Editorial Content, Rights, and Permissions

PSPB 6262 Editing for Books, Journals, and Electronic Products

PSPB 6265 Managing Editorial Staff

Business and marketing group

PSPB 6221 Publishing Management, Organization, and Strategy

PSPB 6222 Accounting and Finance for Publishers

PSPB 6271 Sales Management, Strategy, and Positioning

PSPB 6272 Book Publicity and Promotion

Technology and design group

PSPB 6213 Book Design

PSPB 6253 Electronic Publishing Theory & Practice

PSPB 6257 Designing for E-Publishing Success

PSPB 6256 E-Publishing Technologies And Standards

PSPB 6259 E-Publishing Tools

Electives

Credits beyond those for all required courses are taken as electives; at least one elective must be taken in each group.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPB 5099. Variable Topics. 1-99 Credits.

PSPB 6126. Children's Publishing and Media. 2 Credits.

Explores the children's media industry with a focus on book publishing. Overview of children's and YA print, digital, audio, and video segments. Reviews business opportunities, market analysis, trends, demographics, acquisition, and outreach.

PSPB 6201. Book and Journal Publishing. 3 Credits.

Fundamental aspects of the publishing industry, including business models, acquisitions, production, marketing, and sales for both books and journals. Challenges to the industry and strategic decisions formed and communicated by publishers.

PSPB 6203. Business of Publishing. 2 Credits.

Business operations in the publishing industry and how various business practices impact the publishing ecosystem. Book acquisitions, contracts, business plans, and distribution strategies.

PSPB 6205. Copyright Law in Print and Cyberspace. 3 Credits.

Foundations of copyright law for print and electronic media. History and development of copyright law and key concepts such as exclusive rights, fair use, remedies for infringement, and the overall challenges in application of the law to all media.

PSPB 6207. Marketing Strategies. 2 Credits.

Marketing and promotional strategies for print and digital book and journal publishing products. Decisions marketing departments must make to help increase the impact of publishing products.

PSPB 6213. Book Design. 2 Credits.

The role of design in the publishing process. How components of book design, such as typography, imagery, page layout, cover design, printing, and production, are affected by and affect content, tone, function, and intended audience.

PSPB 6214. Professional Editor. 3 Credits.

The editorial function and importance of editorial judgment as personified in the acquisitions, developmental, substantive, and copy editor roles. Freelance editing, editorial management, challenges facing the professional editor, and potential editorial career trajectories. Prerequisite: PSPB 6201.

PSPB 6215. Editing Special Projects. 1 Credit.

Practical experience editing special projects, which may include journals, open educational resources, monographs, and books. Restricted to students in the online MPS in the field of publishing program. Recommended background: prior completion of PSPB 6214.

PSPB 6221. Publishing Management, Organization, and Strategy. 2 Credits.

Publishing management, strategic planning, how publishers add value, and organizational change. How ethics, diversity, and social responsibility inform organizations. Issues that drive the strategic planning process, such as staff involvement, team building, and resource allocation.

PSPB 6222. Accounting and Finance for Publishers. 2 Credits.

Accounting and financial reporting for a publishing organization's operating results, with an emphasis on evaluating what these results mean in terms of financial success, new business ventures, and sustainability.

PSPB 6223. Global Publishing. 2 Credits.

Overview of the publishing industry around the world. National publishing industries and strategies for entering those markets. Global English language publishing. Acquisition, sales, and production strategies. Translation rights and global strategies. Recommended background: prior completion of PSPB 6203.

PSPB 6224. Budgeting, Fulfillment, and Distribution. 2 Credits.**PSPB 6232. Production Management. 3 Credits.**

Publishing production and product life cycles. Students develop products, plan and specify requirements, select vendors, and learn about integrating digital products into print production processes.

PSPB 6251. Fundamentals of Electronic Publishing. 2 Credits.

Digital technologies and trends that have transformed the publishing industry in recent decades, including standards, business models, and technologies and approaches used in electronic publishing.

PSPB 6253. Electronic Publishing Practice. 2 Credits.

Pragmatic, economic, and ethical aspects of electronic publishing for responsible decision making. Prerequisite: PSPB 6251.

PSPB 6255. Electronic Publishing: Infrastructure and Architecture. 3 Credits.

Emerging content technologies, including software and hardware components of a typical publishing system, the enabling standards, and an introduction to publishing systems architecture. Prerequisite: PSPB 6251.

PSPB 6256. E-Publishing Technologies And Standards. 2 Credits.

Overview of current and emerging content technologies, software and hardware components of a typical publishing system, enabling standards, and publishing systems architecture. Restricted to students in the MPS in publishing program. Prerequisite: PSPB 6251.

PSPB 6257. Designing for E-Publishing Success. 2 Credits.

Principles of digital design, usability testing, search engine optimization, iterative design, and multiple presentational models. Information architecture, usability, and design. Prerequisite: PSPB 6251.

PSPB 6258. User-Centric Design for Print and Electronic Publications. 2 Credits.**PSPB 6259. E-Publishing Tools. 2 Credits.**

Employs tools to produce both book and magazine page layouts, while delving into style sheets, master pages, importing different file types, and rendering on different platforms. Considers print-ready projects and ways to use multimedia. Prerequisite: PSPB 6251.

PSPB 6261. Editorial Content, Rights, and Permissions. 2 Credits.

Meaning and monetization of rights in the publishing world. What editors need to know to negotiate terms for rights that they wish to acquire. The effects of emerging electronic and digital marketplace on permissions and rights.

PSPB 6262. Editing for Books, Journals, and Electronic Products. 2 Credits.

Facets of editing related to books and journals and electronic editions and derivatives of both publication types, and born-digital information products.

PSPB 6265. Managing Editorial Staff. 2 Credits.

Roles and responsibilities, workflows, best practices, policies, and procedures within editorial offices and how these roles may vary from office to office. Tools and strategies for effectively managing an editorial department in scientific, technical, and medical (STM) journal publishing.

PSPB 6271. Sales Management, Strategy, and Positioning. 2 Credits.

Essentials of sales strategy and marketing for books, magazines, and e-content products.

PSPB 6272. Book Publicity and Promotion. 2 Credits.

Overview of strategies, objectives, and tactics for promoting and publicizing new books, monographs, and other publishing products, using examples from trade, academic, and electronic publishing.

PSPB 6273. Managing the Marketing Portfolio. 2 Credits.

PSPB 6280. Applied Ethics in Publishing. 1 Credit.

Students work with publishers, advocacy groups, or community groups on a project that applies ethical theories to real-world publishing situations.

PSPB 6281. Ethics in Publishing. 1 Credit.

Ethical issues in publishing, including censorship, intellectual property rights, plagiarism, open access, business practices, and environmentally-responsible publishing. Issues of diversity, inclusion, and accessibility. Restricted to second-year students in the MPS in publishing program.

PSPB 6298. Digital Publishing Special Projects. 2 Credits.

Students address a real-world problem using publishing theory and application and consideration of workflows, product life cycle, schedules, deliverables, and dissemination. Prerequisites: PSPB 6251; and PSPB 6256, or PSPB 6257, or PSPB 6259.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF SUSTAINABLE URBAN PLANNING

Director S. Whitehead

The master of professional studies (MPS) in sustainable urban planning degree program is dedicated to helping students acquire the skills they need to face the challenges of modern urbanization, both in the United States and around the

globe. The program offers an array of high-level theoretical, philosophical, and historical courses in planning, urban issues, and new technological approaches that aim to prepare new planning professionals for success in the burgeoning field. Above all, the program gives students the ability to use their ideas to help forge better cities.

The complete sequence of classes required for the master's degree is offered each calendar year, including the summer session, and students may enroll on a full- or part-time basis.

The Sustainable Urban Planning Master's Degree is accredited by the Planning Accreditation Board (PAB). (<https://www.planningaccreditationboard.org/?id=30>) This is a high academic standard that recognizes professional planning programs in North America on the basis of performance, integrity, and quality. Successful completion of this program may reduce the time required to become certified through the American Institute of Certified Planners.

Visit the program website (<http://cps.gwu.edu/master-professional-studies-sustainable-urban-planning-0/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 33 credits in required courses and 15 credits in elective courses.

Code	Title	Credits
Required		
PSUS 6201	Principles of Sustainable Urban and Regional Planning	
PSUS 6202	Urban and Environmental Economics	
PSUS 6203	Research Methods: Geospatial and Econometric Analysis	
PSUS 6204	Land Use Law	
PSUS 6210	Transportation Planning in City Systems	
PSUS 6211	Regional Development and Agricultural Economics	
PSUS 6212	Sustainable Communities I: Housing and Design	
PSUS 6220	Planning Resilient and Low-Carbon Cities	
PSUS 6221	The Scientific Basis of Climate Change	
PSUS 6230	Sustainable Community Design Studio	
PSUS 6233	Capstone in Sustainable Urban Planning	

Electives

15 credits in elective courses selected from the following:

FINA 6290	Special Topics
PSUS 6213	Advanced Research Methods Individual Mentoring
PSUS 6214	Food and Cities
PSUS 6215	Urban Health Impact Assessment
PSUS 6216	Megacities in a Globalized World
PSUS 6218	Urban Growth and Affordability
PSUS 6223	Sustainable Communities II: Reading Cities and Town
PSUS 6224	Sustainable Energy for Cities and the Environment
PSUS 6225	Sustainable Building: Energy Demand, Efficiency, and Supply
PSUS 6231	Practicum: Climate Change Management and Policy
PSUS 6235	Advanced Topics in Urban Sustainability
PSUS 6236	International Studio in Sustainable Urban Planning
PSUS 6260	Introduction to Sustainable Design
PSUS 6261	Ecology of the Built Environment
PSUS 6262	Tools for Sustainable Design
PSUS 6266	Ecological Restoration

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSUS 5099. Variable Topics. 1-99 Credits.

PSUS 6201. Principles of Sustainable Urban and Regional Planning. 3 Credits.

The environmental, social, and economic elements of sustainability. Present and future challenges, including environmental management, energy policy, financial crises, global warming, inequality, public education, third and first world slums, the success and failure of nations, urban agriculture, urban economics, and more. The implications of sustainable development and conducting research based on evidenced-based policy. Students focus on the work of researchers outside of the planning field as they write a series of research essays containing reviews of relevant scientific literature.

PSUS 6202. Urban and Environmental Economics. 3 Credits.

The application of neoclassical economics to problems faced by practitioners of the field of sustainable urban and regional planning. Key economic concepts including supply and demand, consumption and production, markets and market failure, and measurement of environmental and other non-market commodities. An economist's perspective on the principals and methods for understanding urban and environmental challenges and solutions, urban growth, environmental quality, public policy, and other issues fundamental to contemporary development.

PSUS 6203. Research Methods: Geospatial and Econometric Analysis. 3 Credits.

Developing proficiency in geographic information systems (GIS) and econometric analysis; building and analyzing spatial datasets using ArcGIS and Stata statistical software.

PSUS 6204. Land Use Law. 3 Credits.

Understanding the legal context of land use planning as it applies to contemporary issues. The role of land use law in shaping the urban context and its implications for policy and practice.

PSUS 6210. Transportation Planning in City Systems. 3 Credits.

Transportation planning with long-run goals in mind, including reducing greenhouse gas emissions. The role of planning at local and regional scales within the broader framework of transportation engineering.

PSUS 6211. Regional Development and Agricultural Economics. 3 Credits.

The economics of land use patterns and development processes in the United States and elsewhere in the world. Introduction to the field of agricultural economics and examination of food deserts and other food-related problems relevant to the field of sustainable urban planning.

PSUS 6212. Sustainable Communities I: Housing and Design. 3 Credits.

Community development with a focus on policy and the various sectors of interest that affect contemporary urbanization. How policies, planning techniques, and implementation strategies form the core work of planning practitioners. Topics include water supply, food deserts, public health, and urban resilience. Pathways to more sustainable communities are explored through the policy arenas in which key decisions are made; key sectors that make up the fabric of communities; and special topics that have emerged as critical challenges for sustainable community development.

PSUS 6213. Advanced Research Methods Individual Mentoring. 3 Credits.

Builds on research skills learned in PSUS 6203. Students in the sustainable urban planning program work one-on-one with a faculty member of their choice on a project of joint design. Prerequisite: PSUS 6203.

PSUS 6214. Food and Cities. 3 Credits.

Examines agricultural systems, food production, consumption, and trade, and their links to urbanization, city growth, and public health, through lenses of history, technology, economic theory, geography, and public policy. The course explores the roles that food plays in the lives of urban inhabitants, and in shaping the urban landscape, and the role of cities in determining the geography, sustainability, and business of agriculture.

PSUS 6215. Urban Health Impact Assessment. 3 Credits.

Examines the relationship between the allied fields of urban planning and public health. Addresses the link between the built environment and various health outcomes and the value added incorporating health concerns into the planning and design processes.

PSUS 6216. Megacities in a Globalized World. 3 Credits.

Research-oriented course in which students identify, analyze, and recommend ways of addressing land use change and economic development within one of the world's megacities.

PSUS 6218. Urban Growth and Affordable Housing. 3 Credits.

Real estate economics, with an emphasis on urban growth and affordable housing; the process and outcome of economic development and the relationship between economic development and sustainable urban planning.

PSUS 6220. Planning Resilient and Low-Carbon Cities. 3 Credits.

International perspectives on urban planning, taking into consideration increased global temperatures resulting from greenhouse gas emissions-induced climate change. The course is taught with reference to the findings of the Intergovernmental Panel on Climate Change (IPCC) and considers how urbanization around the world must adapt to the reality of global warming and its consequences.

PSUS 6221. The Scientific Basis of Climate Change. 3 Credits.

The science underlying climate change policy and decision making. Earth systems, climate change projections, the need for mitigation, and impact assessment. Designed for non-scientists.

PSUS 6222. Climate Change Economics. 3 Credits.

Energy use in built environments with an emphasis on fundamental drivers of energy demand, strategies to promote energy efficiency, and essential features of energy supply; the relationship between energy demand and supply in development.; how advances in construction technology can help counter greenhouse gas emissions.

PSUS 6223. Sustainable Communities II: Tools for Assessment and Transformation. 3 Credits.

Builds on PSUS 6212 by further detailing the theory and tools relevant to the assessment and transformation of neighborhood and communities. Geospatial analysis explore the fundamental drivers of urban form, advanced transportation systems, theories of change, and various impact assessment tools used to inform policy implementation.

PSUS 6224. Sustainable Energy for Cities and the Environment. 3 Credits.

Resource management and renewable energy technologies. Vulnerabilities of existing urban structures, particularly the energy grid. Implications of and solutions to energy-related problems likely to arise in present and future cities.

PSUS 6228. Open Space and Public Facilities Planning. 3 Credits.

Relevant skills applicable to urban park planning. Students learn site assessment and analysis tools and produce a professional quality project.

PSUS 6230. Sustainable Community Design Studio. 3 Credits.

Students gain practical experience by applying research skills and creativity to analyze and resolve a real-world urban issue.

PSUS 6231. Practicum:ClimateChangeMgt&Pol. 3 Credits.

PSUS 6233. Capstone in Sustainable Urban Planning. 3 Credits.

The SUP Capstone is a self-paced project specific to individual students, conducted under the supervision of a faculty member/s of the student's choice. The capstone is a significant piece of research that ties the student's broader experience in the Sustainable Urban Planning Program together – and brings their cumulative learning to bear on a research question / topic / project of their choice and definition. The capstone is intended to be a piece of exemplary work that the student can use to help them get to the "next level." That is, the capstone is a project that demonstrates the students capabilities and ability to work independently – it might be used, for example, as a sample of work in the job application process. Capstone projects may take the form of academic research papers; applied policy briefs; posters; executive training courses; and more. The capstone is no less (and no more) than a full semester's worth of intensive work on a particular project; it is NOT a thesis, as defined by the George Washington University. Ideally, the capstone project is of sufficient quality that it is worth of being presented at a meeting of the American Planning Association (local chapter or national meeting) or other relevant professional context.

PSUS 6235. Advanced Topics in Urban Sustainability. 3 Credits.

PSUS 6236. International Studio in Sustainable Urban Planning. 3 Credits.

International immersion designed to promote an international exchange of research and scholarship on sustainable urban development and provide instruction on operating in a foreign setting.

PSUS 6260. Introduction to Sustainable Design. 2 Credits.

PSUS 6261. Ecology of the Built Environment. 2 Credits.

PSUS 6262. Tools for Sustainable Design. 3 Credits.

PSUS 6266. Ecological Restoration. 1 Credit.

PSUS 6269. Sustenance and the Landscape. 2 Credits.

CERTIFICATE PROGRAMS

Graduate certificates

The College of Professional Studies offers the following graduate certificates. In addition to those listed, graduate certificates in political management and strategic governance and in strategic communications campaigns are offered in Spanish to closed cohorts of students in Latin America and in Spain.

- California paralegal studies (p. 1162)
- Community advocacy (p. 1174)
- Digital communications (p. 1175)

- Digital politics (p. 1175)
- Global public relations (p. 1176)
- Healthcare corporate compliance (p. 1163)
- PACs and political management (p. 1176)
- Paralegal studies (p. 1163)
- Sustainable urban planning (p. 1163)

Additional information is available on the College of Professional Studies website (<https://cps.gwu.edu>).

GRADUATE CERTIFICATE IN CALIFORNIA PARALEGAL STUDIES

Director T. Marsh

As Washington DC's only academic-credit bearing paralegal studies program, the graduate certificate in paralegal studies provides powerful credentials and are a signal to the best employers that you withstood the academic rigor of one of the nation's best paralegal programs. You'll study with the nation's leading experts and get the critical knowledge and skills you need to enter legal, corporate, healthcare, or government practice with confidence and acumen.

The graduate certificate comprises the core course sequence plus any two of the legal practice areas courses, including the highly recommended California Law and Practice course. These eight courses, or 24 credits, builds on the foundational knowledge students gain in the early courses and expands on the knowledge in alignment with students' academic and professional objectives. Additionally, the certificate fully compiles with the educational requirements outlined in California Business and Professions Code, Chapter 5.6, §6450 (c), thereby allowing you to qualify as a paralegal in the state of California. Completion of this certificate typically takes three or four semesters.

Credits earned for the certificate can be counted toward the 32-credit master of professional studies in paralegal studies (p. 1155) degree. As a credit-bearing program, the certificate qualifies for military benefits and federal financial aid.

Visit the program website (<https://cps.gwu.edu/paralegal-studies-graduate-certificates/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 24 credits, including 18 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
PSLX 6210	American Jurisprudence	

PSLX 6211	Legal Research and Writing
PSLX 6212	Litigation
PSLX 6223	Contracts
PSLX 6224	Advanced Legal Writing
PSLX 6225	Business Entities
Two courses from the following:	
PSLX 6214	Administrative Law
PSLX 6215	Government Contracts Law
PSLX 6226	International Law
PSLX 6227	Intellectual Property Law
PSLX 6228	California Law and Practice

GRADUATE CERTIFICATE IN HEALTHCARE CORPORATE COMPLIANCE

Director J. Thorpe

Designed for professionals working in the field of healthcare compliance or who aspire to work in the field, the 12-credit graduate certificate in healthcare corporate compliance provides students with a uniquely comprehensive view of the field. Drawing from GW's Department of Health Policy in the Milken Institute School of Public Health and a leading healthcare law firm in Washington, DC, the program offers education in healthcare laws and regulations as well as tools and strategies for creating effective corporate compliance programs. As the center of federal healthcare policy and enforcement, the District provides the ideal backdrop for study, allowing unparalleled access to experts in the field, including current and former regulators and policymakers and other compliance professionals.

Visit the program website (<https://cps.gwu.edu/healthcare-compliance/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
PSHC 6201	Introduction to Health Care Corporate Compliance	
PSHC 6202	Compliance with Laws and Regulations I	

PSHC 6204	Compliance with Laws and Regulations II
PSHC 6206	Case Studies in Health Care Corporate Compliance

See CPS regulations (p. 1140) for additional information regarding enrollment status, grade-point average requirements, and time limits.

GRADUATE CERTIFICATE IN PARALEGAL STUDIES

Program Director T. Marsh

The graduate certificate in paralegal studies is designed for students who wish to enter the paralegal profession. The certificate is universally recognized as the standard entry-level credential. GW's approach is academic and practical, emphasizing leadership and teamwork, written and oral communication skills, ethics, and time management in addition to substantive law and legal technology skills.

Credits earned for the certificate can be counted toward the 32-credit master of professional studies in paralegal studies (p. 1155) degree. As a credit-bearing program, the certificate qualifies for military benefits and federal financial aid.

Visit the program website (<https://cps.gwu.edu/paralegal-studies-graduate-certificates/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required		
PSLX 6210	American Jurisprudence	
PSLX 6211	Legal Research and Writing	
PSLX 6212	Litigation	
PSLX 6223	Contracts	
PSLX 6224	Advanced Legal Writing	
PSLX 6225	Business Entities	

See CPS regulations (p. 1140) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN SUSTAINABLE URBAN PLANNING

Program Director S. Whitehead

The graduate certificate in sustainable urban planning is tailored to students seeking a credential in the field, but who are not in need of a complete master's degree. If a student wishes to continue their studies, all credits earned for this certificate may be applied toward degree requirements for the master of professional studies in the field of sustainable urban planning. (p. 1159)

Visit the program website (<https://cps.gwu.edu/sustainable-urban-planning/graduate-certificate-sustainable-urban-planning/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
PSUS 6201	Principles of Sustainable Urban and Regional Planning	
PSUS 6202	Urban and Environmental Economics	
PSUS 6210	Transportation Planning in City Systems	
PSUS 6211	Regional Development and Agricultural Economics	
Electives		
6 credits in elective Professional Studies Urban Sustainability (PSUS) courses		

See CPS regulations (p. 1140) for additional information regarding enrollment status and time limits.

GRADUATE SCHOOL OF POLITICAL MANAGEMENT

The Graduate School of Political Management, through the College of Professional Studies, offers the master of professional studies in the fields of political management, legislative affairs, and strategic public relations. Each program has a prerequisite of a bachelor's degree with a minimum *B* grade-point average from an accredited college or university and is subject to the CPS regulations (<https://cps.gwu.edu>) that appear under the respective programs. In addition, graduate certificate programs are offered in digital politics, public relations, PACs and political management, and global public relations. The master of professional studies in political communication and governance; and graduate certificates in both political management and strategic governance, and strategic communications and campaigns are offered in

Spanish to closed cohorts of students in Latin America and in Spain.

GRADUATE

Master's programs

- Master of Professional Studies in the field of legislative affairs (p. 1164)
- Master of Professional Studies in the field of political management (p. 1167)
- Master of Professional Studies in the field of political communication and governance (offered only in Spanish) (p. 1172)
- Master of Professional Studies in the field of strategic public relations (p. 1173)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Political Management (PMGT) (p. 1736)
- Legislative Affairs (LGAF) (p. 1675)
- Professional Studies Public Relations (PSPR) (p. 1765)

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF LEGISLATIVE AFFAIRS

To survive in Washington's complex political environment, the legislative affairs professional must have a comprehensive understanding of how Congress operates, how decisions are made on Capitol Hill, how to influence those decisions, and how to accomplish specific objectives within the legislative process.

Developed in consultation with government relations experts and legislative specialists, this challenging program delivers the knowledge and skills you need to work more effectively in the national policymaking arena. Learn how Congress and the White House develop public policy and examine the workings of Congress from the perspective of both scholars and practitioners.

The master's degree in legislative affairs offers an 11-course (33-credit-hour) program. Classes meet Monday through Thursday evenings on Capitol Hill at the Hall of the States. The

degree can be completed in less than two years. The three-part curriculum covers the political process and policy analysis in such areas as political leaders and parties, Congressional committees, campaigns and elections, interest groups, public opinion, media and public affairs, national security and foreign affairs, energy and environmental policy, and presidential relations.

Visit the program website (<http://gspm.gwu.edu/legislative-affairs/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 12 credits in required courses; at least 6 credits in courses in each of two elective areas; either 6 credits in thesis or 6 additional credits in one or both of the two elective areas; and successful completion of a master's comprehensive examination.

Code	Title	Credits
Required		
LGAF 6201	Politics and Public Policy	
LGAF 6202	Legislative Politics	
LGAF 6203	Executive–Legislative Relations	
LGAF 6204	Research Methods for Legislative Affairs Specialists	
Elective areas		
American Political Process		
At least two courses from the following:		
LGAF 6212	Congressional Committees	
LGAF 6217	Budgetary Politics	
LGAF 6218	Judicial Politics	
LGAF 6219	American Presidency	
LGAF 6222	Parties and Elections	
LGAF 6223	Public Opinion and Political Socialization	
LGAF 6224	Interest Group Politics	
LGAF 6228	Media and Congressional Politics	
LGAF 6233	Comparative Legislatures	
LGAF 6234	PACs and Congress	
LGAF 6235	Ethics and Congress	

LGAF 6241	Legislative Writing and Research
LGAF 6242	Legislative Drafting
LGAF 6243	Advanced Legislative Procedure
LGAF 6244	Running for and Serving in the U.S. Congress
LGAF 6247	Managing a Congressional Office

Public Policy Analysis

At least two courses from the following:

LGAF 6246	Congress and Foreign Policy
LGAF 6248	Religion and Politics
LGAF 6249	Congress and National Security Policy
LGAF 6251	Budgetary Policy
LGAF 6260	Special Topics: Domestic Policy
LGAF 6261	Congress and Defense Policy
LGAF 6262	Congress and Intelligence Policy
LGAF 6263	Congress and Cybersecurity Policy
LGAF 6264	U.S. Energy and Environmental Policy
LGAF 6266	Congress and Trade Policy
LGAF 6267	Congress and Healthcare Policy
LGAF 6270	Special Topics: Congress and Foreign Policy

Thesis option

LGAF 6299	Thesis
LGAF 6300	Thesis

Three additional credits in one of the elective areas, above.

Non-thesis option

Nine additional credits in one or both of the elective areas, above.

*With prior approval of the academic advisor, students may take up to three of the required number of elective courses in related disciplines.

Successful completion of a master's comprehensive examination is required.

See CPS regulations for additional information regarding enrollment status and time limits.

FACULTY

Director C. Burgat

Associate Professors S. Billet, S. Wiley

Professorial Lecturers R. Carr, G. Fisher, R. Whitlock

COURSES

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LGAF 5099. Variable Topics. 1-99 Credits.

LGAF 6201. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

LGAF 6202. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on member-constituency relations, individual and collective decision making, party and committee activities, executive-legislative relations, and interest-group activities.

LGAF 6203. Executive-Legislative Relations. 3 Credits.

Political and institutional relationships between the executive and legislative branches of the federal government.

LGAF 6204. Research Methods for Legislative Affairs Specialists. 3 Credits.

Approaches to political analysis. Construction of research designs and problems of measurement.

LGAF 6212. Congressional Committees. 3 Credits.

Overview of the history, function, and influence of Senate and House committees in the U.S. Congress.

LGAF 6217. Budgetary Politics. 3 Credits.

Examination of federal budget policymaking and politics.

LGAF 6218. Judicial Politics. 3 Credits.

Role of the judiciary in policy formulation; emphasis on Congress and the Supreme Court.

LGAF 6219. American Presidency. 3 Credits.

Personalized and institutionalized aspects of the presidency, with emphasis on the politics of contemporary policymaking.

LGAF 6221. Executive Branch Decision Making. 3 Credits.

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LGAF 6222. Parties and Elections. 3 Credits.

Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

LGAF 6223. Public Opinion and Political Socialization. 3 Credits.

Sources and dynamics of public opinion and political socialization.

LGAF 6224. Interest Group Politics. 3 Credits.

Theory, structure, and activities of interest groups in American politics.

LGAF 6228. Media and Congressional Politics. 3 Credits.

Role of the media in American politics, with emphasis on news coverage, political debates, and political advertising, with their impact on the electorate.

LGAF 6233. Comparative Legislatures. 3 Credits.

Selected problems of legislative theory and behavior from a comparative perspective, with particular reference to the parliamentary systems of Germany, France, and Britain.

LGAF 6234. PACs and Congress. 3 Credits.

Examination of the structure and function of political action committees in the United States in the context of wider arenas of campaign finance, elections, and issue management.

LGAF 6235. Ethics and Congress. 3 Credits.

The role of ethics in the U.S. Congress.

LGAF 6240. Special Topics in Legislative Affairs. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics.

LGAF 6241. Legislative Writing and Research. 3 Credits.

Using specialized databases and policy journals and communicating research findings to a sophisticated, policy-driven audience.

LGAF 6242. Legislative Drafting. 3 Credits.

Introduction for non-lawyers to the process of legislative drafting in the U.S. Congress.

LGAF 6243. Advanced Legislative Procedure. 3 Credits.

Detailed study of the rules, procedures, traditions, and constitutional underpinnings that govern the work of the U.S. Senate and House of Representatives.

LGAF 6244. Running for and Serving in the U.S. Congress. 3 Credits.

Running for and serving in Congress from a member's perspective.

LGAF 6245. Congressional Committees. 3 Credits.

The lawmaking processes of the U.S. Congress. Focus on the legislative workshops of the House and the Senate. Committees and subcommittees.

LGAF 6246. Congress and Foreign Policy. 3 Credits.

The role of Congress in setting foreign policy.

LGAF 6247. Managing a Congressional Office. 3 Credits.

Practical consideration of the proper structure, organization, and management of a Congressional office.

LGAF 6248. Religion and Politics. 3 Credits.

The influence of religion on politics in the United States.

LGAF 6249. Congress and National Security Policy. 3 Credits.

The role of Congress in setting defense policy.

LGAF 6251. Budgetary Policy. 3 Credits.

Analysis of U.S. monetary and fiscal policy.

LGAF 6260. Special Topics: Domestic Policy. 3 Credits.

Analysis of U.S. policy on selected domestic problems.

LGAF 6261. Congress and Defense Policy. 3 Credits.

The role of Congress in U.S. defense policy.

LGAF 6262. Congress and Intelligence Policy. 3 Credits.

The role of Congress in U.S. intelligence policy.

LGAF 6263. Congress and Cybersecurity Policy. 3 Credits.

The role of Congress in U.S. cybersecurity policy.

LGAF 6264. U.S. Energy and Environmental Policy. 3 Credits.

An overview of energy and environmental policymaking in the United States.

LGAF 6266. Congress and Trade Policy. 3 Credits.

The role of Congress in setting U.S. trade policy.

LGAF 6267. Congress and Healthcare Policy. 3 Credits.

The role of Congress in U.S. healthcare policy.

LGAF 6270. Special Topics: Congress and Foreign Policy. 3 Credits.

Analysis of U.S. policy on selected issues, challenges, or world regions.

LGAF 6290. Independent Study. 1-3 Credits.

Directed readings in a topic related to Congress and public policymaking. Limited to Legislative Affairs degree candidates. Written permission of program director required.

LGAF 6299. Thesis. 3 Credits.

LGAF 6300. Thesis. 3 Credits.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL MANAGEMENT

Director T. Belt

The master's degree in political management prepares students to influence the political process, be successful, and make a positive difference in their communities, whether they wish to work in the local, state, national, or international arena. The program's 36-credit curriculum helps aspiring political professionals to take their place in the emerging profession of politics. Students gain hands-on professional experience and

learn the strategy, tactics, and ethical principles they need for success.

The program may be tailored to specific career goals. Focus areas include advocacy politics, electoral politics, and advanced political skills. Classes meet Monday through Thursday evenings on GW's main campus in Foggy Bottom. The degree can be completed in as little as one year; however, students typically take two courses each semester and finish in two years.

Visit the program website (<https://gspm.gwu.edu/political-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 12 credits in required courses, 18 credits in elective courses and 6 credits in the thesis, non-thesis, or distance learning option.

Code	Title	Credits
Required		
PMGT 6401	Fundamentals of Political Management	
PMGT 6402	Applied Political Communications	
PMGT 6403	Political Data and Analytics	
PMGT 6404	Principled Political Leadership	
Electives		
Six courses from the following:		
PMGT 6410	Grassroots Engagement	
PMGT 6412	Issues Management	
PMGT 6422	State and Intergovernmental Politics	
PMGT 6430	Campaign Strategy	
PMGT 6432	Managing Campaigns	
PMGT 6434	Running for Office	
PMGT 6436	National Campaign Dynamics	
PMGT 6438	State and Local Campaigns	
PMGT 6440	Targeting and Voter Contact	
PMGT 6442	Campaigns Around the World	
PMGT 6450	Rules, Laws, and Strategy	
PMGT 6452	Digital Strategy	
PMGT 6454	Fundraising and Budgeting	

PMGT 6456	Speechcraft
PMGT 6458	Crisis Management
PMGT 6460	Audience Research
PMGT 6462	Opposition Research
PMGT 6464	Influencing the Media
PMGT 6466	Political Advertising
PMGT 6468	Digital Advertising and Action
PMGT 6470	Digital Content Creation
PMGT 6472	Maximizing Social Media
PMGT 6474	Stereotypes and Political Strategy
PMGT 6476	Political Consulting
PMGT 6490	Special Topics
PMGT 6496	Independent Study
PMGT 6497	Graduate Internship

Non-thesis option

Students who select the non-thesis option take the capstone course, PMGT 6495, and one additional elective in either their penultimate or final semester.

PMGT 6495	Political Power and Practice
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Thesis option

Students who select the thesis option take PMGT 6498 and PMGT 6499 over the course of their final two terms.

PMGT 6498	Thesis I
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PMGT 6499	Thesis II
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Distance learning

Distance learning students take PMGT 6480 or PMGT 6482 as part of their program of study.

PMGT 6480	Washington Residency
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PMGT 6482	Applied Research Project
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PMGT 1000. Dean's Seminar. 3 Credits.

PMGT 4101. Electoral and Legislative Processes. 3,4 Credits.

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PMGT 4107. Practicum in Political Management. 3,4 Credits.

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PMGT 4187. Professional Internship. 3-4 Credits.

PMGT 4192. Tutorial in American Electoral and Political Movements. 3-4 Credits.

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PMGT 5099. Variable Topics. 1-99 Credits.

PMGT 6401. Fundamentals of Political Management. 3 Credits.

Main concepts, arenas, developments, roles, and practices in the field of political management. Assess rhetorical situations, write strategy memos, create and critique campaign messages, and engage citizens, professional colleagues and decision-makers. Taken in first semester of program. (Professors M. Cornfield and TBD.).

PMGT 6402. Applied Political Communications. 3 Credits.

Models and methods by which professionals plan, produce, and adjust strategic communication messages in democratic politics. Use a variety of communication forms and media, such as, fact sheets, blog posts, video releases, and public addresses, under typical constraints of time, money, information, reputation, talent, audience attentiveness, and institutional procedure. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credits.

PMGT 6403. Political Data and Analytics. 3 Credits.

Introduction to the uses of quantitative data and statistics in politics. Learn to evaluate research designs, statistical associations, causal reasoning, methods for hypothesis testing, multivariate regression analyses, and data analytics. Consume and critique data and statistics for strategic purposes. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credits.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

PMGT 6404. Principled Political Leadership. 3 Credits.

Theory and practice of ethically grounded political leadership. Consideration of the recurrent dilemmas, philosophical principles, management techniques, codes of conduct, and professional norms in the political management field. Application through self-assessment exercises, case study analysis, and individual and group simulations. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credits.

PMGT 6410. Grassroots Engagement. 3 Credits.

Strategies and techniques to build advocacy support among and across general civic populations. Identification of potential supporters through database targeting and individual outreach. Motivation and training of interested supporters for grassroots action in campaigns, at public forums, and before decision-makers. Coalition and protest options; analytics of ongoing efforts. (Professors E. Greffe, S. Gagen).

PMGT 6412. Issues Management. 3 Credits.

Track, influence, and alter politically significant issue-related discourses and policy developments. Legislative, executive, and judicial venues and processes for policymaking; state referendum, initiative, and recall ballot opportunities; organizational structures, including digital procedures, for issue management. (Professors M. Edwards, E. Greffe).

PMGT 6414. Lobbying. 3 Credits.

Survey of and training for lobbying in the U.S. federal system. Students design a detailed lobbying plan for implementation and practice a variety of influence techniques, including those associated with digital media and communications technologies. Legal compliance, organizational and public accountability, professional standards and practices. (Professor J. Hobson).

PMGT 6416. International Lobbying. 3 Credits.

Survey of international lobbying practices, analysis of strategic models and best practices in a variety of different countries and political systems (e.g., EU, China, Brazil, and Turkey). Trends and innovations in lobbying techniques and communications technologies. Investigation and application of appropriate research to improve practice. (Professor TBD by AGE program) (Same as PSAD 6240).

PMGT 6418. Budget Politics. 3 Credits.

Politics of the budget process, including formal and informal mechanisms of appropriating U.S. federal funds. Lobbying strategies and tactics employed by private and public organizations seeking to influence budgetary agenda-setting in the White House; decision-making in Congress; and funding negotiations within and between executive agencies. (Professor M. Edwards).

PMGT 6420. Corporate Public Affairs. 3 Credits.

Exploration of major functional areas in corporate public affairs with a focus on the political and policy dynamics operating in the United States and other democracies. Development and deployment of appropriate strategies, research, and tactics for corporations managing the complexities related to a global economy and shifting political alliances.

PMGT 6422. State and Intergovernmental Politics. 3 Credits.

Examination of the electoral pressures on state and local legislators. Methods and techniques for advocacy in various state capitals. The governing responsibilities of constitutionally-delegated to states and the ever-changing historical relationship between states and the federal government. (Professors C. Shank).

PMGT 6424. Comparative Political Management Environments. 3 Credits.

The operating rules, customs, and processes by which laws are enacted and regulations written in countries around the world; governance systems and the realm of influencers; systems within which legislators, administrators, bureaucracies, and stakeholder's work. Restricted to graduate students. Credit cannot be earned for this course and PSAD 6260.

PMGT 6428. Cultural Aspects of Global Engagement. 3 Credits.

Understanding multicultural communities and diverse institutions, customs, and practices; effective and ethical public engagement on behalf of global organizations; communicating issues and commitments to diverse audiences and the general market; engagement strategies and techniques. Restricted to graduate Students. Same As: PSAD 6250.

PMGT 6430. Campaign Strategy. 3 Credits.

Orientation to the basic systems and technologies that must be created and managed to produce electoral victory. The campaign plan and campaign budget as the foundation for management of campaigns. Focus on development of a campaign plan. (Professor M. Meissner).

PMGT 6432. Managing Campaigns. 3 Credits.

Understanding the role of a campaign manager in staffing and running a campaign, while executing the campaign plan. Candidate handling, fundraising, website and technology, geographic and demographic targeting, field organization, canvassing, get-out-the-vote, press operations, budget control, and liaison with the party and interest groups. (Professors TBD) Prerequisites: PMGT 6430.

PMGT 6434. Running for Office. 3 Credits.

Electoral politics from the perspective of the candidate, strategic and personal factors involved in the decision to run and the consequences of victory or defeat. (Professor R. Fauchaux).

PMGT 6436. National Campaign Dynamics. 3 Credits.

Examination of the historical and systematic patterns in national elections. Differences between presidential and midterm elections; House and Senate contests; party nomination races and general elections; primaries and caucuses; Democratic and Republican party delegate selection rules; causes for "wave" elections; effect of the economy on election outcomes; and standard vice presidential selection models. The political and partisan structural conditions that exist before any of the candidates or the campaigns get involved.

PMGT 6438. State and Local Campaigns. 3 Credits.

Application of campaign strategy and management principles to electoral races at the state and local levels. Staffing, budgeting, and strategic challenges for what are typically lower-visibility contests that involve state and local candidates. Coordinated campaigns and the impact of the national party's reputation on these down-ballot races. (Professor TBD).

PMGT 6440. Targeting and Voter Contact. 3 Credits.

How to find voters for electoral and advocacy campaigns and tailor communications to them. Database analytics, list management, questionnaire design, target weighting, predictive modeling. Review of randomized and natural experiments in light of theoretic principles and findings from public opinion research. Skill development in use of spreadsheets and basic statistical packages. Lab fee. (Professors B. Russell, A. Strauss) Prerequisites: PMGT 6403.

PMGT 6442. Campaigns Around the World. 3 Credits.

Comparative examination of national-level campaigns in democratic countries outside of the United States. Strategies, techniques, and practices used in multi-party and/or parliamentary systems. Professional conduct, consulting rules and norms.

PMGT 6450. Rules, Laws, and Strategy. 3 Credits.

U.S. federal and state laws and regulations governing recognition of political parties and political organizations, campaign finance, political broadcasting and cablecasting, lobbying registration. Ballot access and voter registration. Ethical and strategic considerations (opportunities and constraints; benefits and drawbacks) related to rule construction. (Professor M. Braden).

PMGT 6452. Digital Strategy. 3 Credits.

Development of an integrated digital strategy for use in advocacy and electoral campaigns. Introduction to the theoretical concepts, distinctive technologies, applied skills, and managerial challenges associated with digital campaigning. Search engine optimization, GPS, online payment systems, customizing back- and front-end systems to meet strategic goals and budget parameters, working with IT vendors and distance volunteers, legal and cultural considerations in US and other regimes, site rollout and scaling, security and privacy. (Professor TBD).

PMGT 6454. Fundraising and Budgeting. 3 Credits.

Raising and spending money in political campaigns, referenda contests, issue advocacy, and lobbying efforts. Budgeting process, standard controls to check expenditures, accounting procedures, and general strategies for use in effective fundraising. (Professor N. Bocskor).

PMGT 6456. Speechcraft. 3 Credits.

Analysis and techniques used in speechwriting and presentations for public officials and candidates. Managing the political optics and understanding a speech's visual context and non-verbal communication capabilities (Rose Garden, Oval Office, campaign stump speech, ceremonial occasion, congressional testimony). Modulating speaker style, tone, and pacing, and staging the speech for effect. (Professors D. McGroarty, R. Lehrman).

PMGT 6458. Crisis Management. 3 Credits.

Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions. (Professor M. Edwards).

PMGT 6460. Audience Research. 3 Credits.

Processes by which citizens acquire political information and make decisions in politics. Survey research uses in electoral campaigns and issue advocacy. Designing and drawing samples, constructing and pretesting questionnaires, modes of interviewing, financial implications, practical problems in selecting and monitoring polling organizations, and interpretation of data. Focus groups and small-sample interviews; relationship between qualitative and quantitative research; reliability and validity. (Professors R. Johnson, D. Cantor, B. Tringali, M. Ward) Prerequisites: PMGT 6403.

PMGT 6462. Opposition Research. 3 Credits.

Practices and techniques associated with investigative opposition research. Public document and website searches, candidate tracking, and methods for information dissemination. Changes in practice as a result of technological innovations and a changing media environment. Professional responsibilities and ethics expected from opposition researchers.

PMGT 6464. Influencing the Media. 3 Credits.

Organization, practices, and norms of the major media; media coverage of public officials, political campaigns, legislative battles, interest groups, and issues of public policy. Formulation of strategies for getting favorable news coverage for the issue or candidate and for ending a media crisis. (Professor L. Ellenbogen).

PMGT 6466. Political Advertising. 3 Credits.

Strategies and techniques for using the various media (print, radio, television, cable, Internet) in political and advocacy campaigns, with emphasis on the use of television. Impact and uses of paid advertising; development of campaign messages; production, timing, and placement of television advertising; explanation of media markets. Students design print ads and brochures and produce a 30-second television spot. (Professor P. Fenn).

PMGT 6468. Digital Advertising and Action. 3 Credits.

Strategies and techniques for developing and leveraging digital advertising for mobilization. Manage an effective online ad campaign from initial concept to creation and from targeting to measuring the results. Prepare, design, and launch a variety of online ad types, including search, social, display, and video. Analyze success or failure based on analytics and benchmarking. Prerequisite: PMGT 6452.

PMGT 6470. Digital Content Creation. 3 Credits.

Developing and creating effective digital content that promotes campaign narratives and furthers strategic messages. Construct portfolios of original and aggregated digital media content. Skill development in infographics, video, GPS, photo collage, page and site architecture, and texts from 140 characters to blog posts and file attachments. Versioning for different communities, functionalities, and channels including mobile applications. Prerequisite: PMGT 6452.

PMGT 6472. Maximizing Social Media. 3 Credits.

Creating and integrating owned digital platforms and social media assets for political persuasion and action. Cultivation of online political communities, moderating and curating outside-generated content, integration and alignment with campaign message; event, reputation and crisis management. Review of constraints and potentials intrinsic to specific social media sites (e.g. Facebook, Google, LinkedIn, Twitter). Prerequisite: PMGT 6452.

PMGT 6474. Stereotypes and Political Strategy. 3 Credits.

Accounting for psychological constructs, social stereotypes, media framing, and the impression formation process in developing a political strategy. Review of empirical research; investigation of effective techniques or postures for overcoming biases; self-assessment of perceptual assumptions.

PMGT 6476. Political Consulting. 3 Credits.

Management principles, technical procedures, and legal requirements for starting and running a political consulting business. Effective practices for gaining a positive reputation, sustaining profitability across the variable political environment, and engaging on the international front. Start-up funding, mergers and acquisitions, exit strategies. (Professors G. Nordlinger, L. Purpuro, M. Meissner).

PMGT 6478. Strategic Government Consulting. 3 Credits.

How government agencies are organized and funded, how they support national strategies set by the president and Congress, and how expert consultants work with government leaders to operate and organize agencies to adapt to changing requirements and administrations.

PMGT 6480. Washington Residency. 3 Credits.

Capstone experience equivalent to PMGT 6495 for students in the online political management program. Exposure to and interaction with political consultants, advocacy specialists, elected officials, and applied researchers in Washington, DC. Integration of program curriculum toward an understanding of the federal political ecosystem and development of a robust political network. Restricted to PMGT online students in their last or penultimate term, or students with permission of the instructor.

PMGT 6482. Applied Research Project. 3 Credits.

A research option for students in the online Political Management program. Development of a campaign-relevant research report and related communications on behalf of a mock political client. The report describes the status quo of a political situation, analyze the factors and actors sustaining that status quo, identify what and who is potentially moveable in the direction the client seeks to go, and outline practical first steps a campaign can take in that direction. Restricted to PMGT online students in their last or penultimate term in the program.

PMGT 6490. Special Topics. 3 Credits.

Topic to be announced in the Schedule of Classes.

PMGT 6495. Political Power and Practice. 3 Credits.

Capstone seminar that develops and integrates knowledge of political strategies, tactics, and situational considerations, and applies that knowledge to advanced political problems. Topics include: gaining and wielding power, the complexity associated with making democracy work, conflict resolution, negotiation and bargaining skills, grappling with the consequences of winning and losing. Students to enroll during their last or penultimate term. (Professor L. Brown).

PMGT 6496. Independent Study. 3 Credits.

Independent research with a Political Management faculty member. Registration must be approved in advance by the supervising faculty member and the director of the political management program.

PMGT 6497. Graduate Internship. 0 Credits.

Experience at an organization focused on applied politics. Restricted to students in the MPS in political management program.

PMGT 6498. Thesis I. 3 Credits.

Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credits with a 3.3 GPA.

PMGT 6499. Thesis II. 3 Credits.

Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credits with a 3.3 GPA. Prerequisite: PMGT 6498.

PMGT 6501. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

PMGT 6502. ConfrontManag&AllianceBldg. 3 Credits.**PMGT 6503. Communication Strategy. 3 Credits.**

Formulation of political communications strategies. Elements necessary to create, introduce, and maintain an effective political profile in issue advocacy campaigns, candidate elections, and legislative advocacy campaigns. Application of principles of research, advertising, and marketing to the political landscape.

PMGT 6504. Political Management and Strategic Governance. 3 Credits.**PMGT 6505. Politica de bases. 3 Credits.**

Use of microtargeting and database-layering technology to identify potential advocates. Motivational techniques to mobilize volunteers for political campaigns, lobbying efforts, and community advocacy. Techniques used by grassroots organizers to help corporations, unions, civic and nonprofit organizations, and special interest groups achieve strategic goals.

PMGT 6506. Practicum. 3 Credits.**PMGT 6507. Democracia y elecciones en LA. 3 Credits.**

This course focuses on the recent history of Latin America, underscoring the struggle to establish and consolidate democracy and the preeminence of elections as the legitimate process to select and replace authorities at the national, regional and local levels. The course provides the student with concepts to understand the different types of democratic settings that exist in the region, that is the coexistence of fairly established and solid democracies, with low intensity democracies, and semi-authoritarian regimes, all of which utilize electoral processes to select public authorities. The main message of this course is that campaign designers need to understand and take a strategic advantage of the political context and the rules governing the political competition in order to obtain the most effective results.

PMGT 6508. Estrategia de campana LA. 3 Credits.

Organization of political campaigns. Strategic decisionmaking. Formulation of political communications strategies. Aspects necessary to introduce and maintain an effective political profile in the electoral campaigns in Latin America, including the specialized forms of communication which political professionals use to win support for their candidates. This course is taught entirely in Spanish.

PMGT 6509. Las encuestas-America Latina. 3 Credits.

The use of survey research in campaigns. Quantitative and qualitative survey research for political management in Latin America. The proper use of polls; methodology and survey design; reviewing poll results; drawing conclusions and recommendations from polls; and the practical problems of administering and interpreting survey data of public opinion in Latin America. PMGT 6509 is taught entirely in Spanish.

PMGT 6510. Organizacion y ejecucion-LA. 3 Credits.

Organizational choices facing campaign management teams in Latin America as they attempt to combine the resources and activities of a modern campaign into a winning effort.

PMGT 6511. Propoganda politica, La campan. 3 Credits.

The strategies, techniques, design and impact of paid political communications directed toward target audiences in Latin America, focusing upon the role of political advertising in a campaign, including radio, direct mail, print and internet, but with specific emphasis on television commercials.

PMGT 6512. Los medios, la politica-LA. 3 Credits.

The role of the media in the politics of Latin America. Who the media are, how they make their decisions, and how they influence outcomes in campaigns and other political situations. Strategic planning in dealing with the media as well as the particular dynamics that surround electronic, print, and the new media. Effective practices of media engagement. This course is taught entirely in Spanish.

PMGT 6513. Comunicacion Politica,Gobernon. 3 Credits.

The course builds upon the Practicum course of the Certificate in Governance and integrates the two processes of politics: campaigning and governing. PMGT 6513 is taught entirely in Spanish.

PMGT 6514. Manejo de Crisis. 3 Credits.

Manejo de Crisis. Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF POLITICAL COMMUNICATION AND GOVERNANCE (OFFERED IN SPANISH ONLY)

Program Director L. R. Matos

Offered entirely in Spanish to closed cohorts of students in Latin America and Spain, the online master's in political communication and governance program trains government officials, party leaders, campaign staff, candidates, CEOs, and NGO leaders to develop a professional approach to secure elective office and govern in a way that embraces values essential to democracy. Classes are taught by sophisticated

and seasoned political hands and government officials. Students learn directly how to win both elections and hearts and minds. Ultimately, with the insight gained in the program, graduates can advance the common good of their nation and embody the highly effective, practical political leadership needed for good governance.

Visit the program website (<https://online.gwu.edu/master-professional-studies-political-communications-governance/>) for additional information.

See CPS regulations (p. 1140) for additional information regarding enrollment status and time limits.

MASTER OF PROFESSIONAL STUDIES IN THE FIELD OF STRATEGIC PUBLIC RELATIONS

Director L. Parnell

The master's program in strategic public relations takes advantage of GW's connections in the nation's capital, focusing on the public policy system and the advocacy role played by PR firms and PR operations in corporations and associations in the Washington metropolitan area. The Graduate School of Political Management taps into experts in both the PR and political arenas, helping to prepare program graduates for professional advancement in the field. Focus areas include media and communications theory, ethics and law, new media strategies, evaluating communications programs, crisis communications, media relations, and management skills.

Classes for the 33-credit program meet Monday through Thursday evenings at GW's Alexandria Graduate Education Center.

Visit the program website (<http://gspm.gwu.edu/strategic-public-relations/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 30 credits, including 18 to 21 credits in required courses and 9 to 12 credits in elective courses.

Code	Title	Credits
Required		
PSPR 6201	Strategic Public Relations: Principles and Practice	
PSPR 6202	Advanced Writing for Public Relations Professionals (see note below)	
PSPR 6203	Research Methods for Public Relations and Public Affairs Managers	

PSPR 6204	Media Relations in a Digital World
PSPR 6205	Fundamentals of Business and Management for Public Relations and Public Affairs
PSPR 6206	Ethical Standards in Public Relations and Public Affairs
CPS 6300	Capstone Research Project

Electives

9 to 12 credits in elective courses chosen in consultation with the program director.

Note: Students may place out of PSPR 6202 based on review of their transcript and required writing samples. Such students take an additional elective course.

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPR 5099. Variable Topics. 1-99 Credits.

PSPR 6201. Strategic Public Relations: Principles and Practice. 3 Credits.

Basic rules and strategies in public relations. Major trends, major firms, and types of business and expertise. Digital media and integrated media communications.

PSPR 6202. Advanced Writing for Public Relations Professionals. 3 Credits.

The essentials of effective public relations and public affairs writing, emphasizing strategic thinking and compositional precision as the source of their efficacy and power.

PSPR 6203. Research Methods for Public Relations and Public Affairs Managers. 3 Credits.

PSPR 6204. Media Relations in a Digital World. 3 Credits.

Media relations from the perspective of public relations and public affairs; the state of contemporary media, both on- and offline, and its impact on commerce, politics, and the social contract; key factors influencing reportorial and editorial coverage of business, government, and nonprofit interests.

PSPR 6205. Fundamentals of Business and Management for Public Relations and Public Affairs. 3 Credits.

PSPR 6206. Ethical Standards in Public Relations and Public Affairs. 3 Credits.

PSPR 6207. Sustainability Communications Methods and Practices. 3 Credits.

PSPR 6208. Integrated Marketing Communications. 3 Credits.

The evolution of integrated marketing communications as a means by which for-profit and nonprofit enterprises extend the reach and influence of public relations and public affairs; traditional and non-traditional communications approaches and technologies. Recommended background: degree candidacy in the MPS in the Field of Strategic Public Relations program and/or graduate status in the School of Business or School of Media and Public Affairs.

PSPR 6210. Special Topics in Public Relations. 3 Credits.

PSPR 6211. Strategy and Practice for Nonprofit and Association Communications. 3 Credits.

This course is designed to help communicators currently working # or hoping to work # in trade associations and nonprofit organizations become more effective in the planning and execution of their programs. By its very nature, this course will be practical and reality#based, with guest speakers drawn from many organizations and communications backgrounds. In the context of this class, effective communications means understanding the goals, environments, structures, constraints, opportunities and challenges facing associations and nonprofit organizations, and developing and implementing communication plans to achieve those goals. Effective also means working within the limitations communicators often face, such as (but by no means limited to): dwindling budgets, divided membership, fragmented boards and hesitant leadership, the decline of traditional news media, the rise of blogs, the surge of social media and more. In short, "effective" means being strategic, proactive, and smart. But while these attributes are necessary, they are not sufficient. Effective communicators must understand the roles communications play - internal as well as external - for their organizations. They must know the organization's stakeholders and understand their "care and feeding." In short, they must understand their institutional roles - and the expectations of their internal and external stakeholders and audiences. Restricted to students in the MPS strategic public relations degree program; permission of the program director may be substituted. Prerequisites: PSPR 6201, PSPR 6202, PSPR 6203, PSPR 6204, PSPR 6205 and PSPR 6206.

PSPR 6221. Consumer Behavior. 3 Credits.

PSPR 6222. Multicultural Marketing. 3 Credits.

PSPR 6223. Public Opinion and Political Socialization. 3 Credits.

The process by which people become engaged in public debates and politics; how they acquire and maintain attitudes, biases, and beliefs, and the decisions they make as a result. Discussion centers on the forces that influence public opinion and political socialization, including the power of the press and its impact on our major institutions. Prerequisites: PSPR 6201 and PSPR 6202.

PSPR 6224. Global Public Relations and Public Affairs: Strategy and Practice. 3 Credits.

How global public relations strategies are developed and implemented to support advocacy efforts; communications theories that enable insight into challenges arising from differences in language, culture, politics, and economics worldwide Credit cannot be earned for this course and PSAD 6270.

PSPR 6225. Nonprofit and Association Communications Strategies. 3 Credits.

How communicators working in trade associations, nonprofit organizations, and labor unions become more effective in the planning and execution of their programs to achieve organizational goals.

PSPR 6226. Digital Communication Platforms and Strategies. 3 Credits.

Theories and approach to digital communications and review of major digital platforms used by companies, government agencies, nonprofits and associations to accomplish strategic communications goals and objectives.

PSPR 6227. Applied Digital Communications for Public Relations and Public Affairs Professionals. 3 Credits.

In-depth and holistic study of digital communications using case studies and collaborative exercises; how to blend creative writing with graphics production, social media management with audience segmentation, and digital advertising channels with analytics.

PSPR 6230. Crisis and Issues Management. 3 Credits.

The intersection of communications and policy disciplines, including environmental scanning, public policy analysis, public policy advocacy, strategic communications, media relations, grassroots mobilization, coalition management and corporate reputation management. How these issues work together to further the broad strategic goals of organizations.

GRADUATE CERTIFICATE IN COMMUNITY ADVOCACY

Program Director T. Belt

The graduate certificate in community advocacy program is designed for public affairs and advocacy professionals interested in updating their digital communications and

grassroots organizing skills. Students in the program learn to understand and employ grassroots techniques to mobilize citizens to seek policy outcomes at the state and local levels. They also learn how to generate digital content and create social media campaigns on behalf of their professional affiliation or organization.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
PMGT 6402	Applied Political Communications	
PMGT 6410	Grassroots Engagement	
PMGT 6470	Digital Content Creation	
PMGT 6472	Maximizing Social Media	

GRADUATE CERTIFICATE IN DIGITAL COMMUNICATIONS

The graduate certificate in digital communications is designed to attract public relations professionals interested in gaining a competitive edge by updating their digital communications skills. Students will learn how to apply the leading digital and social media platforms to the fields of strategic public relations and advocacy.

The program consists of 4 courses (12-credit-hours). Flexible credentials allow students to apply the graduate certificate toward the strategic public relations master's degree. Classes meet Monday through Thursday evenings in GW's Arlington Graduate Education Center.

REQUIREMENTS

The following requirements must be fulfilled: 12 credits in required courses.

Code	Title	Credits
Required		
PSPR 6201	Strategic Public Relations: Principles and Practice	
PSPR 6204	Media Relations in a Digital World	
PSPR 6226	Digital Communication Platforms and Strategies	

PSPR 6227

Applied Digital Communications for
Public Relations and Public Affairs
Professionals

GRADUATE CERTIFICATE IN DIGITAL POLITICS

Since the first serious use of online campaigning by John McCain in 2000, online tools such as web advertising, interactive websites, complex social networking, and virtual fundraising have become central to success in politics, and especially in campaigns. Today, digital tools such as web advertising, microtargeting, online fundraising, and social media are central to success in politics. The the graduate certificate in digital politics teaches professionals how to master the world of online engagement and financial development.

The 18 credits earned for the certificate can be counted toward the master of professional studies in political management degree (p. 1167).

Visit the program website (<https://gspm.gwu.edu/digital-politics/>) for additional information

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses

Code	Title	Credits
Required		
PMGT 6402	Applied Political Communications	
PMGT 6403	Political Data and Analytics	
PMGT 6452	Digital Strategy	
Electives		
9 credits from the following:		
PMGT 6440	Targeting and Voter Contact	
PMGT 6468	Digital Advertising and Action	
PMGT 6470	Digital Content Creation	
PMGT 6472	Maximizing Social Media	

Visit the program website (<https://gspm.gwu.edu/digital-politics/>) for additional information.

GRADUATE CERTIFICATE IN GLOBAL PUBLIC RELATIONS

The Graduate Certificate in Global Public Relations prepares students with the strategic and tactical skills needed to excel in the challenging profession of global public relations.

Visit the program website (<https://gspm.gwu.edu/global-public-relations/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses; or, with the advisor's approval, 12 credits in required courses and one 3-credit elective.

Code	Title	Credits
Required		
PMGT 6402	Applied Political Communications	
PMGT 6403	Political Data and Analytics	
PSPR 6204	Media Relations in a Digital World	
PSAD 6270	International Public Relations and Global Advocacy	
PSAD 6200	Global Perspective Residencies	
Electives		
In lieu of one required course, students may take, with the program director's approval, a 3-credit elective selected from the curricula of the graduate certificate in strategic public relations, legislative affairs, or political management programs or from another GW school or college.		

GRADUATE CERTIFICATE IN PACS AND POLITICAL MANAGEMENT

The challenges of coordinated political action and campaign finance uncertainty make it more important than ever that professionally trained and savvy leaders manage political action committees. The graduate certificate program in PACs and political management is designed to give professional PAC managers the fundamental skill set to effectively run their organization's political action committee and successfully tackle the daunting realities of political finance and action. The graduate certificate in PACs and political management's five-course curriculum provides the kind of flexibility today's political professionals want most - the ability to tailor course work to suit their particular goals while addressing their organization's needs.

The program was developed in close consultation with leading experts in the PAC, political action, and campaign finance arenas. The resulting certificate work addresses the gamut of

skills and knowledge necessary for successful PAC operation, from issue advocacy to solicitation, from fundraising to grassroots campaigns, from budgeting to candidate selection. Like the other certificate programs offered by the Graduate School of Political Management, any student who completes the certificate and successfully applies to the master's program can count all 18 credits towards the political management or legislative affairs master's degree.

Visit the program website (<https://gspm.gwu.edu/pacs-and-political-management/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits, including 3 credits in a required course and 12 credits in elective courses.

Code	Title	Credits
Required		
LGAF 6234	PACs and Congress	
Electives		
Two political management courses selected from the following:		
PMGT 6410	Grassroots Engagement	
PMGT 6412	Issues Management	
PMGT 6450	Rules, Laws, and Strategy	
PMGT 6454	Fundraising and Budgeting	
PMGT 6472	Maximizing Social Media	
Two legislative affairs courses selected from the following:		
LGAF 6202	Legislative Politics	
LGAF 6222	Parties and Elections	
LGAF 6224	Interest Group Politics	
LGAF 6260	Special Topics: Domestic Policy	

See CPS regulations (p. 1140) for additional information regarding enrollment status and time limits.

GRADUATE CERTIFICATE IN PUBLIC RELATIONS

The Public Relations Graduate Certificate program takes advantage of GW's connections in the nation's capitol, focusing on the public policy system and the advocacy role played by PR firms and PR operations in corporations and associations in the Washington metropolitan area. The Graduate School of Political Management taps into experts in both the PR and

political arenas. Plus, you'll graduate prepared for professional advancement in the field.

The Graduate Certificate in Public Relations consists of 6 courses (18-credit-hours). Flexible credentials allow you to apply the graduate certificate toward the Strategic Public Relations Master's Degree. Classes meet Monday through Thursday evenings in GW's Alexandria Graduate Education Center. Focus areas include Media & Communications Theory, Ethics & Law, New Media Strategies, Evaluating Communications Programs, Crisis Communications, Media Relations, Management Skills. Admission Requirements

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses.

Code	Title	Credits
Required courses:		
PSPR 6201	Strategic Public Relations: Principles and Practice	
PSPR 6202	Advanced Writing for Public Relations Professionals	
PSPR 6203	Research Methods for Public Relations and Public Affairs Managers	
PSPR 6204	Media Relations in a Digital World	
PSPR 6205	Fundamentals of Business and Management for Public Relations and Public Affairs	
PSPR 6206	Ethical Standards in Public Relations and Public Affairs	

See CPS regulations (p. 1140) for additional information regarding enrollment status and time limits.

Visit the program website (<https://gspm.gwu.edu/strategic-public-relations-0/>) for additional information.

MILKEN INSTITUTE SCHOOL OF PUBLIC HEALTH

Dean L.R. Goldman

Senior Associate Dean A. Hyder, J.H. Thorpe

Associate Deans L.C. Abrams, G.M. Gray, E.A. Migliaccio

Assistant Deans H. Renault, M. Partsch, S. Wilensky

Executive Deans S. DiLorenzo

Executive Associate Dean N. Kazeem

The Milken Institute School of Public Health (GWSPH) was formally established on July 1, 1997, as the first school of public health in Washington, DC. Located on the Foggy Bottom campus of the George Washington University, it remains the only public health school in the nation's capital. When the GWSPH opened its doors, it brought together a number of academic programs from across the University, including the signature master of public health (MPH) degree, which was then offered in the School of Medicine and Health Sciences. The founding of the GWSPH was an opportunity to integrate these disparate public health programs and build a preeminent school whose purpose is to educate future public health leaders and practitioners. The vigor and enthusiasm that created the vision for the school has been rekindled as the institution solidifies its place as a world-renowned hub for science, learning, research, community engagement, and applied practice.

GWSPH faculty and students are tackling some of public health's biggest problems through groundbreaking research. Whether by studying vectors and microbiomes to prevent infectious outbreaks and antimicrobial resistance in state-of-the-science laboratories and genomic core, or by working with government and community partners to end the HIV epidemic in the District of Columbia, or by using big data and environmental surveillance to study the impact of climate change, GWSPH is changing the world through the research it does, the students it educates, and the practice and policies it transforms.

GWSPH enrolls more than 2,000 students, who come from nearly every U.S. state and many other nations to pursue undergraduate, graduate, and doctoral-level degrees in public health. Seven departments form the school: Biostatistics and Bioinformatics, Environmental and Occupational Health, Epidemiology, Exercise and Nutrition Sciences, Global Health, Health Policy and Management, and Prevention and Community Health.

Mission

GWSPH advances population health, well-being, and social justice locally, nationally, and globally by:

- Applying public health knowledge to enhance policy, practice, and management;
- Conducting rigorous, basic, applied, and translational research; and,
- Educating the next generation of public health leaders, policymakers, practitioners, scientists, advocates, and managers.

Vision

Healthier and safer communities powered by public health.

Values

GWSPH shares the following core values:

- Achieving excellence in all endeavors;
- Promoting a culture of service that respects the contributions of all members of its community;
- Embracing social justice and diversity as we work to realize health equity for all individuals and communities, however they are identified;
- Aspiring to innovative, ethical and evidence-based policy, research, practice, management, and pedagogy; and
- Engaging in sustainable practices that promote healthy environments

Accreditation

The public health programs of the Milken Institute School of Public Health (GWSPH) are fully accredited by the Council on Education for Public Health (CEPH). In 2016, GWSPH was awarded a seven-year accreditation through July 1, 2023. The program in health administration is fully accredited by the Commission on Accreditation of Healthcare Management Education (CAHME). GWSPH is a member of the Association of Schools and Programs of Public Health (ASPPH).

REGULATIONS

Undergraduate Regulations

Graduation Requirements

Depending on the Milken Institute SPH degree program, students must complete 120 to 124 credits to earn their degrees. Students in the BS in exercise science and nutrition science degree programs must have a minimum cumulative GPA of 2.5 in courses in the exercise science or nutrition science core respectively; those in the BS in public health program must have a minimum overall cumulative GPA of 2.5. The University General Education Requirements are listed under each program's requirements tab in this Bulletin.

While degrees are awarded at the end of each semester, formal commencement ceremonies occur only in May. Students are eligible to graduate only after they have completed all degree requirements and have no financial obligations to the University. Students may include degree designations (BS, MS,

MPH, MHA, DrPh, or PhD) after their name only when they have completed all degree requirements.

Enrollment Status

Once entered in an undergraduate degree program, students are expected to be registered continuously during all fall and spring semesters and to be engaged actively in fulfilling the requirements for their degree.

- During the summer session, students do not have to be enrolled unless they are graduating during the summer; in this case, they should register for Continuous Enrollment.
- Some additional activities, such as study abroad programs, qualify as continuous enrollment.

Degree students who need to interrupt active pursuit of the degree may petition to take a leave of absence for a period of no more than one calendar year during their program. Students who discontinue active enrollment in degree studies without being granted a leave of absence, or students who are granted a leave but do not return to active study at the close of the period of approved absence, are no longer in status and must apply for readmission and be subject to the regulations and program requirements then in effect. Readmission to any program is a competitive process and not guaranteed.

Advising

Students are responsible for building a support system to help ensure their own academic success. Each student is assigned an professional academic advisor who may assist not only with academic counseling, but also in areas ranging from understanding University requirements to finding campus resources to help individual students connect with the GW the community. Faculty mentors, tutors, and/or counselors also should be part of the support system. The Center for Career Services and The Writing Center offer walk-in and by-appointment assistance. Personal counseling and other individualized services are available through Mental Health Services, Disability Support Services, Multicultural Student Services Center, and International Services Office.

Milken Institute SPH students may pursue a double major, either within the Milken Institute SPH or across the University.

Students in the exercise science and nutrition science majors who earn a grade of *D+* or below in the first course of a sequence (such as EXNS 1110 or EXNS 2111) **may not** take the second course in the sequence in the following semester. Students must earn a C- or above in the first course before taking the second course in the sequence. Please see your advisor for more information.

Timely Progress Toward the Degree

Students who fail to make adequate and timely progress toward the degree, through repeated leaves of absence or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students

dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise. Additionally, students must attain grades no lower than C- in required major field courses. If a student receives a grade of *D+*, *D*, or *D-* in a course specifically required for the major, the student is required to repeat the course until a satisfactory grade (C- or above) is earned. For the BS in public health program, this requirement applies to all courses that apply to the major, including required courses, pre-requisites for required courses, and elective coursework. Once the student has completed the course with a satisfactory grade, credits earned the first time the course was taken count toward the minimum number of credits required for the major. Credits earned toward the repetition do not count toward the degree.

Incompletes

Conditions under which the symbol *I*, Incomplete, may be assigned are described under **University Regulations**. In the Milken Institute SPH, the conditions for granting a notation of *I* must be documented in a **written contract** between the faculty member and the student, to be submitted prior to the last day of the term. The incomplete work must be completed as specified in the contract but no later than six months from the end of the semester in which the course was taken. If work for the course is not completed within the designated time, the grade is converted automatically to a grade of *F*. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course.

Pass/No Pass Option

Junior or senior students in good standing may, with the permission of the instructor and program director, take one course each semester for a grade of *P*, Pass, or *NP*, No Pass. No student is allowed to take more than a total of four courses on a *P/NP* basis under this regulation. Students may, however, also receive grades of *P/NP* in courses that are graded only on that basis. Courses required for the University General Education Requirement or in the student's major or minor field (including those courses required for the major that are offered by other departments) may not be taken on the *P/NP* basis. A transfer student may not choose this option until the second semester of enrollment in the University. Under no circumstances may a student change from *P/NP* status to graded status, or vice versa, after the end of the eighth week of class. The Milken Institute SPH and the University do not allow LSPA courses to be counted toward the degree.

Academic Workload

To encourage academic performance of high quality, the Milken Institute SPH limits the number of credits an undergraduate student may register for in a given semester to 17. However, after freshman year, students who wish to request approval for a course overload may do so. Requests are reviewed based on prior academic performance. Students must be in good academic standing and have no pending incomplete grades, or grades of *F*, *W*, or *Z* from the previous

semester. Permission to take a workload of 18+ credits requires the written approval of the faculty advisor. Permission to take a workload of 18+ credits may be granted for full-time students who, during the immediately preceding semester, have received no grades below B- and have earned grades of A or A- in three courses totaling at least 9 credits with the written approval of a dean. Undergraduates taking more than 18 credits per semester are charged at the rate of 1 credit for each credit exceeding that limit.

Applying for Readmission to a Program

Undergraduate students who previously were registered in a SPH program but who did not register during the immediately preceding semester (summer sessions excluded) are out of status and must apply for readmission by completing an admissions petition. Filing the petition does not guarantee that the student will be readmitted. Milken Institute SPH departments are responsible for readmitting students and can do so only if the student is not in violation of other Milken Institute SPH or University policies. Students who have attended one or more academic institutions while absent from this University must have complete, official transcripts from each institution sent directly to the Milken Institute SPH Office of Admissions. Applicants for readmission are considered on the basis of policies and program requirements currently in effect and if readmitted, are subject to the policies and program requirements then in effect.

International Students--Less than Full-Time Status

International students on an F-1 or J-1 Visa are responsible for enrolling as a full-time student (minimum 12 credits for undergraduate students) for spring and fall semesters according to U.S. Immigration and Naturalization rules governing registration requirements. In certain circumstances, a reduced workload may be allowed; students should contact the International Services Office (<http://internationalservices.gwu.edu/>) to request approval for this exception.

Special Honors

In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in exercise science and nutrition science must have a minimum GPA of 3.5 in required courses in the major and a minimum overall GPA of 3.25. The candidate must submit an honors paper and give a presentation on the findings. The student is recommended for graduation with special honors only if a committee of at least two faculty members approves the final products. Students interested in pursuing special honors should contact their academic advisor and program director early in the program to ensure that all requirements for special honors are met in a timely manner.

Independent Study Course Requirements

Independent study is designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Forms and instructions for registration are available online (<http://publichealth.gwu.edu/academics/forms/>). Independent study projects may not be used as a substitute for an available required or elective course and may not cover substantially the same subject matter that is available in a required or elective course.

Preparation for Medical School

A student who plans to apply to medical school fulfills the general requirements of their program. The pre-health advisors in the Columbian College Office of Undergraduate Studies (prehealth@gwu.edu) provide advice about academic preparation for medical school. For admission to most medical schools, the student must earn a bachelor's degree that includes the following coursework: Biology—8 credits of introductory biology, including laboratory. Students who receive credit for AP biology must complete 8 credits of upper-level biology coursework, including laboratory; chemistry—8 credits of general inorganic chemistry, including laboratory; organic Chemistry—8 credits, including laboratory; biochemistry—3 credits; physics—8 credits, including laboratory; and English—6 credits in introductory English composition courses (fulfilled by the University Writing Program). Many medical schools have additional entrance requirements, which may include courses in biochemistry, genetics, and mathematics; even when such courses are not required, they are strongly recommended. With the exception of the specified requirements, applicants are urged to follow their personal interests in developing their course of study.

Preparation for Law School

A broad liberal arts education is the best undergraduate preparation for law school. Students are encouraged to use elective credit to increase the breadth of their program of study. Advice about academic preparation for law school is provided by the pre-law advisor in the Columbian College Office of Undergraduate Studies (<https://advising.columbian.gwu.edu/>).

Other Regulations

Other regulations applicable to undergraduate students of the University can be found under University Regulations (<http://bulletin.gwu.edu/university-regulations/>).

Graduate Regulations

The Milken Institute SPH provides an online Graduate Student Handbook (<https://publichealth.gwu.edu/content/services-students/>), which contains additional updated information on policies, regulations, and other matters of concern to enrolled or admitted students. It is the responsibility of the student to

be aware of the information contained in both this Bulletin and the Handbook. Students should also consult departmental handbooks and guidelines.

Enrollment Status

Once entered in a graduate degree program, students are expected to be registered continuously during all fall and spring semesters and engaged actively in fulfilling the requirements for the degree.

During the summer session, students do not have to be enrolled unless they are graduating during the summer; in this case, they should register for Continuous Enrollment.

- Some additional activities, such as Master's International, qualify as continuous enrollment.

Degree students who need to interrupt active pursuit of the degree may petition to take a Leave of Absence for a period of no more than one calendar year during the their program. Students who discontinue active enrollment in degree studies without being granted a leave of absence, or students who granted a leave but does not return to active study at the close of the period of approved absence, are no longer in status and must apply for readmission and be subject to the regulations and program requirements then in effect. Readmission to any program is a competitive process and not guaranteed.

Advising

Students are responsible for building a support system to help ensure their own academic success. Each student is assigned a faculty advisor who may assist not only with academic counseling, but also in areas ranging from understanding University requirements to finding campus resources to help individual students connect with the GW the community. Other members of the faculty, professional advisors, tutors, and/or counselors also should be part of the support system. The University Career Center (<http://publichealth.gwu.edu/services/career-center/>) and Writing Center (<http://www.gwu.edu/%7Egwriter/>) offer walk-in and by-appointment assistance. Personal counseling is available through the office of the Dean of Student Affairs (<http://students.gwu.edu/>), Mental Health Services (<http://counselingcenter.gwu.edu/>), Disability Support Services (<https://disabilitysupport.gwu.edu/>), the Multicultural Student Services Center (<https://mssc.gwu.edu/>), and the International Services Office (<https://internationalservices.gwu.edu/>).

Academic Standing

Graduate students who are not suspended, on academic probation, or under extended provisional admission status are considered to be in good standing. Maintenance of a minimum GPA of 3.0 is required for the degree. All courses taken for graduate credit after matriculation as a degree candidate—including those the Milken Institute SPH transferred in from non-degree status, but excluding those audited or taken for the grade of *CR/NC*—are used to calculate the GPA.

Transfer Credits

Graduate students may be eligible to transfer up to 12 graduate credits from an accredited university if they have not been applied to a previous graduate degree. External credits must have been earned within the last 3 years with a grade of *B* (3.0) or better in each transferred course. SPH graduate certificate students may be eligible to transfer as many credits as meet program requirements—up to 18 credits—to a master's degree. SPH graduate certificate students wishing to transfer to a degree program may apply to do so via the online change of concentration petition after completion of 3 or more courses and a cumulative GPA of 3.0 or above, however only courses earning a *B* or better are eligible to be transferred.

Provisional Admission

Graduate program applicants with credentials that are weaker than expected for graduate study, but who nonetheless show promise of successful graduate work, occasionally are granted provisional admission by the Milken Institute SPH Admissions Committee. While on provisional admission status, students are required to see their advisors each semester prior to registration. Provisionally admitted graduate students must demonstrate their ability to maintain a minimum GPA of 3.0 in the first 9 credits of coursework attempted, and during this time are not allowed to receive an Incomplete or a grade lower than a *B*; provisionally admitted students who meet these requirements are granted good standing. Provisionally admitted students who do not meet these requirements are subject to suspension.

Semester Warning

Graduate students whose cumulative GPA is below 3.0 after attempting a minimum of 1 credit and a maximum of 8 credits are issued a warning at the end of the semester and are required to take corrective measures, such as meeting with their academic advisor to outline steps to raise the GPA.

Probation

Graduate students whose cumulative GPA falls below 3.0 at any point after completing 9 credits are placed on probation. This probation extends through the period in which the student next attempts up to 12 credits of work, including prescribed courses. A student's program may be restricted by the program director if deemed necessary. During this period, the student's performance is monitored to determine suitability for continued study. A student who fails to raise the cumulative GPA to 3.0 or above during the period of probation is subject to suspension. Incompletes and grades of *B-* or below are not permitted during the probationary period and are grounds for automatic suspension. A student who is subject to probation for a second time at any point during their degree program may be suspended automatically.

Grade of F

Graduate students who receive a grade of *F* are subject to suspension. If such students wish to remain enrolled, they must

present cause, for consideration by the dean and the director of their degree program, as to why continued study should be permitted. Once a grade of *F* is earned in a core, required, or elective course, it remains a part of the student's permanent record and is calculated into the GPA. A graduate student who receives the grade of *F* in a core or other required course and is permitted to continue in graduate studies must repeat the course and achieve a minimum grade of *B*. The repetition does not, however, expunge the grade of *F*, which remains part of the student's record. If the student receives a grade below *B* in the repeated course, they are suspended from the degree program.

Suspension

Graduate student who receive an *F* or do not meet the conditions of probation are subject to suspension. Suspended students may not register for or complete any courses at The George Washington University. The dean, in consultation with the student's academic advisor, may continue a student on probation (in lieu of suspension) if satisfactory progress is demonstrated during the probationary period, and sufficient evidence of academic promise, by way of a statement of appeal, is offered by the student. A student who is suspended or withdraws under these conditions may apply for readmission after one semester. To be readmitted, the student must submit evidence that suggests the probability of academic success. A student who is readmitted continues on academic probation and must achieve a minimum GPA of 3.5 in the next 12 credits of graduate study. Should the student fail to achieve this GPA, he or she is suspended and will not be readmitted.

Timely Progress Toward the Degree

A graduate student who fails to make adequate and timely progress toward the degree, through repeated leaves of absence or repeated failure to complete an appropriate number of credits per semester, may be suspended. Students suspended on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

Summary of Academic Standing Policies for Graduate Students

- **Provisional Admission**—A student who receives a grade of *I* or of *B-* or below while on provisional admission status is subject to suspension.
- **Semester Warning**—A student with a cumulative GPA below 3.0 (with fewer than 9 credits completed) must take corrective action.
- **Academic Probation**—A student with a cumulative GPA below 3.0 (with 9 or more credits completed) is placed on academic probation. A student on academic probation who receives an unacceptable grade (*B-*, *C*, *F*, *I*, *Z*) or fails to raise the cumulative GPA to 3.0 within the next 12 credits taken is subject to suspension.
- **Grade of *F***—A student who receives a grade of *F* is subject to suspension. If a student wishes to remain enrolled they must present cause as to why continued study should be

permitted. If permitted to continue in graduate studies, the student must repeat the course (if core or required) and achieve a minimum grade of *B*.

- **Suspension**—A student who is suspended may not register for or complete any courses at GW. A student who is suspended or withdraws under these conditions may apply for readmission after one semester.

Incompletes

Incompletes - Conditions under which the symbol *I*, Incomplete, may be assigned are described under University Regulations (<http://bulletin.gwu.edu/university-regulations/>). In the Milken Institute SPH, the conditions for granting a notation of *I* must be documented in a written contract (<https://publichealth.gwu.edu/content/incomplete-course-grade-contract/>) between the faculty member and the student, to be submitted prior to the last day of the term. The incomplete work must be completed as specified in the contract but no later than six months from the end of the semester in which the course was taken. If work for the course is not completed within the designated time, the grade is converted automatically to a grade of *F*. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course.

In Progress (IP)

The notation In Progress (*IPG*) is assigned for all thesis, residency, advanced reading, independent study, culminating experience, practicum, and dissertation research courses until the coursework is completed. Upon the satisfactory completion, the grade replaces the notation *IPG* on the transcript. An *IPG* may not be assigned to regular, semester-length courses.

Applying for Readmission to a Program

Students Who Have Taken Classes Within the Past Year:

Milken Institute SPH graduate degree or certificate students who were previously registered in the university but did not register during the immediate preceding semester/module (excluding summer sessions) are out of status and must apply for readmission by completing an admissions petition. (<http://publichealth.gwu.edu/academics/forms/>)

Students Who Have Not Taken Classes in More Than a Year:

Students who have not taken any courses at GW in more than one year must apply for readmission using SOPHAS Express (<https://sophasexpress.liaisoncas.com>).

Students Who Have Been Suspended:

Students who were suspended from the Milken Institute SPH must apply for readmission through SOPHAS Express (<https://sophasexpress.liaisoncas.com>). Students may only apply for readmission after at least one academic year has passed. Students should consult with the advisor concerning readmission requirements.

International Students---Less than Full-Time Status

International students on an F-1 or J-1 Visa are responsible for enrolling as full-time student (minimum 9 credits for graduate students) for the spring and fall semesters according to the U.S. Immigration and Naturalization rules governing registration requirements. Under certain circumstances, a reduced workload may be allowed. To request approval for a course reduction, students should submit the F-1/J-1 Request for Reduced Course Load Form (<https://internationalservices.gwu.edu/forms-handouts/>). More information is available by calling the ISO at (202) 994-4477.

Independent Study Course Requirements

Independent study is designed to provide students with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Instructions and forms required for registration (<http://publichealth.gwu.edu/academics/forms/>) are available. Independent study projects may not be used as a substitute for an available required or elective course and may not cover substantially the same subject matter that is available in a required or elective course.

Graduation

While degrees are awarded at the end of each semester, formal commencement ceremonies occur only in May. Students are eligible to graduate only after they have completed all degree requirements and have no financial obligations to the University. Students may include degree designation (BS, MS, MPH, MHA, DrPh, or PhD) after their name only when they have completed all degree requirements.

Other Regulations

Other regulations applicable to graduate students of the University can be found under University Regulations. (<http://bulletin.gwu.edu/university-regulations/>)

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 1304)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 1307)
- Bachelor of Science with a major in exercise science, pre-medical professions concentration (p. 1310)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 1313)
- Bachelor of Science with a major in nutrition science (p. 1316)
- Bachelor of Science with a major in nutrition science, pre-medical professions concentration (p. 1319)
- Bachelor of Science with a major in public health (p. 1322)

- Bachelor of Science with a major in public health, pre-medical professions concentration (p. 1324)

Combined program

- Dual Bachelor of Science in nutrition science and Master of Public Health in public health nutrition (p. 1327)
- Dual Bachelor of Science in public health and Master of Public Health

Minors

- Minor in bioinformatics (p. 1327)
- Minor in exercise science (p. 1328)
- Minor in nutrition science
- Minor in public health

MASTER'S

Master of Public Health

- Master of Public Health in the field of biostatistics (p. 1334) (p. 1334)
- Master of Public Health in the field of community oriented primary care (p. 1335)
- Master of Public Health in the field of environmental health science and policy (p. 1336)
- Master of Public Health in the field of epidemiology (p. 1338)
- Master of Public Health in the field of global environmental health (p. 1339)
- Master of Public Health in the field of global health policy (p. 1341)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 1343)
- Master of Public Health in the field of global health epidemiology and disease control (p. 1344)
- Master of Public Health in the field of health policy (p. 1346)
- Master of Public Health in the field of health promotion (p. 1347)
- Master of Public Health in the field of humanitarian health (p. 1349)
- Master of Public Health in the field of maternal and child health (p. 1350)
- Master of Public Health in the field of physical activity in public health (p. 1351)
- Master of Public Health in the field of public health communication and marketing (p. 1353)
- Master of Public Health in the field of public health nutrition (p. 1355)
- Master of Public Health (MPH@GW) (p. 1357)

Master of Science

- Master of Science in the field biostatistics (p. 1358)
- Master of Science in the field of epidemiology (p. 1360)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 1361)
- Master of Science in the field of health and biomedical data (<http://bulletin.gwu.edu/public-health/biostatistics-bioinformatics/ms-health-and-biomedical-data-science/>)
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 1362)
- Master of Science in the field of management of health informatics and analytics (p. 1364)

Master of Health Administration

- Master of Health Administration (p. 1331)
- Master of Health Administration (MHA@GW) (p. 1333)

Specialist program

- Health Services Administration Specialist (p. 1330)

Combined programs

- Dual Master of Public Health and Doctor of Medicine (p. 1364)
- Dual Master of Public Health and Master of Arts in any Elliott School graduate program (p. 1036)
- Dual Master of Health Administration and graduate certificate in health care corporate compliance (p. 1365)
- Dual Master of Public Health in the field of health policy and graduate certificate in health care corporate compliance (p. 1366)
- Joint Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (p. 1366)
- Joint Master of Public Health or SPH graduate certificate and Juris Doctor or Master of Laws (p. 1374)

DOCTORAL

Doctoral programs

- Doctor of Philosophy in the field biostatistics (p. 1375)
- Doctor of Philosophy in the field of environmental health (p. 1378)
- Doctor of Philosophy in the field of epidemiology (p. 1379)
- Doctor of Philosophy in the field of exercise physiology and applied nutrition (p. 1381)
- Doctor of Philosophy in the field of health policy (p. 1382)
- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1383)
- Doctor of Public Health in the field of environmental and occupational health (p. 1384)

- Doctor of Public Health in the field of global health (p. 1386)
- Doctor of Public Health in the field of health behavior (p. 1387)
- Doctor of Public Health in the field of health policy (p. 1388)

CERTIFICATES

Certificate Programs

- Graduate certificate in health administration generalist (p. 1390)
- Graduate certificate in health policy (p. 1391)
- Graduate certificate in public health (p. 1392)

Combined Programs

- Dual Doctor of Medicine and graduate certificate in public health (p. 1393)
- Joint Master of Public Health or SPH graduate certificate and Juris Doctor or Master of Laws (p. 1374)

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

While Public Health (PUBH) courses make up the bulk of Milken Institute School of Public Health (GWSPH) program curricula, the GWSPH offers courses in all of the following designations:

- Exercise and Nutrition Sciences (EXNS) (<https://current.bulletin.gwu.edu/courses/exns/>)
- Health and Wellness (HLWL) (<https://current.bulletin.gwu.edu/courses/hlwl/>)
- Health Services Management and Leadership (HSML) (<https://current.bulletin.gwu.edu/courses/hsml/>)
- Lifestyle, Sports, and Physical Activity (LSPA) (<https://current.bulletin.gwu.edu/courses/lspa/>)
- Public Health (PUBH) (<https://current.bulletin.gwu.edu/courses/pubh/>)

Within PUBH, the number series below indicate the department in which a course is offered:

- PUBH 6000-6099: MPH Core and MPH@GW Program-Specific

- PUBH 6100-6199: Environmental and Occupational Health
- PUBH 6200-6299: Epidemiology
- PUBH 6300-6399: Health Policy
- PUBH 6400-6499: Global Health
- PUBH 6500-6599: Prevention and Community Health
- PUBH 6600-6699: Public Health Nutrition and Miscellaneous
- PUBH 6850-6899: Biostatistics and Bioinformatics
- PUBH 8000-8999: Doctoral-level

DEPARTMENTS

BIostatISTICS AND BIOinformatics

The Department of Biostatistics and Bioinformatics strives to improve public health through excellence in education and teaching in biostatistics and bioinformatics, transformative scientific research, and dedicated service to the university, profession and community. With Department faculty that have received more research funding than any other department at the university, the Department educates the next generation of leaders in biostatistics and bioinformatics by providing opportunities for close interactions with award winning faculty and practical real-world training opportunities in clinical trials, observational studies, diagnostic studies, and bioinformatics and computational biology studies.

UNDERGRADUATE

Undergraduate

- Minor in bioinformatics (p. 1327)

GRADUATE

Master's programs

- Master of Public Health in the field of biostatistics (p. 1334)
- Master of Science in the field biostatistics (p. 1358) (Jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)
- Master of Science in the field of health and biomedical data (<http://bulletin.gwu.edu/public-health/biostatistics-bioinformatics/ms-health-and-biomedical-data-science/>)

Doctoral programs

- Doctor of Philosophy in the field biostatistics (p. 1375) (Jointly administered by the Department of Statistics in CCAS and the Department of Epidemiology and Biostatistics in SPH)

FACULTY

Professors K.A. Crandall, G. Diao, S.R. Evans (*Chair*), T. Hamasaki (*Research*), J.M. Lachin (*Research*), Y. Ma, S.J. Simmens (*Research*), E.A. Thom (*Research*)

Associate Professors I. Bebu (*Research*), K.L. Drews (*Research*), A. Elmi, H.J. Hoffman, M.G. Temporsa (*Research*), N. Younes (*Research*)

Assistant Professors N.M. Butera (*Research*), A. Ciarleglio, A. Ghosh (*Research*), Y. Jiang (*Research*), M. Perez-Losada, G. Rahnavard, D. Uschner (*Research*)

COURSES

Explanation of Course Numbers

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PUBH 0920. Continuing Research - Master's. 1 Credit.

Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.

Continuing Research Credit- Doctoral.

PUBH 1010. First-Year Experience in Public Health. 1 Credit.

Designed to assist students in the transition to GW and the public health major by introducing skills and resources needed to succeed personally, academically, and professionally, particularly in a public health context.

PUBH 1099. Variable Topics. 1-36 Credits.

PUBH 1101. Introduction to Public Health and Health Services. 3 Credits.

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 1102W. History of Public Health. 3 Credits.

Social history of public health from the late nineteenth century to the present; historical context for contemporary public health problems. Includes a significant engagement in writing as a form critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: UW 1020.

PUBH 1299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 2110. Public Health Biology. 3 Credits.

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisites: BISC 1005; or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.

A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3115. Global Health and Human Rights. 3 Credits.

Concepts of health as a human right and the impact of ethical violations on the mental and physical health of individuals; the efforts of the international community in addressing health consequences of vulnerable populations.

PUBH 3116. Global Health Systems Performance. 3 Credits.

Introduction to the U.S. and international health systems, both public and private, and the WHO Health Systems Framework; how environmental, ethical, cultural, and political actions shape health systems in different parts of the world. Restricted to juniors and seniors.

PUBH 3130. Health Services Management and Economics. 3 Credits.

Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisites: PUBH 1101 and STAT 1127.

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.

Political, social, and economic determinants of health; how health status is measured with an emphasis on low-income countries, the health of the poor, and inequity and inequality; burden of diseases that impact development and their basic epidemiological characteristics, including who they affect, when they occur, and where risk is greatest.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisite: PUBH 3133.

PUBH 3142. Introduction to Biostatistics for Public Health. 3 Credits.

Applying biostatistical principles to analyze studies in health services literature. Selecting statistical methods based on research questions, calculating basic statistics for estimation and inference, interpreting results of statistical analyses.

PUBH 3150. Sustainable Energy and Environmental Health. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues.

PUBH 3151W. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PUBH 3152. Qualitative Research Methods in Public Health. 3 Credits.

Introduction to characteristics and methods relevant to the design and conduct of qualitative research in public health investigations; data collection methods, coding, data analysis, and reporting results.

PUBH 3199. Topics in Public Health. 1-5 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 3201. Introduction to Bioinformatics. 3 Credits.

Introduction to bioinformatics, including biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structural bioinformatics; and programming concepts in Unix and Python including the Unix environment, the shell, scripting, databases, regular expressions, and pipeline development. Prerequisites: BISC 1112 or BISC 1116 and BISC 1126; and STAT 1127. Credit cannot be earned for this course and BISC 2584, CSCI 3571.

PUBH 3202. Introduction to Genomics. 3 Credits.

Principles of genomics; genome projects, including the human genome, molecular techniques, analytical approaches, computational tools for genome research, and genomic data generation and analysis. Prerequisites: BISC 1111; BISC 1112.

PUBH 3299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and EXNS 3995.

PUBH 4140W. Senior Seminar. 3 Credits.

Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4141. Senior Seminar Community Needs Assessment. 3 Credits.

Culminating experience for students in undergraduate public health programs. Restricted to seniors in the BS in public health program and students in the minor in public health.

PUBH 4199. Independent Study. 3 Credits.

Outline of intended project must be approved prior to registration by instructor and dean's office. Restricted to public health majors.

PUBH 4201. Practical Computing. 3 Credits.

Basic concepts of computer programming in biomedical sciences and health informatics; foundations of R and Python languages; best programming practices in health applications. Prerequisites: BISC 1111 and BISC 1115; or BISC 1112 and BISC 1116.

PUBH 4202. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Prerequisite: PUBH 4201.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.

Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6009. Fundamentals of Public Health Program Evaluation. 2 Credits.

Topics include designing program evaluation studies to produce and interpret evidence to improve public health; options for evaluation study design and evidence generation; and qualitative data collection and analysis methods. Prerequisites: PUBH 6007. Recommended background: Prior completion of PUBH 6002.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of the instructor or advisor required prior to enrollment.

PUBH 6011. Environmental and Biological Foundations of Public Health. 3 Credits.

The connection between population health and exposures to chemical, physical, and biological agents in the environment; interconnection between dimensions of environmental systems and all living things; biological sciences as they relate to environmental impacts.

PUBH 6012. Fundamentals of Health Policy. 2 Credits.

Comparative study of the structure, financing, and delivery of public health and health care in the United States and abroad; core elements of policy analysis are used to develop skills in analyzing a public health problem and presenting possible solutions both orally and in writing.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.

Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience are introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6021. Essentials of Public Health Practice and Leadership I. 1 Credit.

The skills necessary for being an effective practitioner and leader; optimizing self-management and contributions in teams as public health professionals.

PUBH 6022. Essentials of Public Health Practice and Leadership II. 1 Credit.

The development of organizations and systems in public health; organizational management tools and collaborative, outcome-oriented advocacy techniques. PUBH 6021 may be taken as a corequisite. Prerequisite: PUBH 6021.

PUBH 6023. Interprofessional Education Experience. 0 Credits.

Completion of an interprofessional education experience (IPE) is required for all MPH students. Maximizes the student's capacity for collaboration with others to better address public health and health care challenges. A variety of options are available for students to complete this requirement before graduation. Restricted to MPH students. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011, PUBH 6012, and PUBH 6021.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.

Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.

Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.

Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.

The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011 and PUBH 6012.

PUBH 6060. MPH@GW Culminating Experience I. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Most students will have completed PUBH 6014 or PUBH 6022 and other MPH core coursework prior to enrollment. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6007; and PUBH 6004 or PUBH 6011; and PUBH 6006 or PUBH 6012; and PUBH 6009 or PUBH 6437.

PUBH 6061. MPH@GW Culminating Experience II. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Students may already have completed PUBH 6060 or it may be taken as a corequisite. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6060.

PUBH 6080. Pathways to Public Health. 0 Credits.

Introduces the 12 foundational public health learning objectives to GWSPH students in non-MPH graduate programs. Must be completed before the last day of classes in the student's first semester of matriculation.

PUBH 6090. Practicum/Culminating Experience. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Permission of the advisor required prior to enrollment.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 3 Credits.

In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.

Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems; epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies; survey design and sources and evaluation of biases and confounding; emphasis on written and oral communication skills. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.

The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.

Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6124. Risk Management and Communication. 3 Credits.

Culminating course using problem-based learning methods to examine a variety of real-world environmental and occupational health issues in-depth. Students integrate cumulative knowledge across all required courses and demonstrate professional competencies. Prerequisites: PUBH 6121, PUBH 6123 and PUBH 6126.

PUBH 6126. Assessment and Control of Environmental Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.

Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries; principles from behavioral sciences, development economics, risk assessment, and epidemiology are included; potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.

The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6131. Quantitative Methods in Environmental and Occupational Health. 3 Credits.

Application of biostatistical and epidemiologic concepts and methods to analysis of EOH data. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.

Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.

The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6135. Researching Climate Change and Human Health. 3 Credits.

Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6011.

PUBH 6137. Environmental and Occupational Health Culminating Experience I. 1 Credit.

The first in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health who have completed all core courses and at least 9 credits in program-specific courses. Prerequisites: PUBH 6002 and PUBH 6003; PUBH 6004 or PUBH 6011; PUBH 6006 or PUBH 6012; and PUBH 6007.

PUBH 6138. Environmental and Occupational Health Culminating Experience II. 1 Credit.

The second in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health. Prerequisite: PUBH 6137.

PUBH 6140. Global Climate Change and Air Pollution. 2 Credits.

The state of the air in the Anthropocene epoch. Key concepts of atmospheric science, public health, and other societal impacts. Local and global policy frameworks. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6144. Environmental Health Data Development and Modeling. 2 Credits.

Introduction to sources of environmental data, handling and cleaning of data, and using data in both statistical and environmental exposure models. Prerequisites: PUBH 6131 or PUBH 6853.

PUBH 6146. Microbiomes and Microbial Ecology in Public Health. 2 Credits.

Introduction to key concepts of environmental microbial ecology and the human microbiome. The roles of microbes in ecosystems' functions with a focus on climate change and the roles of microbes in human health and disease. Prerequisites: PUBH 6011.

PUBH 6199. Topics in Environmental and Occupational Health. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

PUBH 6233. Epidemiologic Principles and Practice of Disease Eradication. 2 Credits.

The role of epidemiology, surveillance, research, and information technology in the eradication of vaccine preventable and parasitic human diseases. Prerequisites: PUBH 6003.

PUBH 6234. Epidemiologic Methods in Neglected Tropical Disease Control. 1 Credit.

Introduction to neglected tropical disease epidemiology providing a broad overview of select tropical medicine and public health issues; focus on applications of epidemiologic methods to the study of public health consequences of NTDs. Prerequisites: PUBH 6003. Corequisites: PUBH 6011.

PUBH 6235. Epidemiology of Obesity. 1 Credit.

Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.

The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; and PUBH 6003 or EXNS 6208.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.

Overview of the epidemiology (descriptive, analytic, and etiologic) of chronic diseases. Emphasis on epidemiologic methods and study design in relation to chronic disease, as well as public health approaches to disease control including surveillance, screening, and interventions. Prerequisites: EXNS 6204 or PUBH 6002; and EXNS 6208 or PUBH 6003.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PUBH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PUBH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PUBH 6003. Recommended background: PUBH 6250 and PUBH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PUBH 6003.

PUBH 6242. Clinical Epidemiology and Public Health: Reading the Research. 2 Credits.

Methods for reading epidemiology and public health research including case-control, cohort studies, randomized controlled trials, meta-analysis, testing and screening, prediction rules, decision and cost-effectiveness analysis. Prerequisites: PUBH 6003 or equivalent.

PUBH 6243. Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

An evidence-based problem solving applications course utilizing methods taught in PubH 6242 Clinical Epidemiology and Public Health: Reading the Research Prerequisites: PUBH 6003. Credit cannot be earned for this course and PUBH 8242.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PUBH 6003.

PUBH 6245. Infectious Disease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PUBH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Prerequisites: PUBH 6003. Corequisites: PUBH 6002.

PUBH 6248. Epidemiology of Aging. 2 Credits.

The demographics, theories, and physiology of aging; descriptive and associative epidemiology of several common age-related diseases and disorders; implications for public health. Prerequisites: PUBH 6003.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisites: PUBH 6003. Recommended background: PUBH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. PUBH 6249 may be taken as a corequisite. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6247 and PUBH 6249.

PUBH 6253. Issues in HIV Care and Treatment. 1 Credit.

This course provides an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students are able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisites: PUBH 6003, HIV/AIDS experience, or permission of the instructor.

PUBH 6258. Advanced Topics in Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epidemiology Surveillance in Public Health. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods are included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel are discussed. Prerequisites: PUBH 6003.

PUBH 6260. Advanced Data Analysis for Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PUBH 6002 and PUBH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PUBH 6002 and PUBH 6249.

PUBH 6262. Introduction to Geographic Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisites: PUBH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and so.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201, STAT 6202 and PUBH 6264.

PUBH 6267. Time Series Applications in Public Health. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation is used. Prerequisites: PUBH 6249.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PUBH 6002 and PUBH 6249; or permission of the instructor.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues, and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisites: PUBH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance are presented and discussed. Strengths and weaknesses of these various systems are discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisites: PUBH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6272. Epidemiology of Infectious Agents Associated with Human Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, are also discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisites: PUBH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisites: PUBH 6003.

PUBH 6274. Emerging Infectious Diseases for Public Health Professionals. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Emphasis on the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PUBH 6003 or MICR 6292; or permission of the instructor.

PUBH 6275. Essential Public Health Laboratory Skills. 2 Credits.

This course provides public health students with practical laboratory experience. Prerequisites: MICR 6239 or permission of the instructor.

PUBH 6276. Public Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to public health microbiology. Learn how to isolate and identify pathogens using critical thinking and problem solving skills.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues, and public health relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions and therapeutic strategies.

PUBH 6280. Microbiology and Emerging Infectious Diseases Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Biosafety training, CITI training, HIPAA training and permission of the instructor are required prior to enrollment. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6292, and PUBH 6245.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 2 Credits.

Appropriate methods to analyze survey data collected using complex sampling methods are discussed and applied to national survey data to address provocative public health research questions. An equivalent Stata course may be substituted for prerequisite 6249. Prerequisites: PUBH 6003 and PUBH 6249.

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PUBH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6299. Topics in Epidemiology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.

An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisite: PUBH 6002.

PUBH 6315. Introduction to Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Summer, Fall, Spring Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6320. Advanced Health Policy Analysis. 3 Credits.

Practical applications of basic quantitative tools in health policy. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Prerequisites: PUBH 6305 or PUBH 6012; and PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.

The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking; federal budget, authorization, and appropriation processes; common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.

Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.

How the law can both promote public health and conflict with the rights of individuals protected under the U.S. Constitution; legal concepts that underlie the public health system and inform public health policymaking; major areas of public health activity; the future of public health.

PUBH 6340. Health Economics and Finance. 3 Credits.

Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisites: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.**PUBH 6350. Health Policy Capstone. 2 Credits.**

Required for MPH graduate students in the health policy concentration in the final semester before graduation. Students synthesize and integrate knowledge across multiple public health disciplines; apply theories, principles, and skills in ways that approximate professional practice in the field of health policy; and demonstrate mastery of the required knowledge and competencies addressed in the curriculum. Prerequisites: PUBH 6012 or PUBH 6305; and PUBH 6320.

PUBH 6352. Basics of Economics for Health Policy. 1 Credit.

An introduction to modern microeconomics -- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors are analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.

Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Substance Abuse Policy. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors and hospitals), health plans, and payers (public and private). Prerequisite: PUBH 6305.

PUBH 6355. Comparative Health Policy. 2 Credits.

Archetypical health care systems, financing, and reform efforts, with emphasis on the trade-offs between efficiency and equity. Comparison of current policy challenges and solutions faced by policymakers in the U.S. and in other countries. Prerequisites: PUBH 6012 and PUBH 6305.

PUBH 6356. State Health Policy. 2 Credits.

Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.

Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisite: PUBH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.

The development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations; interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.

Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. Advanced Maternal and Child Health Policy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PUBH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.

Strategies for the prevention and control of infectious diseases, focusing on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems, vaccination programs, chemotherapy as a prevention and treatment tool, nutritional supplementation, environmental approaches, and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.

How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Federal Budget Process for Health Policy. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures and committees through which they are considered. Prerequisite: PUBH 6305.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.

The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisites: HSML 6215 or PUBH 6330.

PUBH 6367. Population Health, Public Health, and Health Reform. 2 Credits.

In-depth assessment of how a reforming health care system can be expected to change the policy landscape for population and public health in the United States; direct changes evolving at the state and local level and national payment and health system reforms. Prerequisites: One of the following: HSML 6202, PUBH 6006, PUBH 6012, or PUBH 6305.

PUBH 6368. Law, Medicine, and Ethics. 3 Credits.

Legal, ethical, and policy issues that arise in the biomedical arena; the definitions of life and death, the nature of personal identity, the requirements of justice, and the boundaries of liberty. Prerequisites: PUBH 6330 or PUBH 6335.

PUBH 6370. Medicare/Medicaid Law and Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PUBH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Fall. Prerequisite: PUBH 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Politics and policy behind the provision of primary health care in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the US. 2 Credits.

Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.

Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the health care industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.

PUBH 6384. Health Care Quality and Health Policy. 2 Credits.

The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.

Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6390. Prescription Drugs: Policy and Public Health. 3 Credits.

Key policies and public health programs related to each stage of a prescription drug's life cycle; Congressional funding focused on speeding the development and approval of needed drugs, public and private approaches to increase access to prescription drugs, and exceptions to international laws that allow some countries to violate prescription drug patents to improve the health of impoverished citizens.

PUBH 6399. Topics in Health Policy. 3 Credits.

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.

Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6410. Global Health Study Design. 1,2 Credit.

Tools necessary for designing and understanding the research that goes into developing good public health programs; basic elements for the planning and design phase of a research project. Prerequisite or corequisite: PUBH 6009 or PUBH 6501. Prerequisite: PUBH 6003.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6417. Cross-Cultural Approaches for Global Health Practice. 1 Credit.

How to communicate, negotiate, and be more effective across cultures; social aspects that affect communication within cultures and how to navigate communication in practical situations including in the work place and in risk and crisis situations. Corequisite: PUBH 6410. Prerequisite: PUBH 6416.

PUBH 6420. Understanding Commercial Determinants of Health. 1 Credit.

Conceptual understanding and frameworks for commercial determinants of health as key to improving public health.

PUBH 6421. Responsible Conduct of Research. 1 Credit.

Designed to raise awareness of the responsible conduct of research. Strategies for preventing irresponsible research practices, including unacceptable practices and research misconduct.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisites: PUBH 6007 and PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PUBH 6430 or permission of the instructor; and PUBH 6007.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisite: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.

Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to students in the MPH in global health program design, monitoring, and evaluation program. Prerequisites: PUBH 6400 and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.

Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PUBH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.

Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.

The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course examines a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6445. Quantitative Methods for Impact Evaluation. 2 Credits.

Learning to use and produce empirical research in the public health field; review of quantitative techniques and research designs used to uncover causal effects of policies and programs, with applications to public health topics. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6412.

PUBH 6450. Global Health Diplomacy. 2 Credits.

Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6451. Monitoring/Evaluation of Sexual/Reproductive Health Programs in Low- and Middle- Income Countries. 2 Credits.

Overview of key sexual and reproductive health challenges in low- and middle-income countries; designing and measuring programs to address those challenges. Taught from the perspective of applied researchers working within an organization that implements sexual and reproductive health programs and services. Prerequisites: PUBH 6437, PUBH 6500 and PUBH 6503.

PUBH 6452. Social and Behavior Change Communication in Middle- to Low-Income Countries. 2 Credits.

The ways in which behavior change and sociocultural theories underpin the development of SBCC programs in politically, culturally, and socially diverse settings. Prerequisites: PUBH 6007 and PUBH 6503.

PUBH 6455. Global Vaccinology. 3 Credits.

Concepts, methods, and tools for making new and existing lifesaving vaccines more accessible to individuals in low- and middle- income country settings. Recommended for second-year MPH students. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6461. Ethics and Accountability in Humanitarian Settings. 1 Credit.

Principles and fundamentals of ethical approaches and accountability processes in the delivery of humanitarian services and possible solutions and interventions to address them. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6462. Nutrition and Food in Large Humanitarian Emergencies. 1 Credit.

Fundamentals of food aid programs and nutritional issues in emergency humanitarian situations and appropriate local and international responses in lower-income countries. Field-based program responses in international, resource-scarce settings, as conducted by NGOs and UN agencies. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6463. Communication Strategies and Planning in Humanitarian Settings. 2 Credits.

Principles of and major challenges in communication planning with wide range of stakeholders in humanitarian settings; solutions and interventions to identify related risks and appropriately respond to and effectively plan communication strategies. PUBH 6480 may be taken as a corequisite. Prerequisites: PUBH 6007 and PUBH 6480.

PUBH 6464. Mental Health in Humanitarian Settings. 1 Credit.

Principles of and fundamental challenges to mental health in humanitarian settings, including potential solutions and interventions; foundational knowledge and skills in mental health and psychosocial support services in such settings. PUBH 6480 may be taken as a corequisite. Restricted to PUBH 6480.

PUBH 6465. Reproductive Health and Gender-Based Violence in Humanitarian Settings. 1 Credit.

Key issues, challenges, policies, and interventions related to sexual and reproductive health and gender-based violence in humanitarian settings for persons affected by armed conflict and natural disasters. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6469. Humanitarian Aid Seminar Series. 1 Credit.

Targeted talks and panel discussions with humanitarian aid workers from a variety of agencies addressing important or controversial contemporary topics in humanitarian settings. Corequisite or prerequisite: PUBH 6480.

PUBH 6480. Public Health in Humanitarian Settings. 2 Credits.

Technical aspects of high-priority public health interventions; consideration of how and why sound public health interventions should be implemented in both emergency and chronic humanitarian settings; the roles of diverse humanitarian actors.

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PUBH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.

Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.

Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.

Strategies for the control of infectious diseases with a focus on low and middle income countries; identifying and critiquing goals, strategies, and challenges of major global health intervention programs designed to prevent and control infectious diseases. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6487. Emerging Zoonotic Diseases and Global Food Production. 1 Credit.

Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Health Care. 2 Credits.

The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.

Introduction to major global food and nutrition issues, strategies used to address these problems, and commonly-used program impact theories and evaluation frameworks; application of evaluation methods and approaches to nutrition and food programs and policies. Prerequisite: PUBH 6437.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, nonprofit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Permission of the faculty member required prior to enrollment.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.

Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.

Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6494. Population, Public Health Practice, and Sustainable Development. 2 Credits.

The reciprocal connections between the dynamics of population growth, distribution, and age structure to health, well-being, and socioeconomic development.

PUBH 6495. Field Trial Methods and Application. 2 Credits.

Concepts, methods, and tools necessary to conduct community-based randomized trials in low- and middle-income country settings; the process of running a randomized field trial from selecting a topic, through implementation, to analysis and reporting. Most appropriate for students in their second year of study. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6499. Topics in Global Health. 3 Credits.

Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisite: PUBH 6007.

PUBH 6501. Program Evaluation. 3 Credits.

The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings; types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6007; and PUBH 6435 or PUBH 6500.

PUBH 6502. Practical Data Analysis for Prevention and Community Health. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis and tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students create codebooks, enter and clean data, derive new variables from existing ones, choose appropriate analytical techniques and implement them, graph and tabulate results, and document and protect work. Examples are drawn from commonly-encountered situations in prevention and community health, such as needs assessments and program evaluations. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.

The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaigns and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PUBH 6002 and PUBH 6007; or permission of the instructor.

PUBH 6508. Cost-Effectiveness Analysis of Health Promotion Interventions. 3 Credits.

Theoretical basis for and practical skills needed to estimate the effectiveness, population impact, and cost of health promotion interventions; application to policy and cost-effectiveness and cost-utility analyses. Familiarity with basic algebra and statistics is assumed. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6006 or PUBH 6012.

PUBH 6510. Community-Oriented Primary Care Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Community-Oriented Primary Care Policy and Issues. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PUBH 6510.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisites: PUBH 6003 and PUBH 6510.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk and Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course reviews the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PUBH 6007.

PUBH 6516. Community Health Information Resources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course introduces students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. Health Promotion in Health Care Settings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisites: PUBH 6007 and PUBH 6500.

PUBH 6532. Community Organization, Development, and Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PUBH 6007.

PUBH 6533. Design and Conduct of Community Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Community-Based Participatory Research. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. Emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PUBH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PUBH 6007.

PUBH 6537. Health Promotion and Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans are examined. Students are able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PUBH 6007.

PUBH 6550. Maternal and Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal and Child Health II. 3 Credits.

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PUBH 6552. Women's Health. 2 Credits.

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children and Youth with Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability are addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities are reviewed along with classification schemes. Both national and international distributions are considered from a sociopolitical viewpoint.

PUBH 6555. Reproductive Health: U.S. and Global Perspectives. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal and Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1 credit) and Spring (2 credits).

PUBH 6557. Child Development and Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender, and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevention: An Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It provides an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal and Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course broadly examines the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course focuses on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students are expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.

Elements of science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Learn the burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. Advanced Public Health Communication: Theory and Practice. 3 Credits.

Focuses on the use of communication to positively influence people's - and population's - understanding of health information, decision-making, and health behavior. Students study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prerequisite: PUBH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.

The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisite: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students study and apply a range of theories and techniques germane to the policy advocacy process. Prerequisite: PUBH 6503.

PUBH 6574. Public Health Branding: Theory and Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we examine how to brand behaviors as well as products and services. We review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. Communication Skills for Public Health Professionals. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Introduction to Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social and economic conditions. Emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. PA/MPH Clinical Leadership Seminar. 1 Credit.

For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in Prevention and Community Health. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

The anthropometric, biochemical, clinical, and dietary methods for assessing nutritional status in individuals. The process of conducting food and nutrition environment assessments. Prerequisites: EXNS 2119 or PUBH 6619; or other equivalent course with permission of the instructor.

PUBH 6612. Food Systems in Public Health. 2 Credits.

A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems.

PUBH 6613. U.S. Food Policy and Politics. 2 Credits.

The programs, regulations, and legislation that pertain to food production, food safety, nutrition assistance, and dietary guidance in the United States at the federal, state, and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.

The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6620. Designing Healthy Communities. 2 Credits.

Issues at the intersection of public health and planning; evaluating needs and creating change in communities facing food access, physical activity, and age related challenges; the built environment as a means of improving health and preventing chronic disease.

PUBH 6621. Applied Data Analysis in Exercise and Nutrition Sciences. 1 Credit.

Introduction to data management and data analysis using the SAS System; data analysis procedures for specific research questions and settings within the context of exercise and nutrition sciences. Restricted to students in the MPH in physical activity in public health program, program design and evaluation track, or with the permission of the advisor. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6682. Managing Natural Resources for Food Production. 3 Credits.

The relevance of natural resource conservation for ensuring healthy agricultural, food, and environmental systems; various approaches to achieving sustainable systems. Restricted to students in the graduate certificate in food policy leadership program.

PUBH 6683. Applied Food Policy Immersion Experience. 2 Credits.

Leadership theories and an opportunity to build leadership skills and engage with food policy and agriculture leaders from a variety of sectors. Includes site visits to public and private organizations significant in food policy. Restricted to students in the graduate certificate in food policy leadership program. Prerequisites: PUBH 6680 and PUBH 6682.

PUBH 6699. Topics in Nutrition Sciences. 3 Credits.

Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6704. Health Information Technology, Informatics, and Decision Making. 3 Credits.

Operationalizing fundamental technology, processes, policies and concepts of healthcare informatics and decision management to translate data into actionable information within the framework of improving quality, safety, productivity, and experience.

PUBH 6706. Population and Community Health Analytics. 3 Credits.

Overview of the concepts of population and community health, the informatics and analytics necessary to assess population health, and best approaches for decision makers and policy makers using and communicating population and community health data.

PUBH 6850. Introduction to SAS for Public Health Research. 1 Credit.

Conducting basic data management tasks with SAS software; creating libraries, data sets, and variables, and generating basic descriptive statistics and simple graphics of public health and biomedical data.

PUBH 6851. Introduction to R for Public Health Research. 1 Credit.

Read, clean, transform, tidy, and summarize public health data in R. Explore data and write R functions to make workflow more efficient.

PUBH 6852. Introduction to Python for Public Health Research. 1 Credit.

Introduction to the basic concepts of Python programming language, illustrated with applications in biomedical sciences and health informatics.

PUBH 6853. Use of Statistical Packages for Data Management and Data Analysis. 3 Credits.

Data management and data analysis using statistical software. Creating and manipulating variables, merging and concatenating data sets, and implementing common statistical methods such as Student's t-test, linear regression, and logistic regression. Prerequisites: PUBH 6002.

PUBH 6854. Applied Computing in Health Data Science. 3 Credits.

Concepts of computing in biomedical sciences and health informatics. Foundations of Unix shell, command line tools, R and Python programming languages, and their applications in public health. PUBH 6860 may be taken simultaneously. Prerequisites: PUBH 6860. Credit cannot be earned for this course and PUBH 4201.

PUBH 6856. Advanced SAS for Public Health Research. 1 Credit.

Advanced SAS programming. Interactive Matrix Language, SAS macro facility, Structured Query Language, and SAS/GRAPH options for creating drill-down graphs to analyze public health data sets. Prerequisites: PUBH 6002; and PUBH 6249 or PUBH 6853; or permission of the instructor. Credit cannot be earned for this course and PUBH 6268.

PUBH 6859. High Performance and Cloud Computing. 3 Credits.

Introduction to high performance computing and cloud computing, including issues such as data transfer, security, virtual machines, and containers. HPC at GW, Amazon Web Services, and Google Cloud for biohealth computing. Prerequisites: PUBH 6851 and PUBH 6852 or permission of the instructor.

PUBH 6860. Principles of Bioinformatics. 3 Credits.

Biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structure; and basic programming concepts including the shell, scripting, and databases. Prerequisites: PUBH 6002 or equivalent.

PUBH 6861. Public Health Genomics. 3 Credits.

Molecular technology and its impact on public health practice and discourse in the post-genomic era. The use of genomics to solve or help alleviate public health challenges. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6862. Applied Linear Regression Analysis for Public Health Research. 3 Credits.

Review of basic statistical inference and an overview of the construction of linear regression models for application to public health and biomedical data sets. Prerequisites: Prior completion of a course in undergraduate statistics and one semester of calculus.

PUBH 6863. Applied Meta-Analysis. 1 Credit.

Examination of meta-analysis (MA) with case studies using R. Statistical methods, including fixed- and random-effects MA; MA for binary and continuous data; heterogeneity in MA; meta-regression; and publication bias. Recommended background: Prior completion of an introductory course in biostatistical methods, such as PUBH 6002 or PUBH 6003, or an equivalent, is strongly recommended.

PUBH 6864. Applied Survival Analysis for Public Health Research. 3 Credits.

Application of survival or time-to-event data in public health studies. Censoring, survival functions, Kaplan-Meier curves, log-rank tests, Cox proportional hazards regression, parametric survival models, recurrent events, and competing risks. Prerequisites: PUBH 6249 or PUBH 6853. Recommended background: undergraduate calculus.

PUBH 6865. Applied Categorical Data Analysis. 3 Credits.

Comprehensive overview of methods for analyzing binary and multicategory response data. Contingency table methods for assessing associations and logistic regression for binary, nominal, and ordinal outcomes, including models for matched data. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6866. Principles of Clinical Trials. 3 Credits.

Introduction to basic principles for design, conduct, analysis, and reporting of clinical trials. Developing a proposal for a clinical trial. Prerequisites: PUBH 6002 or equivalent.

PUBH 6868. Quantitative Methods. 3 Credits.

Basic mathematical statistics: probability, fundamental distributions including binomial, Poisson and normal, central limit theorem, consistency, basic point estimation, hypothesis testing, linear models, and maximum likelihood estimation. Prerequisites: PUBH 6002 and prior completion of at least two courses in single variable calculus. Corequisites: PUBH 6249 or PUBH 6853.

PUBH 6869. Principles of Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting and related skills and knowledge for public health and medical research environments. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended. Credit cannot be earned for this course and PUBH 6258.

PUBH 6879. Propensity Score Methods for Causal Inference in Observational Studies. 3 Credits.

Designing observational studies; drawing causal inferences using propensity score methods; and performing propensity score analysis using R with hands-on data. Prerequisites: PUBH 6851 and PUBH 6865 or permission of the instructor.

PUBH 6883. Biostatistics Consulting Practicum. 1 Credit.

Supervised experiences involving the synthesis of biostatistical skills with consultations in one or more areas of health research. Students in the MPH programs in biostatistics and in epidemiology may register with permission of the instructor. Restricted to students in the MS in biostatistics and MS in epidemiology programs. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended.

PUBH 6884. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Theoretical background is complemented with solving practical problems. Prerequisites: PUBH 6854 or equivalent. Credit cannot be earned for this course and PUBH 4202.

PUBH 6885. Computational Biology. 3 Credits.

Introduction to modern computational biology, including omics data science, high-throughput technologies, multi-omics data integration, and analytical methods with real-world applications. Permission of the instructor is required prior to enrollment.

PUBH 6886. Statistical and Machine Learning for Public Health Research. 3 Credits.

Application and evaluation of supervised and unsupervised statistical and machine learning algorithms in the context of biomedical and public health research. Permission of the instructor is required prior to enrollment.

PUBH 6887. Applied Longitudinal Data Analysis for Public Health Research. 3 Credits.

Introduction to commonly used methods for longitudinal data analysis including fixed effects models, linear and generalized linear mixed effects models, and generalized estimating equations. Missing data. Prerequisites: PUBH 6862 and PUBH 6965; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202.

PUBH 6894. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration.

PUBH 6897. Research in Biostatistics and Bioinformatics. 1-4 Credits.

Independent research. Must be approved in advance by advisor/instructor. Restricted to graduate students in the Department of Biostatistics and Bioinformatics.

PUBH 6898. Master of Science Thesis. 1-2 Credits.

Master's thesis.

PUBH 6899. Topics in Biostatistics and Bioinformatics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.

Thesis research. Restricted to students in the MS in epidemiology program.

PUBH 8010. Doctoral Independent Study. 1-3 Credits.

Doctoral students complete an independent study plan to meet predetermined project and/or research work under the supervision of a faculty member. Restricted to GWSPH doctoral students.

PUBH 8110. Research Rotations. 2 Credits.

Students conduct formal rotations with a laboratory or research group to gain research and reporting experience with the mentorship of EOH faculty. Includes identification of an environmental health research problem, collection or analysis of data, and reporting on the results. May be repeated for credit. Restricted to students in the PhD in environmental program or with the permission of the instructor.

PUBH 8116. Communicating Research Results. 2 Credits.

The importance of strategic communication to public health progress. Students gain communication skills that help to transcend educational barriers and facilitate connections with peers, policymakers, and the broader public. Restricted to doctoral students who have satisfactorily completed the comprehensive examination or with the permission of the dissertation chair.

PUBH 8144. Advanced Environmental Health Data Development and Modeling. 1 Credit.

Advanced doctoral level material on environmental exposure assessment using methods covered in PUBH 6144. Restricted to doctoral candidates. Prerequisites: PUBH 6131 or PUBH 6853. Corequisites: PUBH 6144.

PUBH 8242. Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

Evidence-based problem-solving approach using methods covered in PUBH 6242. Restricted to doctoral students. Prerequisites: PUBH 6003 or equivalent. Corequisites: PUBH 6242. Credit cannot be earned for this course and PUBH 6243.

PUBH 8244. Doctoral Topics: Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6244.

PUBH 8245. Doctoral Topics: Infectious Disease Epidemiology. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Spring Prerequisites: PUBH 6003. Corequisites: PUBH 6245.

PUBH 8250. Doctoral Topics: Epidemiology of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6250.

PUBH 8259. Doctoral Topics: Epidemiologic Surveillance in Public Health. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PUBH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequisites: PUBH 6002 and PUBH 6003. Corequisites: PUBH 6259.

PUBH 8283. Doctoral Biostatistics Consulting Practicum. 2 Credits.

Working under supervision, students develop an experience-based understanding of how biostatistical skills are used in one or more areas of health research. Students must have completed at least 6 credits in any combination of general or specialized graduate-level statistics courses, such as PUBH 6202, PUBH 6260, STAT 6201, or STAT 6202, before enrolling in this course. Restricted to PhD students.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and PUBH 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PUBH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or permission of the instructor.

PUBH 8401. Foundations in Public Health Leadership. 3 Credits.

Course modules cover personal leadership; leadership models, theories, concepts, tools, and skills; and practical application of leadership to real world situations. Restricted to doctoral candidates.

PUBH 8402. Leadership and Decision Making: Skills Based Approach. 2 Credits.

Using leadership and decision making skills to solve complex health problems and implement successful solutions to improve population health in all communities; decision making, program management, quality and risk management, human resources and budget, governance, and change management.

PUBH 8403. Leadership in Public Health Policy and Practice. 2 Credits.

Students work in teams on projects for clients from public health-related agencies or organizations in the Washington, DC, area that address issues in environmental and occupational health, global health, health behavior, and health policy. Restricted to students in the DrPh program. Prerequisite: PUBH 8402.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.

Examination and assessment of issues related to the intersection of health care systems and health policy, and how health policy and health services research can inform the development and evaluation of health care systems and health policy. Restricted to doctoral candidates. Prerequisite: PUBH 6315.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.

Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.

Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.

Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics: Principles of Human Health Risk Science. 3 Credits.

This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to students in the environmental and occupational health program, or with permission of the instructor.

PUBH 8412. Advanced Topics: Environmental and Occupational Health Research and Practice. 3 Credits.

This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisites: PUBH 8411 or permission of the instructor.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.

Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisites: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measurement in Public Health and Health Services. 3 Credits.

Review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior. Explore current measurement issues in health research.

PUBH 8420. Advanced Analysis and Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Fall. Prerequisites: PUBH 8417 and PUBH 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.

Design of protocol suitable for implementation as part of DrPH dissertation requirement. Permission of the instructor, completion of required coursework, and successful completion of the comprehensive examination required prior to enrollment.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation research for DrPH. Prerequisite: PUBH 8422.

PUBH 8434. Behavioral Medicine and Public Health. 3 Credits.

Investigation into the field of behavioral medicine, which integrates behavioral, psychosocial, and biomedical sciences, with specific applications to public health. Restricted to PhD students in the social and behavioral sciences in public health program or with the permission of the instructor.

PUBH 8435. Dissertation Proposal Development for Social and Behavioral Sciences. 2 Credits.

Advise and assist doctoral students in developing and defending their dissertation proposal. Restricted to doctoral students who have successfully completed comprehensive examinations.

PUBH 8610. Statistical Methods for Health Policy. 3 Credits.

Application of statistical analysis in health policy and public health research using Stata® to analyze a variety of large public health data sets. Prior completion of at least one graduate-level statistics course is required. Restricted to doctoral students. Credit cannot be earned for this course and PUBH 6310.

PUBH 8620. Seminar: Foundations of U.S. Health Policy. 3 Credits.

Reintroduction to the basics of U.S. health policy, combining advanced legal, policy, and regulatory content acquisition with advanced health law and policy analysis skills. Restricted to doctoral students in health policy or with the permission of the instructor.

PUBH 8622. Health Care Payments, Systems, and Delivery Models. 3 Credits.

Survey of long-standing practices and recent developments in provider payment and the organization of health care delivery in the United States. Restricted to doctoral students in the health policy program or with the permission of the instructor.

PUBH 8875. Linear Models in Biostatistics. 3 Credits.

Introduction to the theory of linear models with applications to public health and biomedical data. Least squares, maximum likelihood, and distribution theory for linear regression. Prerequisites: PUBH 6862; and PUBH 6868 or PUBH 8364 or STAT 6201. Corequisites: STAT 6202. Recommended background: prior completion of coursework in linear algebra and multivariable calculus.

PUBH 8877. Generalized Linear Models in Biostatistics. 3 Credits.

Theoretical development of most commonly used methods for categorical and count data presented within the unified framework of the generalized linear model. Prerequisites: PUBH 6865; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202. Recommended background: prior completion of coursework in linear algebra.

PUBH 8878. Statistical Genetics. 3 Credits.

Application of statistical concepts to family- and population-based genetic data. Human evolution, genome-wide association studies, gene-environment interactions, and genetic architecture with emphasis on applications to real data and analyses. Prerequisites: PUBH 6860.

PUBH 8999. Dissertation Research. 1-12 Credits.

Dissertation research.

ENVIRONMENTAL AND OCCUPATIONAL HEALTH

The Department of Environmental and Occupational Health (EOH) works to further the student's understanding of how natural and human-made environments impact human health. The department offers public health programs that challenge students to explore both the underlying science and policy remedies for topics including sustainable cities and food systems, climate change mitigation, workplace safety, and risk management.

Visit the Department of Environmental and Occupational Health website (<https://publichealth.gwu.edu/departments/environmental-and-occupational-health/>) for additional information.

GRADUATE

Master's programs

- Master of Public Health in environmental health science and policy (p. 1336)
- Master of Public Health in global environmental health (p. 1339)

Doctoral program

- Doctor of Philosophy in the field of environmental health (p. 1378)
- Doctor of Public Health in environmental and occupational health (p. 1384)

FACULTY

Professors L.R. Goldman, G.M. Gray, D. Michaels, M.J. Perry (Chair), L.B. Price

Associate Professors S.C. Anenberg, K.M. Applebaum, M.S. Attene Ramos, P.T. LaPuma, C. Liu, S. McCormick, A.R. Zota

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.
Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.
Continuing Research Credit- Doctoral.

PUBH 1010. First-Year Experience in Public Health. 1 Credit.

Designed to assist students in the transition to GW and the public health major by introducing skills and resources needed to succeed personally, academically, and professionally, particularly in a public health context.

PUBH 1099. Variable Topics. 1-36 Credits.

PUBH 1101. Introduction to Public Health and Health Services. 3 Credits.

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 1102W. History of Public Health. 3 Credits.

Social history of public health from the late nineteenth century to the present; historical context for contemporary public health problems. Includes a significant engagement in writing as a form critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: UW 1020.

PUBH 1299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 2110. Public Health Biology. 3 Credits.

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisites: BISC 1005; or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.

A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3115. Global Health and Human Rights. 3 Credits.

Concepts of health as a human right and the impact of ethical violations on the mental and physical health of individuals; the efforts of the international community in addressing health consequences of vulnerable populations.

PUBH 3116. Global Health Systems Performance. 3 Credits.

Introduction to the U.S. and international health systems, both public and private, and the WHO Health Systems Framework; how environmental, ethical, cultural, and political actions shape health systems in different parts of the world. Restricted to juniors and seniors.

PUBH 3130. Health Services Management and Economics. 3 Credits.

Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisites: PUBH 1101 and STAT 1127.

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.

Political, social, and economic determinants of health; how health status is measured with an emphasis on low-income countries, the health of the poor, and inequity and inequality; burden of diseases that impact development and their basic epidemiological characteristics, including who they affect, when they occur, and where risk is greatest.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisite: PUBH 3133.

PUBH 3142. Introduction to Biostatistics for Public Health. 3 Credits.

Applying biostatistical principles to analyze studies in health services literature. Selecting statistical methods based on research questions, calculating basic statistics for estimation and inference, interpreting results of statistical analyses.

PUBH 3150. Sustainable Energy and Environmental Health. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues.

PUBH 3151W. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PUBH 3152. Qualitative Research Methods in Public Health. 3 Credits.

Introduction to characteristics and methods relevant to the design and conduct of qualitative research in public health investigations; data collection methods, coding, data analysis, and reporting results.

PUBH 3199. Topics in Public Health. 1-5 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 3201. Introduction to Bioinformatics. 3 Credits.

Introduction to bioinformatics, including biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structural bioinformatics; and programming concepts in Unix and Python including the Unix environment, the shell, scripting, databases, regular expressions, and pipeline development. Prerequisites: BISC 1112 or BISC 1116 and BISC 1126; and STAT 1127. Credit cannot be earned for this course and BISC 2584, CSCI 3571.

PUBH 3202. Introduction to Genomics. 3 Credits.

Principles of genomics; genome projects, including the human genome, molecular techniques, analytical approaches, computational tools for genome research, and genomic data generation and analysis. Prerequisites: BISC 1111; BISC 1112.

PUBH 3299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and EXNS 3995.

PUBH 4140W. Senior Seminar. 3 Credits.

Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4141. Senior Seminar Community Needs Assessment. 3 Credits.

Culminating experience for students in undergraduate public health programs. Restricted to seniors in the BS in public health program and students in the minor in public health.

PUBH 4199. Independent Study. 3 Credits.

Outline of intended project must be approved prior to registration by instructor and dean's office. Restricted to public health majors.

PUBH 4201. Practical Computing. 3 Credits.

Basic concepts of computer programming in biomedical sciences and health informatics; foundations of R and Python languages; best programming practices in health applications. Prerequisites: BISC 1111 and BISC 1115; or BISC 1112 and BISC 1116.

PUBH 4202. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Prerequisite: PUBH 4201.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.

Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6009. Fundamentals of Public Health Program Evaluation. 2 Credits.

Topics include designing program evaluation studies to produce and interpret evidence to improve public health; options for evaluation study design and evidence generation; and qualitative data collection and analysis methods. Prerequisites: PUBH 6007. Recommended background: Prior completion of PUBH 6002.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of the instructor or advisor required prior to enrollment.

PUBH 6011. Environmental and Biological Foundations of Public Health. 3 Credits.

The connection between population health and exposures to chemical, physical, and biological agents in the environment; interconnection between dimensions of environmental systems and all living things; biological sciences as they relate to environmental impacts.

PUBH 6012. Fundamentals of Health Policy. 2 Credits.

Comparative study of the structure, financing, and delivery of public health and health care in the United States and abroad; core elements of policy analysis are used to develop skills in analyzing a public health problem and presenting possible solutions both orally and in writing.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.

Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience are introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6021. Essentials of Public Health Practice and Leadership I. 1 Credit.

The skills necessary for being an effective practitioner and leader; optimizing self-management and contributions in teams as public health professionals.

PUBH 6022. Essentials of Public Health Practice and Leadership II. 1 Credit.

The development of organizations and systems in public health; organizational management tools and collaborative, outcome-oriented advocacy techniques. PUBH 6021 may be taken as a corequisite. Prerequisite: PUBH 6021.

PUBH 6023. Interprofessional Education Experience. 0 Credits.

Completion of an interprofessional education experience (IPE) is required for all MPH students. Maximizes the student's capacity for collaboration with others to better address public health and health care challenges. A variety of options are available for students to complete this requirement before graduation. Restricted to MPH students. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011, PUBH 6012, and PUBH 6021.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.

Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.

Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.

Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.

The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011 and PUBH 6012.

PUBH 6060. MPH@GW Culminating Experience I. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Most students will have completed PUBH 6014 or PUBH 6022 and other MPH core coursework prior to enrollment. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6007; and PUBH 6004 or PUBH 6011; and PUBH 6006 or PUBH 6012; and PUBH 6009 or PUBH 6437.

PUBH 6061. MPH@GW Culminating Experience II. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Students may already have completed PUBH 6060 or it may be taken as a corequisite. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6060.

PUBH 6080. Pathways to Public Health. 0 Credits.

Introduces the 12 foundational public health learning objectives to GWSPH students in non-MPH graduate programs. Must be completed before the last day of classes in the student's first semester of matriculation.

PUBH 6090. Practicum/Culminating Experience. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Permission of the advisor required prior to enrollment.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 3 Credits.

In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.

Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems; epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies; survey design and sources and evaluation of biases and confounding; emphasis on written and oral communication skills. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.

The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.

Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6124. Risk Management and Communication. 3 Credits.

Culminating course using problem-based learning methods to examine a variety of real-world environmental and occupational health issues in-depth. Students integrate cumulative knowledge across all required courses and demonstrate professional competencies. Prerequisites: PUBH 6121, PUBH 6123 and PUBH 6126.

PUBH 6126. Assessment and Control of Environmental Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.

Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries; principles from behavioral sciences, development economics, risk assessment, and epidemiology are included; potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.

The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6131. Quantitative Methods in Environmental and Occupational Health. 3 Credits.

Application of biostatistical and epidemiologic concepts and methods to analysis of EOH data. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.

Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.

The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6135. Researching Climate Change and Human Health. 3 Credits.

Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6011.

PUBH 6137. Environmental and Occupational Health Culminating Experience I. 1 Credit.

The first in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health who have completed all core courses and at least 9 credits in program-specific courses. Prerequisites: PUBH 6002 and PUBH 6003; PUBH 6004 or PUBH 6011; PUBH 6006 or PUBH 6012; and PUBH 6007.

PUBH 6138. Environmental and Occupational Health Culminating Experience II. 1 Credit.

The second in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health. Prerequisite: PUBH 6137.

PUBH 6140. Global Climate Change and Air Pollution. 2 Credits.

The state of the air in the Anthropocene epoch. Key concepts of atmospheric science, public health, and other societal impacts. Local and global policy frameworks. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6144. Environmental Health Data Development and Modeling. 2 Credits.

Introduction to sources of environmental data, handling and cleaning of data, and using data in both statistical and environmental exposure models. Prerequisites: PUBH 6131 or PUBH 6853.

PUBH 6146. Microbiomes and Microbial Ecology in Public Health. 2 Credits.

Introduction to key concepts of environmental microbial ecology and the human microbiome. The roles of microbes in ecosystems' functions with a focus on climate change and the roles of microbes in human health and disease. Prerequisites: PUBH 6011.

PUBH 6199. Topics in Environmental and Occupational Health. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

PUBH 6233. Epidemiologic Principles and Practice of Disease Eradication. 2 Credits.

The role of epidemiology, surveillance, research, and information technology in the eradication of vaccine preventable and parasitic human diseases. Prerequisites: PUBH 6003.

PUBH 6234. Epidemiologic Methods in Neglected Tropical Disease Control. 1 Credit.

Introduction to neglected tropical disease epidemiology providing a broad overview of select tropical medicine and public health issues; focus on applications of epidemiologic methods to the study of public health consequences of NTDs. Prerequisites: PUBH 6003. Corequisites: PUBH 6011.

PUBH 6235. Epidemiology of Obesity. 1 Credit.

Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.

The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; and PUBH 6003 or EXNS 6208.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.

Overview of the epidemiology (descriptive, analytic, and etiologic) of chronic diseases. Emphasis on epidemiologic methods and study design in relation to chronic disease, as well as public health approaches to disease control including surveillance, screening, and interventions. Prerequisites: EXNS 6204 or PUBH 6002; and EXNS 6208 or PUBH 6003.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PUBH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PUBH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PUBH 6003. Recommended background: PUBH 6250 and PUBH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PUBH 6003.

PUBH 6242. Clinical Epidemiology and Public Health: Reading the Research. 2 Credits.

Methods for reading epidemiology and public health research including case-control, cohort studies, randomized controlled trials, meta-analysis, testing and screening, prediction rules, decision and cost-effectiveness analysis. Prerequisites: PUBH 6003 or equivalent.

PUBH 6243. Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

An evidence-based problem solving applications course utilizing methods taught in PubH 6242 Clinical Epidemiology and Public Health: Reading the Research Prerequisites: PUBH 6003. Credit cannot be earned for this course and PUBH 8242.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PUBH 6003.

PUBH 6245. Infectious Disease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PUBH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Prerequisites: PUBH 6003. Corequisites: PUBH 6002.

PUBH 6248. Epidemiology of Aging. 2 Credits.

The demographics, theories, and physiology of aging; descriptive and associative epidemiology of several common age-related diseases and disorders; implications for public health. Prerequisites: PUBH 6003.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisites: PUBH 6003. Recommended background: PUBH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. PUBH 6249 may be taken as a corequisite. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6247 and PUBH 6249.

PUBH 6253. Issues in HIV Care and Treatment. 1 Credit.

This course provides an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students are able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisites: PUBH 6003, HIV/AIDS experience, or permission of the instructor.

PUBH 6258. Advanced Topics in Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epidemiology Surveillance in Public Health. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods are included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel are discussed. Prerequisites: PUBH 6003.

PUBH 6260. Advanced Data Analysis for Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PUBH 6002 and PUBH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PUBH 6002 and PUBH 6249.

PUBH 6262. Introduction to Geographic Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisites: PUBH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201, STAT 6202 and PUBH 6264.

PUBH 6267. Time Series Applications in Public Health. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation is used. Prerequisites: PUBH 6249.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PUBH 6002 and PUBH 6249; or permission of the instructor.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues, and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisites: PUBH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance are presented and discussed. Strengths and weaknesses of these various systems are discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisites: PUBH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6272. Epidemiology of Infectious Agents Associated with Human Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, are also discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisites: PUBH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisites: PUBH 6003.

PUBH 6274. Emerging Infectious Diseases for Public Health Professionals. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Emphasis on the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PUBH 6003 or MICR 6292; or permission of the instructor.

PUBH 6275. Essential Public Health Laboratory Skills. 2 Credits.

This course provides public health students with practical laboratory experience. Prerequisites: MICR 6239 or permission of the instructor.

PUBH 6276. Public Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to public health microbiology. Learn how to isolate and identify pathogens using critical thinking and problem solving skills.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues, and public health relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions and therapeutic strategies.

PUBH 6280. Microbiology and Emerging Infectious Diseases Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Biosafety training, CITI training, HIPAA training and permission of the instructor are required prior to enrollment. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6292, and PUBH 6245.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 2 Credits.

Appropriate methods to analyze survey data collected using complex sampling methods are discussed and applied to national survey data to address provocative public health research questions. An equivalent Stata course may be substituted for prerequisite 6249. Prerequisites: PUBH 6003 and PUBH 6249.

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PUBH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6299. Topics in Epidemiology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.

An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisite: PUBH 6002.

PUBH 6315. Introduction to Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Summer, Fall, Spring. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6320. Advanced Health Policy Analysis. 3 Credits.

Practical applications of basic quantitative tools in health policy. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Prerequisites: PUBH 6305 or PUBH 6012; and PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.

The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking; federal budget, authorization, and appropriation processes; common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.

Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.

How the law can both promote public health and conflict with the rights of individuals protected under the U.S. Constitution; legal concepts that underlie the public health system and inform public health policymaking; major areas of public health activity; the future of public health.

PUBH 6340. Health Economics and Finance. 3 Credits.

Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisites: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.**PUBH 6350. Health Policy Capstone. 2 Credits.**

Required for MPH graduate students in the health policy concentration in the final semester before graduation. Students synthesize and integrate knowledge across multiple public health disciplines; apply theories, principles, and skills in ways that approximate professional practice in the field of health policy; and demonstrate mastery of the required knowledge and competencies addressed in the curriculum. Prerequisites: PUBH 6012 or PUBH 6305; and PUBH 6320.

PUBH 6352. Basics of Economics for Health Policy. 1 Credit.

An introduction to modern microeconomics -- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors are analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.

Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Substance Abuse Policy. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors and hospitals), health plans, and payers (public and private). Prerequisite: PUBH 6305.

PUBH 6355. Comparative Health Policy. 2 Credits.

Archetypical health care systems, financing, and reform efforts, with emphasis on the trade-offs between efficiency and equity. Comparison of current policy challenges and solutions faced by policymakers in the U.S. and in other countries. Prerequisites: PUBH 6012 and PUBH 6305.

PUBH 6356. State Health Policy. 2 Credits.

Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.

Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisite: PUBH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.

The development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations; interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.

Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. Advanced Maternal and Child Health Policy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PUBH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.

Strategies for the prevention and control of infectious diseases, focusing on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems, vaccination programs, chemotherapy as a prevention and treatment tool, nutritional supplementation, environmental approaches, and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.

How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Federal Budget Process for Health Policy. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures and committees through which they are considered. Prerequisite: PUBH 6305.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.

The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisites: HSML 6215 or PUBH 6330.

PUBH 6367. Population Health, Public Health, and Health Reform. 2 Credits.

In-depth assessment of how a reforming health care system can be expected to change the policy landscape for population and public health in the United States; direct changes evolving at the state and local level and national payment and health system reforms. Prerequisites: One of the following: HSML 6202, PUBH 6006, PUBH 6012, or PUBH 6305.

PUBH 6368. Law, Medicine, and Ethics. 3 Credits.

Legal, ethical, and policy issues that arise in the biomedical arena; the definitions of life and death, the nature of personal identity, the requirements of justice, and the boundaries of liberty. Prerequisites: PUBH 6330 or PUBH 6335.

PUBH 6370. Medicare/Medicaid Law and Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PUBH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Fall. Prerequisite: PUBH 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Politics and policy behind the provision of primary health care in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the US. 2 Credits.

Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.

Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the health care industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.

PUBH 6384. Health Care Quality and Health Policy. 2 Credits.

The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.

Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6390. Prescription Drugs: Policy and Public Health. 3 Credits.

Key policies and public health programs related to each stage of a prescription drug's life cycle; Congressional funding focused on speeding the development and approval of needed drugs, public and private approaches to increase access to prescription drugs, and exceptions to international laws that allow some countries to violate prescription drug patents to improve the health of impoverished citizens.

PUBH 6399. Topics in Health Policy. 3 Credits.

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.

Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6410. Global Health Study Design. 1,2 Credit.

Tools necessary for designing and understanding the research that goes into developing good public health programs; basic elements for the planning and design phase of a research project. Prerequisite or corequisite: PUBH 6009 or PUBH 6501. Prerequisite: PUBH 6003.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6417. Cross-Cultural Approaches for Global Health Practice. 1 Credit.

How to communicate, negotiate, and be more effective across cultures; social aspects that affect communication within cultures and how to navigate communication in practical situations including in the work place and in risk and crisis situations. Corequisite: PUBH 6410. Prerequisite: PUBH 6416.

PUBH 6420. Understanding Commercial Determinants of Health. 1 Credit.

Conceptual understanding and frameworks for commercial determinants of health as key to improving public health.

PUBH 6421. Responsible Conduct of Research. 1 Credit.

Designed to raise awareness of the responsible conduct of research. Strategies for preventing irresponsible research practices, including unacceptable practices and research misconduct.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisites: PUBH 6007 and PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PUBH 6430 or permission of the instructor; and PUBH 6007.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisite: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.

Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to students in the MPH in global health program design, monitoring, and evaluation program. Prerequisites: PUBH 6400 and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.

Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PUBH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.

Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.

The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course examines a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6445. Quantitative Methods for Impact Evaluation. 2 Credits.

Learning to use and produce empirical research in the public health field; review of quantitative techniques and research designs used to uncover causal effects of policies and programs, with applications to public health topics. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6412.

PUBH 6450. Global Health Diplomacy. 2 Credits.

Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6451. Monitoring/Evaluation of Sexual/Reproductive Health Programs in Low- and Middle- Income Countries. 2 Credits.

Overview of key sexual and reproductive health challenges in low- and middle-income countries; designing and measuring programs to address those challenges. Taught from the perspective of applied researchers working within an organization that implements sexual and reproductive health programs and services. Prerequisites: PUBH 6437, PUBH 6500 and PUBH 6503.

PUBH 6452. Social and Behavior Change Communication in Middle- to Low-Income Countries. 2 Credits.

The ways in which behavior change and sociocultural theories underpin the development of SBCC programs in politically, culturally, and socially diverse settings. Prerequisites: PUBH 6007 and PUBH 6503.

PUBH 6455. Global Vaccinology. 3 Credits.

Concepts, methods, and tools for making new and existing lifesaving vaccines more accessible to individuals in low- and middle- income country settings. Recommended for second-year MPH students. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6461. Ethics and Accountability in Humanitarian Settings. 1 Credit.

Principles and fundamentals of ethical approaches and accountability processes in the delivery of humanitarian services and possible solutions and interventions to address them. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6462. Nutrition and Food in Large Humanitarian Emergencies. 1 Credit.

Fundamentals of food aid programs and nutritional issues in emergency humanitarian situations and appropriate local and international responses in lower-income countries. Field-based program responses in international, resource-scarce settings, as conducted by NGOs and UN agencies. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6463. Communication Strategies and Planning in Humanitarian Settings. 2 Credits.

Principles of and major challenges in communication planning with wide range of stakeholders in humanitarian settings; solutions and interventions to identify related risks and appropriately respond to and effectively plan communication strategies. PUBH 6480 may be taken as a corequisite. Prerequisites: PUBH 6007 and PUBH 6480.

PUBH 6464. Mental Health in Humanitarian Settings. 1 Credit.

Principles of and fundamental challenges to mental health in humanitarian settings, including potential solutions and interventions; foundational knowledge and skills in mental health and psychosocial support services in such settings. PUBH 6480 may be taken as a corequisite. Restricted to PUBH 6480.

PUBH 6465. Reproductive Health and Gender-Based Violence in Humanitarian Settings. 1 Credit.

Key issues, challenges, policies, and interventions related to sexual and reproductive health and gender-based violence in humanitarian settings for persons affected by armed conflict and natural disasters. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6469. Humanitarian Aid Seminar Series. 1 Credit.

Targeted talks and panel discussions with humanitarian aid workers from a variety of agencies addressing important or controversial contemporary topics in humanitarian settings. Corequisite or prerequisite: PUBH 6480.

PUBH 6480. Public Health in Humanitarian Settings. 2 Credits.

Technical aspects of high-priority public health interventions; consideration of how and why sound public health interventions should be implemented in both emergency and chronic humanitarian settings; the roles of diverse humanitarian actors.

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PUBH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.

Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.

Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.

Strategies for the control of infectious diseases with a focus on low and middle income countries; identifying and critiquing goals, strategies, and challenges of major global health intervention programs designed to prevent and control infectious diseases. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6487. Emerging Zoonotic Diseases and Global Food Production. 1 Credit.

Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Health Care. 2 Credits.

The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.

Introduction to major global food and nutrition issues, strategies used to address these problems, and commonly-used program impact theories and evaluation frameworks; application of evaluation methods and approaches to nutrition and food programs and policies. Prerequisite: PUBH 6437.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, nonprofit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Permission of the faculty member required prior to enrollment.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.

Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.

Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6494. Population, Public Health Practice, and Sustainable Development. 2 Credits.

The reciprocal connections between the dynamics of population growth, distribution, and age structure to health, well-being, and socioeconomic development.

PUBH 6495. Field Trial Methods and Application. 2 Credits.

Concepts, methods, and tools necessary to conduct community-based randomized trials in low- and middle-income country settings; the process of running a randomized field trial from selecting a topic, through implementation, to analysis and reporting. Most appropriate for students in their second year of study. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6499. Topics in Global Health. 3 Credits.

Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisite: PUBH 6007.

PUBH 6501. Program Evaluation. 3 Credits.

The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings; types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6007; and PUBH 6435 or PUBH 6500.

PUBH 6502. Practical Data Analysis for Prevention and Community Health. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis and tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students create codebooks, enter and clean data, derive new variables from existing ones, choose appropriate analytical techniques and implement them, graph and tabulate results, and document and protect work. Examples are drawn from commonly-encountered situations in prevention and community health, such as needs assessments and program evaluations. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.

The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaigns and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PUBH 6002 and PUBH 6007; or permission of the instructor.

PUBH 6508. Cost-Effectiveness Analysis of Health Promotion Interventions. 3 Credits.

Theoretical basis for and practical skills needed to estimate the effectiveness, population impact, and cost of health promotion interventions; application to policy and cost-effectiveness and cost-utility analyses. Familiarity with basic algebra and statistics is assumed. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6006 or PUBH 6012.

PUBH 6510. Community-Oriented Primary Care Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Community-Oriented Primary Care Policy and Issues. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PUBH 6510.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisites: PUBH 6003 and PUBH 6510.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk and Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course reviews the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PUBH 6007.

PUBH 6516. Community Health Information Resources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course introduces students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. Health Promotion in Health Care Settings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisites: PUBH 6007 and PUBH 6500.

PUBH 6532. Community Organization, Development, and Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PUBH 6007.

PUBH 6533. Design and Conduct of Community Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Community-Based Participatory Research. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. Emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PUBH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PUBH 6007.

PUBH 6537. Health Promotion and Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans are examined. Students are able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PUBH 6007.

PUBH 6550. Maternal and Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal and Child Health II. 3 Credits.

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PUBH 6552. Women's Health. 2 Credits.

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children and Youth with Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability are addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities are reviewed along with classification schemes. Both national and international distributions are considered from a sociopolitical viewpoint.

PUBH 6555. Reproductive Health: U.S. and Global Perspectives. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal and Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1 credit) and Spring (2 credits).

PUBH 6557. Child Development and Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender, and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevention: An Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It provides an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal and Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course broadly examines the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course focuses on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students are expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.

Elements of science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Learn the burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. Advanced Public Health Communication: Theory and Practice. 3 Credits.

Focuses on the use of communication to positively influence people's - and population's - understanding of health information, decision-making, and health behavior. Students study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prerequisite: PUBH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.

The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisite: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students study and apply a range of theories and techniques germane to the policy advocacy process. Prerequisite: PUBH 6503.

PUBH 6574. Public Health Branding: Theory and Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we examine how to brand behaviors as well as products and services. We review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. Communication Skills for Public Health Professionals. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Introduction to Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social and economic conditions. Emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. PA/MPH Clinical Leadership Seminar. 1 Credit.

For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in Prevention and Community Health. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

The anthropometric, biochemical, clinical, and dietary methods for assessing nutritional status in individuals. The process of conducting food and nutrition environment assessments. Prerequisites: EXNS 2119 or PUBH 6619; or other equivalent course with permission of the instructor.

PUBH 6612. Food Systems in Public Health. 2 Credits.

A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems.

PUBH 6613. U.S. Food Policy and Politics. 2 Credits.

The programs, regulations, and legislation that pertain to food production, food safety, nutrition assistance, and dietary guidance in the United States at the federal, state, and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.

The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6620. Designing Healthy Communities. 2 Credits.

Issues at the intersection of public health and planning; evaluating needs and creating change in communities facing food access, physical activity, and age related challenges; the built environment as a means of improving health and preventing chronic disease.

PUBH 6621. Applied Data Analysis in Exercise and Nutrition Sciences. 1 Credit.

Introduction to data management and data analysis using the SAS System; data analysis procedures for specific research questions and settings within the context of exercise and nutrition sciences. Restricted to students in the MPH in physical activity in public health program, program design and evaluation track, or with the permission of the advisor. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6682. Managing Natural Resources for Food Production. 3 Credits.

The relevance of natural resource conservation for ensuring healthy agricultural, food, and environmental systems; various approaches to achieving sustainable systems. Restricted to students in the graduate certificate in food policy leadership program.

PUBH 6683. Applied Food Policy Immersion Experience. 2 Credits.

Leadership theories and an opportunity to build leadership skills and engage with food policy and agriculture leaders from a variety of sectors. Includes site visits to public and private organizations significant in food policy. Restricted to students in the graduate certificate in food policy leadership program. Prerequisites: PUBH 6680 and PUBH 6682.

PUBH 6699. Topics in Nutrition Sciences. 3 Credits.

Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6704. Health Information Technology, Informatics, and Decision Making. 3 Credits.

Operationalizing fundamental technology, processes, policies and concepts of healthcare informatics and decision management to translate data into actionable information within the framework of improving quality, safety, productivity, and experience.

PUBH 6706. Population and Community Health Analytics. 3 Credits.

Overview of the concepts of population and community health, the informatics and analytics necessary to assess population health, and best approaches for decision makers and policy makers using and communicating population and community health data.

PUBH 6850. Introduction to SAS for Public Health Research. 1 Credit.

Conducting basic data management tasks with SAS software; creating libraries, data sets, and variables, and generating basic descriptive statistics and simple graphics of public health and biomedical data.

PUBH 6851. Introduction to R for Public Health Research. 1 Credit.

Read, clean, transform, tidy, and summarize public health data in R. Explore data and write R functions to make workflow more efficient.

PUBH 6852. Introduction to Python for Public Health Research. 1 Credit.

Introduction to the basic concepts of Python programming language, illustrated with applications in biomedical sciences and health informatics.

PUBH 6853. Use of Statistical Packages for Data Management and Data Analysis. 3 Credits.

Data management and data analysis using statistical software. Creating and manipulating variables, merging and concatenating data sets, and implementing common statistical methods such as Student's t-test, linear regression, and logistic regression. Prerequisites: PUBH 6002.

PUBH 6854. Applied Computing in Health Data Science. 3 Credits.

Concepts of computing in biomedical sciences and health informatics. Foundations of Unix shell, command line tools, R and Python programming languages, and their applications in public health. PUBH 6860 may be taken simultaneously. Prerequisites: PUBH 6860. Credit cannot be earned for this course and PUBH 4201.

PUBH 6856. Advanced SAS for Public Health Research. 1 Credit.

Advanced SAS programming. Interactive Matrix Language, SAS macro facility, Structured Query Language, and SAS/GRAPH options for creating drill-down graphs to analyze public health data sets. Prerequisites: PUBH 6002; and PUBH 6249 or PUBH 6853; or permission of the instructor. Credit cannot be earned for this course and PUBH 6268.

PUBH 6859. High Performance and Cloud Computing. 3 Credits.

Introduction to high performance computing and cloud computing, including issues such as data transfer, security, virtual machines, and containers. HPC at GW, Amazon Web Services, and Google Cloud for biohealth computing. Prerequisites: PUBH 6851 and PUBH 6852 or permission of the instructor.

PUBH 6860. Principles of Bioinformatics. 3 Credits.

Biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structure; and basic programming concepts including the shell, scripting, and databases. Prerequisites: PUBH 6002 or equivalent.

PUBH 6861. Public Health Genomics. 3 Credits.

Molecular technology and its impact on public health practice and discourse in the post-genomic era. The use of genomics to solve or help alleviate public health challenges. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6862. Applied Linear Regression Analysis for Public Health Research. 3 Credits.

Review of basic statistical inference and an overview of the construction of linear regression models for application to public health and biomedical data sets. Prerequisites: Prior completion of a course in undergraduate statistics and one semester of calculus.

PUBH 6863. Applied Meta-Analysis. 1 Credit.

Examination of meta-analysis (MA) with case studies using R. Statistical methods, including fixed- and random-effects MA; MA for binary and continuous data; heterogeneity in MA; meta-regression; and publication bias. Recommended background: Prior completion of an introductory course in biostatistical methods, such as PUBH 6002 or PUBH 6003, or an equivalent, is strongly recommended.

PUBH 6864. Applied Survival Analysis for Public Health Research. 3 Credits.

Application of survival or time-to-event data in public health studies. Censoring, survival functions, Kaplan-Meier curves, log-rank tests, Cox proportional hazards regression, parametric survival models, recurrent events, and competing risks. Prerequisites: PUBH 6249 or PUBH 6853. Recommended background: undergraduate calculus.

PUBH 6865. Applied Categorical Data Analysis. 3 Credits.

Comprehensive overview of methods for analyzing binary and multicategory response data. Contingency table methods for assessing associations and logistic regression for binary, nominal, and ordinal outcomes, including models for matched data. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6866. Principles of Clinical Trials. 3 Credits.

Introduction to basic principles for design, conduct, analysis, and reporting of clinical trials. Developing a proposal for a clinical trial. Prerequisites: PUBH 6002 or equivalent.

PUBH 6868. Quantitative Methods. 3 Credits.

Basic mathematical statistics: probability, fundamental distributions including binomial, Poisson and normal, central limit theorem, consistency, basic point estimation, hypothesis testing, linear models, and maximum likelihood estimation. Prerequisites: PUBH 6002 and prior completion of at least two courses in single variable calculus. Corequisites: PUBH 6249 or PUBH 6853.

PUBH 6869. Principles of Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting and related skills and knowledge for public health and medical research environments. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended. Credit cannot be earned for this course and PUBH 6258.

PUBH 6879. Propensity Score Methods for Causal Inference in Observational Studies. 3 Credits.

Designing observational studies; drawing causal inferences using propensity score methods; and performing propensity score analysis using R with hands-on data. Prerequisites: PUBH 6851 and PUBH 6865 or permission of the instructor.

PUBH 6883. Biostatistics Consulting Practicum. 1 Credit.

Supervised experiences involving the synthesis of biostatistical skills with consultations in one or more areas of health research. Students in the MPH programs in biostatistics and in epidemiology may register with permission of the instructor. Restricted to students in the MS in biostatistics and MS in epidemiology programs. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended.

PUBH 6884. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Theoretical background is complemented with solving practical problems. Prerequisites: PUBH 6854 or equivalent. Credit cannot be earned for this course and PUBH 4202.

PUBH 6885. Computational Biology. 3 Credits.

Introduction to modern computational biology, including omics data science, high-throughput technologies, multi-omics data integration, and analytical methods with real-world applications. Permission of the instructor is required prior to enrollment.

PUBH 6886. Statistical and Machine Learning for Public Health Research. 3 Credits.

Application and evaluation of supervised and unsupervised statistical and machine learning algorithms in the context of biomedical and public health research. Permission of the instructor is required prior to enrollment.

PUBH 6887. Applied Longitudinal Data Analysis for Public Health Research. 3 Credits.

Introduction to commonly used methods for longitudinal data analysis including fixed effects models, linear and generalized linear mixed effects models, and generalized estimating equations. Missing data. Prerequisites: PUBH 6862 and PUBH 6965; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202.

PUBH 6894. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration.

PUBH 6897. Research in Biostatistics and Bioinformatics. 1-4 Credits.

Independent research. Must be approved in advance by advisor/instructor. Restricted to graduate students in the Department of Biostatistics and Bioinformatics.

PUBH 6898. Master of Science Thesis. 1-2 Credits.

Master's thesis.

PUBH 6899. Topics in Biostatistics and Bioinformatics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.

Thesis research. Restricted to students in the MS in epidemiology program.

PUBH 8010. Doctoral Independent Study. 1-3 Credits.

Doctoral students complete an independent study plan to meet predetermined project and/or research work under the supervision of a faculty member. Restricted to GWSPH doctoral students.

PUBH 8110. Research Rotations. 2 Credits.

Students conduct formal rotations with a laboratory or research group to gain research and reporting experience with the mentorship of EOH faculty. Includes identification of an environmental health research problem, collection or analysis of data, and reporting on the results. May be repeated for credit. Restricted to students in the PhD in environmental program or with the permission of the instructor.

PUBH 8116. Communicating Research Results. 2 Credits.

The importance of strategic communication to public health progress. Students gain communication skills that help to transcend educational barriers and facilitate connections with peers, policymakers, and the broader public. Restricted to doctoral students who have satisfactorily completed the comprehensive examination or with the permission of the dissertation chair.

PUBH 8144. Advanced Environmental Health Data Development and Modeling. 1 Credit.

Advanced doctoral level material on environmental exposure assessment using methods covered in PUBH 6144. Restricted to doctoral candidates. Prerequisites: PUBH 6131 or PUBH 6853. Corequisites: PUBH 6144.

PUBH 8242. Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

Evidence-based problem-solving approach using methods covered in PUBH 6242. Restricted to doctoral students. Prerequisites: PUBH 6003 or equivalent. Corequisites: PUBH 6242. Credit cannot be earned for this course and PUBH 6243.

PUBH 8244. Doctoral Topics: Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6244.

PUBH 8245. Doctoral Topics: Infectious Disease Epidemiology. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Spring Prerequisites: PUBH 6003. Corequisites: PUBH 6245.

PUBH 8250. Doctoral Topics: Epidemiology of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6250.

PUBH 8259. Doctoral Topics: Epidemiologic Surveillance in Public Health. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PUBH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequisites: PUBH 6002 and PUBH 6003. Corequisites: PUBH 6259.

PUBH 8283. Doctoral Biostatistics Consulting Practicum. 2 Credits.

Working under supervision, students develop an experience-based understanding of how biostatistical skills are used in one or more areas of health research. Students must have completed at least 6 credits in any combination of general or specialized graduate-level statistics courses, such as PUBH 6202, PUBH 6260, STAT 6201, or STAT 6202, before enrolling in this course. Restricted to PhD students.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and PUBH 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PUBH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or permission of the instructor.

PUBH 8401. Foundations in Public Health Leadership. 3 Credits.

Course modules cover personal leadership; leadership models, theories, concepts, tools, and skills; and practical application of leadership to real world situations. Restricted to doctoral candidates.

PUBH 8402. Leadership and Decision Making: Skills Based Approach. 2 Credits.

Using leadership and decision making skills to solve complex health problems and implement successful solutions to improve population health in all communities; decision making, program management, quality and risk management, human resources and budget, governance, and change management.

PUBH 8403. Leadership in Public Health Policy and Practice. 2 Credits.

Students work in teams on projects for clients from public health-related agencies or organizations in the Washington, DC, area that address issues in environmental and occupational health, global health, health behavior, and health policy. Restricted to students in the DrPh program. Prerequisite: PUBH 8402.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.

Examination and assessment of issues related to the intersection of health care systems and health policy, and how health policy and health services research can inform the development and evaluation of health care systems and health policy. Restricted to doctoral candidates. Prerequisite: PUBH 6315.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.

Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.

Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.

Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics: Principles of Human Health Risk Science. 3 Credits.

This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to students in the environmental and occupational health program, or with permission of the instructor.

PUBH 8412. Advanced Topics: Environmental and Occupational Health Research and Practice. 3 Credits.

This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisites: PUBH 8411 or permission of the instructor.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.

Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisites: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measurement in Public Health and Health Services. 3 Credits.

Review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior. Explore current measurement issues in health research.

PUBH 8420. Advanced Analysis and Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Fall. Prerequisites: PUBH 8417 and PUBH 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.

Design of protocol suitable for implementation as part of DrPH dissertation requirement. Permission of the instructor, completion of required coursework, and successful completion of the comprehensive examination required prior to enrollment.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation research for DrPH. Prerequisite: PUBH 8422.

PUBH 8434. Behavioral Medicine and Public Health. 3 Credits.

Investigation into the field of behavioral medicine, which integrates behavioral, psychosocial, and biomedical sciences, with specific applications to public health. Restricted to PhD students in the social and behavioral sciences in public health program or with the permission of the instructor.

PUBH 8435. Dissertation Proposal Development for Social and Behavioral Sciences. 2 Credits.

Advise and assist doctoral students in developing and defending their dissertation proposal. Restricted to doctoral students who have successfully completed comprehensive examinations.

PUBH 8610. Statistical Methods for Health Policy. 3 Credits.

Application of statistical analysis in health policy and public health research using Stata® to analyze a variety of large public health data sets. Prior completion of at least one graduate-level statistics course is required. Restricted to doctoral students. Credit cannot be earned for this course and PUBH 6310.

PUBH 8620. Seminar: Foundations of U.S. Health Policy. 3 Credits.

Reintroduction to the basics of U.S. health policy, combining advanced legal, policy, and regulatory content acquisition with advanced health law and policy analysis skills. Restricted to doctoral students in health policy or with the permission of the instructor.

PUBH 8622. Health Care Payments, Systems, and Delivery Models. 3 Credits.

Survey of long-standing practices and recent developments in provider payment and the organization of health care delivery in the United States. Restricted to doctoral students in the health policy program or with the permission of the instructor.

PUBH 8875. Linear Models in Biostatistics. 3 Credits.

Introduction to the theory of linear models with applications to public health and biomedical data. Least squares, maximum likelihood, and distribution theory for linear regression. Prerequisites: PUBH 6862; and PUBH 6868 or PUBH 8364 or STAT 6201. Corequisites: STAT 6202. Recommended background: prior completion of coursework in linear algebra and multivariable calculus.

PUBH 8877. Generalized Linear Models in Biostatistics. 3 Credits.

Theoretical development of most commonly used methods for categorical and count data presented within the unified framework of the generalized linear model. Prerequisites: PUBH 6865; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202. Recommended background: prior completion of coursework in linear algebra.

PUBH 8878. Statistical Genetics. 3 Credits.

Application of statistical concepts to family- and population-based genetic data. Human evolution, genome-wide association studies, gene-environment interactions, and genetic architecture with emphasis on applications to real data and analyses. Prerequisites: PUBH 6860.

PUBH 8999. Dissertation Research. 1-12 Credits.

Dissertation research.

EPIDEMIOLOGY

The Department of Epidemiology integrates diverse educational programs with a rapidly growing research portfolio. Graduate students have the opportunity to study and participate in faculty research projects in a variety of academic disciplines, including infectious disease, cancer, nutritional and disaster epidemiology, and public health laboratory science. In their practicum, students work closely with scientists at local health departments, the NIH and other federal agencies, academic institutions, and international health organizations.

By exploring the core quantitative sciences of public health and taking advantage of opportunities to learn by doing, students are prepared to become the next generation of public health leaders and practitioners.

GRADUATE

Master's programs

- Master of Public Health in the field of epidemiology (p. 1338)
- Master of Science in the field of epidemiology (p. 1360)
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 1362)

Doctoral programs

- Doctor of Philosophy in the field epidemiology (p. 1379)

FACULTY

Professors A.D. Castel, A.E. Greenberg (*Chair*), L.A. Guay (*Research*), J.A. Jordan, M. Magnus, R.K. Riegelman, D.A. Verme, H.A. Young

Associate Professors D.H. Bernat, B.H. Braffett (*Research*), S.D. Cleary, R.G. Clifton (*Research*), M. Ghosh, K.A. Jablonski (*Research*), I. Kuo (*Research*), A.K. Monroe, M.M. Rice (*Research*)

Assistant Professors R.K. Doshi (*Research*), C.A.B. MacPherson (*Research*), H.A. Muse, J.A. Peterson (*Research*), M. Power, S.C. Quinlan (*Teaching*), M.I. Ulfers (*Teaching*)

Adjunct Professor C.L. Ogden

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.
Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.
Continuing Research Credit- Doctoral.

PUBH 1010. First-Year Experience in Public Health. 1 Credit.

Designed to assist students in the transition to GW and the public health major by introducing skills and resources needed to succeed personally, academically, and professionally, particularly in a public health context.

PUBH 1099. Variable Topics. 1-36 Credits.

PUBH 1101. Introduction to Public Health and Health Services. 3 Credits.

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 1102W. History of Public Health. 3 Credits.

Social history of public health from the late nineteenth century to the present; historical context for contemporary public health problems. Includes a significant engagement in writing as a form critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: UW 1020.

PUBH 1299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 2110. Public Health Biology. 3 Credits.

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisites: BISC 1005; or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.

A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3115. Global Health and Human Rights. 3 Credits.

Concepts of health as a human right and the impact of ethical violations on the mental and physical health of individuals; the efforts of the international community in addressing health consequences of vulnerable populations.

PUBH 3116. Global Health Systems Performance. 3 Credits.

Introduction to the U.S. and international health systems, both public and private, and the WHO Health Systems Framework; how environmental, ethical, cultural, and political actions shape health systems in different parts of the world. Restricted to juniors and seniors.

PUBH 3130. Health Services Management and Economics. 3 Credits.

Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisites: PUBH 1101 and STAT 1127.

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.

Political, social, and economic determinants of health; how health status is measured with an emphasis on low-income countries, the health of the poor, and inequity and inequality; burden of diseases that impact development and their basic epidemiological characteristics, including who they affect, when they occur, and where risk is greatest.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisite: PUBH 3133.

PUBH 3142. Introduction to Biostatistics for Public Health. 3 Credits.

Applying biostatistical principles to analyze studies in health services literature. Selecting statistical methods based on research questions, calculating basic statistics for estimation and inference, interpreting results of statistical analyses.

PUBH 3150. Sustainable Energy and Environmental Health. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues.

PUBH 3151W. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PUBH 3152. Qualitative Research Methods in Public Health. 3 Credits.

Introduction to characteristics and methods relevant to the design and conduct of qualitative research in public health investigations; data collection methods, coding, data analysis, and reporting results.

PUBH 3199. Topics in Public Health. 1-5 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 3201. Introduction to Bioinformatics. 3 Credits.

Introduction to bioinformatics, including biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structural bioinformatics; and programming concepts in Unix and Python including the Unix environment, the shell, scripting, databases, regular expressions, and pipeline development. Prerequisites: BISC 1112 or BISC 1116 and BISC 1126; and STAT 1127. Credit cannot be earned for this course and BISC 2584, CSCI 3571.

PUBH 3202. Introduction to Genomics. 3 Credits.

Principles of genomics; genome projects, including the human genome, molecular techniques, analytical approaches, computational tools for genome research, and genomic data generation and analysis. Prerequisites: BISC 1111; BISC 1112.

PUBH 3299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and EXNS 3995.

PUBH 4140W. Senior Seminar. 3 Credits.

Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4141. Senior Seminar Community Needs Assessment. 3 Credits.

Culminating experience for students in undergraduate public health programs. Restricted to seniors in the BS in public health program and students in the minor in public health.

PUBH 4199. Independent Study. 3 Credits.

Outline of intended project must be approved prior to registration by instructor and dean's office. Restricted to public health majors.

PUBH 4201. Practical Computing. 3 Credits.

Basic concepts of computer programming in biomedical sciences and health informatics; foundations of R and Python languages; best programming practices in health applications. Prerequisites: BISC 1111 and BISC 1115; or BISC 1112 and BISC 1116.

PUBH 4202. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Prerequisite: PUBH 4201.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.

Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6009. Fundamentals of Public Health Program Evaluation. 2 Credits.

Topics include designing program evaluation studies to produce and interpret evidence to improve public health; options for evaluation study design and evidence generation; and qualitative data collection and analysis methods. Prerequisites: PUBH 6007. Recommended background: Prior completion of PUBH 6002.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of the instructor or advisor required prior to enrollment.

PUBH 6011. Environmental and Biological Foundations of Public Health. 3 Credits.

The connection between population health and exposures to chemical, physical, and biological agents in the environment; interconnection between dimensions of environmental systems and all living things; biological sciences as they relate to environmental impacts.

PUBH 6012. Fundamentals of Health Policy. 2 Credits.

Comparative study of the structure, financing, and delivery of public health and health care in the United States and abroad; core elements of policy analysis are used to develop skills in analyzing a public health problem and presenting possible solutions both orally and in writing.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.

Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience are introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6021. Essentials of Public Health Practice and Leadership I. 1 Credit.

The skills necessary for being an effective practitioner and leader; optimizing self-management and contributions in teams as public health professionals.

PUBH 6022. Essentials of Public Health Practice and Leadership II. 1 Credit.

The development of organizations and systems in public health; organizational management tools and collaborative, outcome-oriented advocacy techniques. PUBH 6021 may be taken as a corequisite. Prerequisite: PUBH 6021.

PUBH 6023. Interprofessional Education Experience. 0 Credits.

Completion of an interprofessional education experience (IPE) is required for all MPH students. Maximizes the student's capacity for collaboration with others to better address public health and health care challenges. A variety of options are available for students to complete this requirement before graduation. Restricted to MPH students. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011, PUBH 6012, and PUBH 6021.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.

Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.

Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.

Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.

The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011 and PUBH 6012.

PUBH 6060. MPH@GW Culminating Experience I. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Most students will have completed PUBH 6014 or PUBH 6022 and other MPH core coursework prior to enrollment. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6007; and PUBH 6004 or PUBH 6011; and PUBH 6006 or PUBH 6012; and PUBH 6009 or PUBH 6437.

PUBH 6061. MPH@GW Culminating Experience II. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Students may already have completed PUBH 6060 or it may be taken as a corequisite. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6060.

PUBH 6080. Pathways to Public Health. 0 Credits.

Introduces the 12 foundational public health learning objectives to GWSPH students in non-MPH graduate programs. Must be completed before the last day of classes in the student's first semester of matriculation.

PUBH 6090. Practicum/Culminating Experience. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Permission of the advisor required prior to enrollment.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 3 Credits.

In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.

Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems; epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies; survey design and sources and evaluation of biases and confounding; emphasis on written and oral communication skills. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.

The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.

Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6124. Risk Management and Communication. 3 Credits.

Culminating course using problem-based learning methods to examine a variety of real-world environmental and occupational health issues in-depth. Students integrate cumulative knowledge across all required courses and demonstrate professional competencies. Prerequisites: PUBH 6121, PUBH 6123 and PUBH 6126.

PUBH 6126. Assessment and Control of Environmental Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.

Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries; principles from behavioral sciences, development economics, risk assessment, and epidemiology are included; potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.

The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6131. Quantitative Methods in Environmental and Occupational Health. 3 Credits.

Application of biostatistical and epidemiologic concepts and methods to analysis of EOH data. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.

Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.

The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6135. Researching Climate Change and Human Health. 3 Credits.

Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6011.

PUBH 6137. Environmental and Occupational Health Culminating Experience I. 1 Credit.

The first in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health who have completed all core courses and at least 9 credits in program-specific courses. Prerequisites: PUBH 6002 and PUBH 6003; PUBH 6004 or PUBH 6011; PUBH 6006 or PUBH 6012; and PUBH 6007.

PUBH 6138. Environmental and Occupational Health Culminating Experience II. 1 Credit.

The second in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health. Prerequisite: PUBH 6137.

PUBH 6140. Global Climate Change and Air Pollution. 2 Credits.

The state of the air in the Anthropocene epoch. Key concepts of atmospheric science, public health, and other societal impacts. Local and global policy frameworks. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6144. Environmental Health Data Development and Modeling. 2 Credits.

Introduction to sources of environmental data, handling and cleaning of data, and using data in both statistical and environmental exposure models. Prerequisites: PUBH 6131 or PUBH 6853.

PUBH 6146. Microbiomes and Microbial Ecology in Public Health. 2 Credits.

Introduction to key concepts of environmental microbial ecology and the human microbiome. The roles of microbes in ecosystems' functions with a focus on climate change and the roles of microbes in human health and disease. Prerequisites: PUBH 6011.

PUBH 6199. Topics in Environmental and Occupational Health. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

PUBH 6233. Epidemiologic Principles and Practice of Disease Eradication. 2 Credits.

The role of epidemiology, surveillance, research, and information technology in the eradication of vaccine preventable and parasitic human diseases. Prerequisites: PUBH 6003.

PUBH 6234. Epidemiologic Methods in Neglected Tropical Disease Control. 1 Credit.

Introduction to neglected tropical disease epidemiology providing a broad overview of select tropical medicine and public health issues; focus on applications of epidemiologic methods to the study of public health consequences of NTDs. Prerequisites: PUBH 6003. Corequisites: PUBH 6011.

PUBH 6235. Epidemiology of Obesity. 1 Credit.

Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.

The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; and PUBH 6003 or EXNS 6208.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.

Overview of the epidemiology (descriptive, analytic, and etiologic) of chronic diseases. Emphasis on epidemiologic methods and study design in relation to chronic disease, as well as public health approaches to disease control including surveillance, screening, and interventions. Prerequisites: EXNS 6204 or PUBH 6002; and EXNS 6208 or PUBH 6003.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PUBH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PUBH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PUBH 6003. Recommended background: PUBH 6250 and PUBH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PUBH 6003.

PUBH 6242. Clinical Epidemiology and Public Health: Reading the Research. 2 Credits.

Methods for reading epidemiology and public health research including case-control, cohort studies, randomized controlled trials, meta-analysis, testing and screening, prediction rules, decision and cost-effectiveness analysis. Prerequisites: PUBH 6003 or equivalent.

PUBH 6243. Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

An evidence-based problem solving applications course utilizing methods taught in PubH 6242 Clinical Epidemiology and Public Health: Reading the Research Prerequisites: PUBH 6003. Credit cannot be earned for this course and PUBH 8242.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PUBH 6003.

PUBH 6245. Infectious Disease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PUBH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Prerequisites: PUBH 6003. Corequisites: PUBH 6002.

PUBH 6248. Epidemiology of Aging. 2 Credits.

The demographics, theories, and physiology of aging; descriptive and associative epidemiology of several common age-related diseases and disorders; implications for public health. Prerequisites: PUBH 6003.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisites: PUBH 6003. Recommended background: PUBH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. PUBH 6249 may be taken as a corequisite. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6247 and PUBH 6249.

PUBH 6253. Issues in HIV Care and Treatment. 1 Credit.

This course provides an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students are able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisites: PUBH 6003, HIV/AIDS experience, or permission of the instructor.

PUBH 6258. Advanced Topics in Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epidemiology Surveillance in Public Health. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods are included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel are discussed. Prerequisites: PUBH 6003.

PUBH 6260. Advanced Data Analysis for Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PUBH 6002 and PUBH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PUBH 6002 and PUBH 6249.

PUBH 6262. Introduction to Geographic Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisites: PUBH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201, STAT 6202 and PUBH 6264.

PUBH 6267. Time Series Applications in Public Health. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation is used. Prerequisites: PUBH 6249.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PUBH 6002 and PUBH 6249; or permission of the instructor.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues, and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisites: PUBH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance are presented and discussed. Strengths and weaknesses of these various systems are discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisites: PUBH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6272. Epidemiology of Infectious Agents Associated with Human Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, are also discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisites: PUBH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisites: PUBH 6003.

PUBH 6274. Emerging Infectious Diseases for Public Health Professionals. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Emphasis on the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PUBH 6003 or MICR 6292; or permission of the instructor.

PUBH 6275. Essential Public Health Laboratory Skills. 2 Credits.

This course provides public health students with practical laboratory experience. Prerequisites: MICR 6239 or permission of the instructor.

PUBH 6276. Public Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to public health microbiology. Learn how to isolate and identify pathogens using critical thinking and problem solving skills.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues, and public health relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions and therapeutic strategies.

PUBH 6280. Microbiology and Emerging Infectious Diseases Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Biosafety training, CITI training, HIPAA training and permission of the instructor are required prior to enrollment. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6292, and PUBH 6245.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 2 Credits.

Appropriate methods to analyze survey data collected using complex sampling methods are discussed and applied to national survey data to address provocative public health research questions. An equivalent Stata course may be substituted for prerequisite 6249. Prerequisites: PUBH 6003 and PUBH 6249.

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PUBH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6299. Topics in Epidemiology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.

An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisite: PUBH 6002.

PUBH 6315. Introduction to Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Summer, Fall, Spring Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6320. Advanced Health Policy Analysis. 3 Credits.

Practical applications of basic quantitative tools in health policy. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Prerequisites: PUBH 6305 or PUBH 6012; and PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.

The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking; federal budget, authorization, and appropriation processes; common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.

Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.

How the law can both promote public health and conflict with the rights of individuals protected under the U.S. Constitution; legal concepts that underlie the public health system and inform public health policymaking; major areas of public health activity; the future of public health.

PUBH 6340. Health Economics and Finance. 3 Credits.

Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisites: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.

PUBH 6350. Health Policy Capstone. 2 Credits.

Required for MPH graduate students in the health policy concentration in the final semester before graduation. Students synthesize and integrate knowledge across multiple public health disciplines; apply theories, principles, and skills in ways that approximate professional practice in the field of health policy; and demonstrate mastery of the required knowledge and competencies addressed in the curriculum. Prerequisites: PUBH 6012 or PUBH 6305; and PUBH 6320.

PUBH 6352. Basics of Economics for Health Policy. 1 Credit.

An introduction to modern microeconomics -- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors are analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.

Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Substance Abuse Policy. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors and hospitals), health plans, and payers (public and private). Prerequisite: PUBH 6305.

PUBH 6355. Comparative Health Policy. 2 Credits.

Archetypical health care systems, financing, and reform efforts, with emphasis on the trade-offs between efficiency and equity. Comparison of current policy challenges and solutions faced by policymakers in the U.S. and in other countries. Prerequisites: PUBH 6012 and PUBH 6305.

PUBH 6356. State Health Policy. 2 Credits.

Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.

Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisite: PUBH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.

The development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations; interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.

Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. Advanced Maternal and Child Health Policy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PUBH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.

Strategies for the prevention and control of infectious diseases, focusing on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems, vaccination programs, chemotherapy as a prevention and treatment tool, nutritional supplementation, environmental approaches, and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.

How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Federal Budget Process for Health Policy. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures and committees through which they are considered. Prerequisite: PUBH 6305.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.

The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisites: HSML 6215 or PUBH 6330.

PUBH 6367. Population Health, Public Health, and Health Reform. 2 Credits.

In-depth assessment of how a reforming health care system can be expected to change the policy landscape for population and public health in the United States; direct changes evolving at the state and local level and national payment and health system reforms. Prerequisites: One of the following: HSML 6202, PUBH 6006, PUBH 6012, or PUBH 6305.

PUBH 6368. Law, Medicine, and Ethics. 3 Credits.

Legal, ethical, and policy issues that arise in the biomedical arena; the definitions of life and death, the nature of personal identity, the requirements of justice, and the boundaries of liberty. Prerequisites: PUBH 6330 or PUBH 6335.

PUBH 6370. Medicare/Medicaid Law and Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs.

Prerequisite: PUBH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy.

Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Fall. Prerequisite: PUBH 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance.

Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Politics and policy behind the provision of primary health care in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the US. 2 Credits.

Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.

Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the health care industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.**PUBH 6384. Health Care Quality and Health Policy. 2 Credits.**

The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.

Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6390. Prescription Drugs: Policy and Public Health. 3 Credits.

Key policies and public health programs related to each stage of a prescription drug's life cycle; Congressional funding focused on speeding the development and approval of needed drugs, public and private approaches to increase access to prescription drugs, and exceptions to international laws that allow some countries to violate prescription drug patents to improve the health of impoverished citizens.

PUBH 6399. Topics in Health Policy. 3 Credits.

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.

Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6410. Global Health Study Design. 1,2 Credit.

Tools necessary for designing and understanding the research that goes into developing good public health programs; basic elements for the planning and design phase of a research project. Prerequisite or corequisite: PUBH 6009 or PUBH 6501. Prerequisite: PUBH 6003.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6417. Cross-Cultural Approaches for Global Health Practice. 1 Credit.

How to communicate, negotiate, and be more effective across cultures; social aspects that affect communication within cultures and how to navigate communication in practical situations including in the work place and in risk and crisis situations. Corequisite: PUBH 6410. Prerequisite: PUBH 6416.

PUBH 6420. Understanding Commercial Determinants of Health. 1 Credit.

Conceptual understanding and frameworks for commercial determinants of health as key to improving public health.

PUBH 6421. Responsible Conduct of Research. 1 Credit.

Designed to raise awareness of the responsible conduct of research. Strategies for preventing irresponsible research practices, including unacceptable practices and research misconduct.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisites: PUBH 6007 and PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PUBH 6430 or permission of the instructor; and PUBH 6007.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisite: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.

Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to students in the MPH in global health program design, monitoring, and evaluation program. Prerequisites: PUBH 6400 and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.

Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PUBH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.

Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.

The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course examines a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6445. Quantitative Methods for Impact Evaluation. 2 Credits.

Learning to use and produce empirical research in the public health field; review of quantitative techniques and research designs used to uncover causal effects of policies and programs, with applications to public health topics. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6412.

PUBH 6450. Global Health Diplomacy. 2 Credits.

Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6451. Monitoring/Evaluation of Sexual/Reproductive Health Programs in Low- and Middle- Income Countries. 2 Credits.

Overview of key sexual and reproductive health challenges in low- and middle-income countries; designing and measuring programs to address those challenges. Taught from the perspective of applied researchers working within an organization that implements sexual and reproductive health programs and services. Prerequisites: PUBH 6437, PUBH 6500 and PUBH 6503.

PUBH 6452. Social and Behavior Change Communication in Middle- to Low-Income Countries. 2 Credits.

The ways in which behavior change and sociocultural theories underpin the development of SBCC programs in politically, culturally, and socially diverse settings. Prerequisites: PUBH 6007 and PUBH 6503.

PUBH 6455. Global Vaccinology. 3 Credits.

Concepts, methods, and tools for making new and existing lifesaving vaccines more accessible to individuals in low- and middle- income country settings. Recommended for second-year MPH students. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6461. Ethics and Accountability in Humanitarian Settings. 1 Credit.

Principles and fundamentals of ethical approaches and accountability processes in the delivery of humanitarian services and possible solutions and interventions to address them. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6462. Nutrition and Food in Large Humanitarian Emergencies. 1 Credit.

Fundamentals of food aid programs and nutritional issues in emergency humanitarian situations and appropriate local and international responses in lower-income countries. Field-based program responses in international, resource-scarce settings, as conducted by NGOs and UN agencies. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6463. Communication Strategies and Planning in Humanitarian Settings. 2 Credits.

Principles of and major challenges in communication planning with wide range of stakeholders in humanitarian settings; solutions and interventions to identify related risks and appropriately respond to and effectively plan communication strategies. PUBH 6480 may be taken as a corequisite. Prerequisites: PUBH 6007 and PUBH 6480.

PUBH 6464. Mental Health in Humanitarian Settings. 1 Credit.

Principles of and fundamental challenges to mental health in humanitarian settings, including potential solutions and interventions; foundational knowledge and skills in mental health and psychosocial support services in such settings. PUBH 6480 may be taken as a corequisite. Restricted to PUBH 6480.

PUBH 6465. Reproductive Health and Gender-Based Violence in Humanitarian Settings. 1 Credit.

Key issues, challenges, policies, and interventions related to sexual and reproductive health and gender-based violence in humanitarian settings for persons affected by armed conflict and natural disasters. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6469. Humanitarian Aid Seminar Series. 1 Credit.

Targeted talks and panel discussions with humanitarian aid workers from a variety of agencies addressing important or controversial contemporary topics in humanitarian settings. Corequisite or prerequisite: PUBH 6480.

PUBH 6480. Public Health in Humanitarian Settings. 2 Credits.

Technical aspects of high-priority public health interventions; consideration of how and why sound public health interventions should be implemented in both emergency and chronic humanitarian settings; the roles of diverse humanitarian actors.

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PUBH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.

Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.

Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.

Strategies for the control of infectious diseases with a focus on low and middle income countries; identifying and critiquing goals, strategies, and challenges of major global health intervention programs designed to prevent and control infectious diseases. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6487. Emerging Zoonotic Diseases and Global Food Production. 1 Credit.

Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Health Care. 2 Credits.

The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.

Introduction to major global food and nutrition issues, strategies used to address these problems, and commonly-used program impact theories and evaluation frameworks; application of evaluation methods and approaches to nutrition and food programs and policies. Prerequisite: PUBH 6437.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, nonprofit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Permission of the faculty member required prior to enrollment.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.

Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.

Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6494. Population, Public Health Practice, and Sustainable Development. 2 Credits.

The reciprocal connections between the dynamics of population growth, distribution, and age structure to health, well-being, and socioeconomic development.

PUBH 6495. Field Trial Methods and Application. 2 Credits.

Concepts, methods, and tools necessary to conduct community-based randomized trials in low- and middle-income country settings; the process of running a randomized field trial from selecting a topic, through implementation, to analysis and reporting. Most appropriate for students in their second year of study. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6499. Topics in Global Health. 3 Credits.

Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisite: PUBH 6007.

PUBH 6501. Program Evaluation. 3 Credits.

The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings; types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6007; and PUBH 6435 or PUBH 6500.

PUBH 6502. Practical Data Analysis for Prevention and Community Health. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis and tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students create codebooks, enter and clean data, derive new variables from existing ones, choose appropriate analytical techniques and implement them, graph and tabulate results, and document and protect work. Examples are drawn from commonly-encountered situations in prevention and community health, such as needs assessments and program evaluations. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.

The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaigns and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PUBH 6002 and PUBH 6007; or permission of the instructor.

PUBH 6508. Cost-Effectiveness Analysis of Health Promotion Interventions. 3 Credits.

Theoretical basis for and practical skills needed to estimate the effectiveness, population impact, and cost of health promotion interventions; application to policy and cost-effectiveness and cost-utility analyses. Familiarity with basic algebra and statistics is assumed. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6006 or PUBH 6012.

PUBH 6510. Community-Oriented Primary Care Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Community-Oriented Primary Care Policy and Issues. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PUBH 6510.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisites: PUBH 6003 and PUBH 6510.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk and Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course reviews the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PUBH 6007.

PUBH 6516. Community Health Information Resources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course introduces students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. Health Promotion in Health Care Settings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisites: PUBH 6007 and PUBH 6500.

PUBH 6532. Community Organization, Development, and Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PUBH 6007.

PUBH 6533. Design and Conduct of Community Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Community-Based Participatory Research. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. Emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PUBH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PUBH 6007.

PUBH 6537. Health Promotion and Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans are examined. Students are able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PUBH 6007.

PUBH 6550. Maternal and Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal and Child Health II. 3 Credits.

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PUBH 6552. Women's Health. 2 Credits.

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children and Youth with Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability are addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities are reviewed along with classification schemes. Both national and international distributions are considered from a sociopolitical viewpoint.

PUBH 6555. Reproductive Health: U.S. and Global Perspectives. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal and Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1 credit) and Spring (2 credits).

PUBH 6557. Child Development and Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender, and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevention: An Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It provides an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal and Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course broadly examines the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course focuses on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students are expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.

Elements of science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Learn the burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. Advanced Public Health Communication: Theory and Practice. 3 Credits.

Focuses on the use of communication to positively influence people's – and population's – understanding of health information, decision-making, and health behavior. Students study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prerequisite: PUBH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.

The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisite: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students study and apply a range of theories and techniques germane to the policy advocacy process. Prerequisite: PUBH 6503.

PUBH 6574. Public Health Branding: Theory and Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we examine how to brand behaviors as well as products and services. We review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. Communication Skills for Public Health Professionals. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Introduction to Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social and economic conditions. Emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. PA/MPH Clinical Leadership Seminar. 1 Credit.

For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in Prevention and Community Health. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

The anthropometric, biochemical, clinical, and dietary methods for assessing nutritional status in individuals. The process of conducting food and nutrition environment assessments. Prerequisites: EXNS 2119 or PUBH 6619; or other equivalent course with permission of the instructor.

PUBH 6612. Food Systems in Public Health. 2 Credits.

A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems.

PUBH 6613. U.S. Food Policy and Politics. 2 Credits.

The programs, regulations, and legislation that pertain to food production, food safety, nutrition assistance, and dietary guidance in the United States at the federal, state, and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.

The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6620. Designing Healthy Communities. 2 Credits.

Issues at the intersection of public health and planning; evaluating needs and creating change in communities facing food access, physical activity, and age related challenges; the built environment as a means of improving health and preventing chronic disease.

PUBH 6621. Applied Data Analysis in Exercise and Nutrition Sciences. 1 Credit.

Introduction to data management and data analysis using the SAS System; data analysis procedures for specific research questions and settings within the context of exercise and nutrition sciences. Restricted to students in the MPH in physical activity in public health program, program design and evaluation track, or with the permission of the advisor. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6682. Managing Natural Resources for Food Production. 3 Credits.

The relevance of natural resource conservation for ensuring healthy agricultural, food, and environmental systems; various approaches to achieving sustainable systems. Restricted to students in the graduate certificate in food policy leadership program.

PUBH 6683. Applied Food Policy Immersion Experience. 2 Credits.

Leadership theories and an opportunity to build leadership skills and engage with food policy and agriculture leaders from a variety of sectors. Includes site visits to public and private organizations significant in food policy. Restricted to students in the graduate certificate in food policy leadership program. Prerequisites: PUBH 6680 and PUBH 6682.

PUBH 6699. Topics in Nutrition Sciences. 3 Credits.

Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6704. Health Information Technology, Informatics, and Decision Making. 3 Credits.

Operationalizing fundamental technology, processes, policies and concepts of healthcare informatics and decision management to translate data into actionable information within the framework of improving quality, safety, productivity, and experience.

PUBH 6706. Population and Community Health Analytics. 3 Credits.

Overview of the concepts of population and community health, the informatics and analytics necessary to assess population health, and best approaches for decision makers and policy makers using and communicating population and community health data.

PUBH 6850. Introduction to SAS for Public Health Research. 1 Credit.

Conducting basic data management tasks with SAS software; creating libraries, data sets, and variables, and generating basic descriptive statistics and simple graphics of public health and biomedical data.

PUBH 6851. Introduction to R for Public Health Research. 1 Credit.

Read, clean, transform, tidy, and summarize public health data in R. Explore data and write R functions to make workflow more efficient.

PUBH 6852. Introduction to Python for Public Health Research. 1 Credit.

Introduction to the basic concepts of Python programming language, illustrated with applications in biomedical sciences and health informatics.

PUBH 6853. Use of Statistical Packages for Data Management and Data Analysis. 3 Credits.

Data management and data analysis using statistical software. Creating and manipulating variables, merging and concatenating data sets, and implementing common statistical methods such as Student's t-test, linear regression, and logistic regression. Prerequisites: PUBH 6002.

PUBH 6854. Applied Computing in Health Data Science. 3 Credits.

Concepts of computing in biomedical sciences and health informatics. Foundations of Unix shell, command line tools, R and Python programming languages, and their applications in public health. PUBH 6860 may be taken simultaneously. Prerequisites: PUBH 6860. Credit cannot be earned for this course and PUBH 4201.

PUBH 6856. Advanced SAS for Public Health Research. 1 Credit.

Advanced SAS programming. Interactive Matrix Language, SAS macro facility, Structured Query Language, and SAS/GRAPH options for creating drill-down graphs to analyze public health data sets. Prerequisites: PUBH 6002; and PUBH 6249 or PUBH 6853; or permission of the instructor. Credit cannot be earned for this course and PUBH 6268.

PUBH 6859. High Performance and Cloud Computing. 3 Credits.

Introduction to high performance computing and cloud computing, including issues such as data transfer, security, virtual machines, and containers. HPC at GW, Amazon Web Services, and Google Cloud for biohealth computing. Prerequisites: PUBH 6851 and PUBH 6852 or permission of the instructor.

PUBH 6860. Principles of Bioinformatics. 3 Credits.

Biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structure; and basic programming concepts including the shell, scripting, and databases. Prerequisites: PUBH 6002 or equivalent.

PUBH 6861. Public Health Genomics. 3 Credits.

Molecular technology and its impact on public health practice and discourse in the post-genomic era. The use of genomics to solve or help alleviate public health challenges. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6862. Applied Linear Regression Analysis for Public Health Research. 3 Credits.

Review of basic statistical inference and an overview of the construction of linear regression models for application to public health and biomedical data sets. Prerequisites: Prior completion of a course in undergraduate statistics and one semester of calculus.

PUBH 6863. Applied Meta-Analysis. 1 Credit.

Examination of meta-analysis (MA) with case studies using R. Statistical methods, including fixed- and random-effects MA; MA for binary and continuous data; heterogeneity in MA; meta-regression; and publication bias. Recommended background: Prior completion of an introductory course in biostatistical methods, such as PUBH 6002 or PUBH 6003, or an equivalent, is strongly recommended.

PUBH 6864. Applied Survival Analysis for Public Health Research. 3 Credits.

Application of survival or time-to-event data in public health studies. Censoring, survival functions, Kaplan-Meier curves, log-rank tests, Cox proportional hazards regression, parametric survival models, recurrent events, and competing risks. Prerequisites: PUBH 6249 or PUBH 6853. Recommended background: undergraduate calculus.

PUBH 6865. Applied Categorical Data Analysis. 3 Credits.

Comprehensive overview of methods for analyzing binary and multcategory response data. Contingency table methods for assessing associations and logistic regression for binary, nominal, and ordinal outcomes, including models for matched data. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6866. Principles of Clinical Trials. 3 Credits.

Introduction to basic principles for design, conduct, analysis, and reporting of clinical trials. Developing a proposal for a clinical trial. Prerequisites: PUBH 6002 or equivalent.

PUBH 6868. Quantitative Methods. 3 Credits.

Basic mathematical statistics: probability, fundamental distributions including binomial, Poisson and normal, central limit theorem, consistency, basic point estimation, hypothesis testing, linear models, and maximum likelihood estimation. Prerequisites: PUBH 6002 and prior completion of at least two courses in single variable calculus. Corequisites: PUBH 6249 or PUBH 6853.

PUBH 6869. Principles of Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting and related skills and knowledge for public health and medical research environments. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended. Credit cannot be earned for this course and PUBH 6258.

PUBH 6879. Propensity Score Methods for Causal Inference in Observational Studies. 3 Credits.

Designing observational studies; drawing causal inferences using propensity score methods; and performing propensity score analysis using R with hands-on data. Prerequisites: PUBH 6851 and PUBH 6865 or permission of the instructor.

PUBH 6883. Biostatistics Consulting Practicum. 1 Credit.

Supervised experiences involving the synthesis of biostatistical skills with consultations in one or more areas of health research. Students in the MPH programs in biostatistics and in epidemiology may register with permission of the instructor. Restricted to students in the MS in biostatistics and MS in epidemiology programs. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended.

PUBH 6884. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Theoretical background is complemented with solving practical problems. Prerequisites: PUBH 6854 or equivalent. Credit cannot be earned for this course and PUBH 4202.

PUBH 6885. Computational Biology. 3 Credits.

Introduction to modern computational biology, including omics data science, high-throughput technologies, multi-omics data integration, and analytical methods with real-world applications. Permission of the instructor is required prior to enrollment.

PUBH 6886. Statistical and Machine Learning for Public Health Research. 3 Credits.

Application and evaluation of supervised and unsupervised statistical and machine learning algorithms in the context of biomedical and public health research. Permission of the instructor is required prior to enrollment.

PUBH 6887. Applied Longitudinal Data Analysis for Public Health Research. 3 Credits.

Introduction to commonly used methods for longitudinal data analysis including fixed effects models, linear and generalized linear mixed effects models, and generalized estimating equations. Missing data. Prerequisites: PUBH 6862 and PUBH 6965; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202.

PUBH 6894. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration.

PUBH 6897. Research in Biostatistics and Bioinformatics. 1-4 Credits.

Independent research. Must be approved in advance by advisor/instructor. Restricted to graduate students in the Department of Biostatistics and Bioinformatics.

PUBH 6898. Master of Science Thesis. 1-2 Credits.

Master's thesis.

PUBH 6899. Topics in Biostatistics and Bioinformatics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.

Thesis research. Restricted to students in the MS in epidemiology program.

PUBH 8010. Doctoral Independent Study. 1-3 Credits.

Doctoral students complete an independent study plan to meet predetermined project and/or research work under the supervision of a faculty member. Restricted to GWSPH doctoral students.

PUBH 8110. Research Rotations. 2 Credits.

Students conduct formal rotations with a laboratory or research group to gain research and reporting experience with the mentorship of EOH faculty. Includes identification of an environmental health research problem, collection or analysis of data, and reporting on the results. May be repeated for credit. Restricted to students in the PhD in environmental program or with the permission of the instructor.

PUBH 8116. Communicating Research Results. 2 Credits.

The importance of strategic communication to public health progress. Students gain communication skills that help to transcend educational barriers and facilitate connections with peers, policymakers, and the broader public. Restricted to doctoral students who have satisfactorily completed the comprehensive examination or with the permission of the dissertation chair.

PUBH 8144. Advanced Environmental Health Data Development and Modeling. 1 Credit.

Advanced doctoral level material on environmental exposure assessment using methods covered in PUBH 6144. Restricted to doctoral candidates. Prerequisites: PUBH 6131 or PUBH 6853. Corequisites: PUBH 6144.

PUBH 8242. Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

Evidence-based problem-solving approach using methods covered in PUBH 6242. Restricted to doctoral students. Prerequisites: PUBH 6003 or equivalent. Corequisites: PUBH 6242. Credit cannot be earned for this course and PUBH 6243.

PUBH 8244. Doctoral Topics: Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6244.

PUBH 8245. Doctoral Topics: Infectious Disease Epidemiology. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Spring Prerequisites: PUBH 6003. Corequisites: PUBH 6245.

PUBH 8250. Doctoral Topics: Epidemiology of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6250.

PUBH 8259. Doctoral Topics: Epidemiologic Surveillance in Public Health. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PUBH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequisites: PUBH 6002 and PUBH 6003. Corequisites: PUBH 6259.

PUBH 8283. Doctoral Biostatistics Consulting Practicum. 2 Credits.

Working under supervision, students develop an experience-based understanding of how biostatistical skills are used in one or more areas of health research. Students must have completed at least 6 credits in any combination of general or specialized graduate-level statistics courses, such as PUBH 6202, PUBH 6260, STAT 6201, or STAT 6202, before enrolling in this course. Restricted to PhD students.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and PUBH 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PUBH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or permission of the instructor.

PUBH 8401. Foundations in Public Health Leadership. 3 Credits.

Course modules cover personal leadership; leadership models, theories, concepts, tools, and skills; and practical application of leadership to real world situations. Restricted to doctoral candidates.

PUBH 8402. Leadership and Decision Making: Skills Based Approach. 2 Credits.

Using leadership and decision making skills to solve complex health problems and implement successful solutions to improve population health in all communities; decision making, program management, quality and risk management, human resources and budget, governance, and change management.

PUBH 8403. Leadership in Public Health Policy and Practice. 2 Credits.

Students work in teams on projects for clients from public health-related agencies or organizations in the Washington, DC, area that address issues in environmental and occupational health, global health, health behavior, and health policy. Restricted to students in the DrPh program. Prerequisite: PUBH 8402.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.

Examination and assessment of issues related to the intersection of health care systems and health policy, and how health policy and health services research can inform the development and evaluation of health care systems and health policy. Restricted to doctoral candidates. Prerequisite: PUBH 6315.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.

Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.

Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.

Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics: Principles of Human Health Risk Science. 3 Credits.

This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to students in the environmental and occupational health program, or with permission of the instructor.

PUBH 8412. Advanced Topics: Environmental and Occupational Health Research and Practice. 3 Credits.

This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisites: PUBH 8411 or permission of the instructor.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.

Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisites: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measurement in Public Health and Health Services. 3 Credits.

Review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior. Explore current measurement issues in health research.

PUBH 8420. Advanced Analysis and Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Fall. Prerequisites: PUBH 8417 and PUBH 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.

Design of protocol suitable for implementation as part of DrPH dissertation requirement. Permission of the instructor, completion of required coursework, and successful completion of the comprehensive examination required prior to enrollment.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation research for DrPH. Prerequisite: PUBH 8422.

PUBH 8434. Behavioral Medicine and Public Health. 3 Credits.

Investigation into the field of behavioral medicine, which integrates behavioral, psychosocial, and biomedical sciences, with specific applications to public health. Restricted to PhD students in the social and behavioral sciences in public health program or with the permission of the instructor.

PUBH 8435. Dissertation Proposal Development for Social and Behavioral Sciences. 2 Credits.

Advise and assist doctoral students in developing and defending their dissertation proposal. Restricted to doctoral students who have successfully completed comprehensive examinations.

PUBH 8610. Statistical Methods for Health Policy. 3 Credits.

Application of statistical analysis in health policy and public health research using Stata® to analyze a variety of large public health data sets. Prior completion of at least one graduate-level statistics course is required. Restricted to doctoral students. Credit cannot be earned for this course and PUBH 6310.

PUBH 8620. Seminar: Foundations of U.S. Health Policy. 3 Credits.

Reintroduction to the basics of U.S. health policy, combining advanced legal, policy, and regulatory content acquisition with advanced health law and policy analysis skills. Restricted to doctoral students in health policy or with the permission of the instructor.

PUBH 8622. Health Care Payments, Systems, and Delivery Models. 3 Credits.

Survey of long-standing practices and recent developments in provider payment and the organization of health care delivery in the United States. Restricted to doctoral students in the health policy program or with the permission of the instructor.

PUBH 8875. Linear Models in Biostatistics. 3 Credits.

Introduction to the theory of linear models with applications to public health and biomedical data. Least squares, maximum likelihood, and distribution theory for linear regression.

Prerequisites: PUBH 6862; and PUBH 6868 or PUBH 8364 or STAT 6201. Corequisites: STAT 6202. Recommended background: prior completion of coursework in linear algebra and multivariable calculus.

PUBH 8877. Generalized Linear Models in Biostatistics. 3 Credits.

Theoretical development of most commonly used methods for categorical and count data presented within the unified framework of the generalized linear model. Prerequisites: PUBH 6865; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202. Recommended background: prior completion of coursework in linear algebra.

PUBH 8878. Statistical Genetics. 3 Credits.

Application of statistical concepts to family- and population-based genetic data. Human evolution, genome-wide association studies, gene-environment interactions, and genetic architecture with emphasis on applications to real data and analyses. Prerequisites: PUBH 6860.

PUBH 8999. Dissertation Research. 1-12 Credits.

Dissertation research.

EXERCISE AND NUTRITION SCIENCES

The Department of Exercise and Nutrition Sciences is uniquely positioned within the only school of public health in the nation's capital while also offering programs that integrate the complimentary sciences of nutrition and exercise. The curriculum provides students with the opportunity to learn only how exercise, physical activity, and nutrition affect the individual, but also how these factors affect the

health and function of communities at large. Students within the Department engage in research and applied learning experiences in settings as diverse as the National Institutes of Health, professional sports teams, the U.S. Department of Agriculture, the Pentagon, and the DC public school system.

UNDERGRADUATE

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 1304)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 1307)
- Bachelor of Science with a major in exercise science, pre-medical professional concentration (p. 1310)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 1313)
- Bachelor of Science with a major in nutrition science (p. 1316)
- Bachelor of Science with a major in nutrition science, pre-medical professions concentration (p. 1319)

Combined program

- Dual Bachelor of Science in nutrition science and Master of Public Health in public health nutrition (p. 1327)

Minors

- Minor in exercise science (p. 1328)
- Minor in nutrition (p. 1328) science (p. 1328)

GRADUATE

Master's Programs

- Master of Public Health in the field of physical activity in public health (p. 1351)
- Master of Public Health in the field of public health nutrition (p. 1355)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 1361)

Doctoral Program

- Doctor of Philosophy in the field of exercise physiology and applied nutrition (p. 1381)

FACULTY

Professors L. DiPietro, J. Sacheck-Ward (*Chair*), B.J. Westerman

Associate Professors M.J. Barron, T.A. Miller, K.Z. Robien, S.A. Talegawker, M. Ver Ploeg, A.J. Visek

Assistant Professors M.D. Barberio, K.S. Levers, K.R. Lora (*Teaching*), A.C. Sylvetsky

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
 - Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
 - Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
 - The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office
- Exercise and Nutrition Sciences (EXNS) (p. 1589)
 - Health and Wellness (HLWL) (p. 1616)
 - Lifestyle, Sport, and Physical Activity (LSPA) (p. 1676)
 - Public Health (PUBH) (p. 1777)

GLOBAL HEALTH

The Department of Global Health offers diverse programs of study that prepare students to make a difference in the health of individuals and communities around the world. With three fields of study, several joint programs within the School of Public Health, several joint degree programs with other GW schools, a doctoral program, and more than 20 international practicum partnerships, students have a wealth of opportunities to examine global health concepts and conduct interdisciplinary research.

GRADUATE

Master's programs

- Master of Public Health (MPH@GW) (p. 1357)
- Master of Public Health in the field of global environmental health (p. 1339)
- Master of Public Health in the field of global health epidemiology and disease control (p. 1344)
- Master of Public Health in the field of global health policy (p. 1341)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 1343)
- Master of Public Health in the field of humanitarian health (p. 1349)

Doctoral program

- Doctor of Public Health in the field of global health (p. 1386)

FACULTY

Professors M.C. Ellsberg, A. Hyder, N. Kumar, E.A. Migliaccio, C. Mores, C. Santos-Burgoa, R. Southby (Emeritus), J.M. Tielsch (Chair)

Associate Professors R. Asgary, S. Baird, U. Colon-Ramos, S. Frehywot (Teaching), C. Huang, W. Munar, J.F. Sandberg

Assistant Professors S. Mookherji (Teaching), J. Muz, N. Paichadze (Research), E. Smith

Adjunct Professors J.K. Andrus, R.J. Waldman

Adjunct Instructors K.A. Gamble-Payne

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.
Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.
Continuing Research Credit- Doctoral.

PUBH 1010. First-Year Experience in Public Health. 1 Credit.

Designed to assist students in the transition to GW and the public health major by introducing skills and resources needed to succeed personally, academically, and professionally, particularly in a public health context.

PUBH 1099. Variable Topics. 1-36 Credits.

PUBH 1101. Introduction to Public Health and Health Services. 3 Credits.

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 1102W. History of Public Health. 3 Credits.

Social history of public health from the late nineteenth century to the present; historical context for contemporary public health problems. Includes a significant engagement in writing as a form critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: UW 1020.

PUBH 1299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 2110. Public Health Biology. 3 Credits.

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisites: BISC 1005; or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.

A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3115. Global Health and Human Rights. 3 Credits.

Concepts of health as a human right and the impact of ethical violations on the mental and physical health of individuals; the efforts of the international community in addressing health consequences of vulnerable populations.

PUBH 3116. Global Health Systems Performance. 3 Credits.

Introduction to the U.S. and international health systems, both public and private, and the WHO Health Systems Framework; how environmental, ethical, cultural, and political actions shape health systems in different parts of the world. Restricted to juniors and seniors.

PUBH 3130. Health Services Management and Economics. 3 Credits.

Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisites: PUBH 1101 and STAT 1127.

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.

Political, social, and economic determinants of health; how health status is measured with an emphasis on low-income countries, the health of the poor, and inequity and inequality; burden of diseases that impact development and their basic epidemiological characteristics, including who they affect, when they occur, and where risk is greatest.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisite: PUBH 3133.

PUBH 3142. Introduction to Biostatistics for Public Health. 3 Credits.

Applying biostatistical principles to analyze studies in health services literature. Selecting statistical methods based on research questions, calculating basic statistics for estimation and inference, interpreting results of statistical analyses.

PUBH 3150. Sustainable Energy and Environmental Health. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues.

PUBH 3151W. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PUBH 3152. Qualitative Research Methods in Public Health. 3 Credits.

Introduction to characteristics and methods relevant to the design and conduct of qualitative research in public health investigations; data collection methods, coding, data analysis, and reporting results.

PUBH 3199. Topics in Public Health. 1-5 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 3201. Introduction to Bioinformatics. 3 Credits.

Introduction to bioinformatics, including biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structural bioinformatics; and programming concepts in Unix and Python including the Unix environment, the shell, scripting, databases, regular expressions, and pipeline development. Prerequisites: BISC 1112 or BISC 1116 and BISC 1126; and STAT 1127. Credit cannot be earned for this course and BISC 2584, CSCI 3571.

PUBH 3202. Introduction to Genomics. 3 Credits.

Principles of genomics; genome projects, including the human genome, molecular techniques, analytical approaches, computational tools for genome research, and genomic data generation and analysis. Prerequisites: BISC 1111; BISC 1112.

PUBH 3299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and EXNS 3995.

PUBH 4140W. Senior Seminar. 3 Credits.

Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4141. Senior Seminar Community Needs Assessment. 3 Credits.

Culminating experience for students in undergraduate public health programs. Restricted to seniors in the BS in public health program and students in the minor in public health.

PUBH 4199. Independent Study. 3 Credits.

Outline of intended project must be approved prior to registration by instructor and dean's office. Restricted to public health majors.

PUBH 4201. Practical Computing. 3 Credits.

Basic concepts of computer programming in biomedical sciences and health informatics; foundations of R and Python languages; best programming practices in health applications. Prerequisites: BISC 1111 and BISC 1115; or BISC 1112 and BISC 1116.

PUBH 4202. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Prerequisite: PUBH 4201.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.

Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6009. Fundamentals of Public Health Program Evaluation. 2 Credits.

Topics include designing program evaluation studies to produce and interpret evidence to improve public health; options for evaluation study design and evidence generation; and qualitative data collection and analysis methods.

Prerequisites: PUBH 6007. Recommended background: Prior completion of PUBH 6002.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of the instructor or advisor required prior to enrollment.

PUBH 6011. Environmental and Biological Foundations of Public Health. 3 Credits.

The connection between population health and exposures to chemical, physical, and biological agents in the environment; interconnection between dimensions of environmental systems and all living things; biological sciences as they relate to environmental impacts.

PUBH 6012. Fundamentals of Health Policy. 2 Credits.

Comparative study of the structure, financing, and delivery of public health and health care in the United States and abroad; core elements of policy analysis are used to develop skills in analyzing a public health problem and presenting possible solutions both orally and in writing.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.

Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience are introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6021. Essentials of Public Health Practice and Leadership I. 1 Credit.

The skills necessary for being an effective practitioner and leader; optimizing self-management and contributions in teams as public health professionals.

PUBH 6022. Essentials of Public Health Practice and Leadership II. 1 Credit.

The development of organizations and systems in public health; organizational management tools and collaborative, outcome-oriented advocacy techniques. PUBH 6021 may be taken as a corequisite. Prerequisite: PUBH 6021.

PUBH 6023. Interprofessional Education Experience. 0 Credits.

Completion of an interprofessional education experience (IPE) is required for all MPH students. Maximizes the student's capacity for collaboration with others to better address public health and health care challenges. A variety of options are available for students to complete this requirement before graduation. Restricted to MPH students. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011, PUBH 6012, and PUBH 6021.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.

Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.

Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.

Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.

The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011 and PUBH 6012.

PUBH 6060. MPH@GW Culminating Experience I. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Most students will have completed PUBH 6014 or PUBH 6022 and other MPH core coursework prior to enrollment. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6007; and PUBH 6004 or PUBH 6011; and PUBH 6006 or PUBH 6012; and PUBH 6009 or PUBH 6437.

PUBH 6061. MPH@GW Culminating Experience II. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Students may already have completed PUBH 6060 or it may be taken as a corequisite. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6060.

PUBH 6080. Pathways to Public Health. 0 Credits.

Introduces the 12 foundational public health learning objectives to GWSPH students in non-MPH graduate programs. Must be completed before the last day of classes in the student's first semester of matriculation.

PUBH 6090. Practicum/Culminating Experience. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Permission of the advisor required prior to enrollment.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 3 Credits.

In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.

Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems; epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies; survey design and sources and evaluation of biases and confounding; emphasis on written and oral communication skills. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.

The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.

Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6124. Risk Management and Communication. 3 Credits.

Culminating course using problem-based learning methods to examine a variety of real-world environmental and occupational health issues in-depth. Students integrate cumulative knowledge across all required courses and demonstrate professional competencies. Prerequisites: PUBH 6121, PUBH 6123 and PUBH 6126.

PUBH 6126. Assessment and Control of Environmental Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.

Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries; principles from behavioral sciences, development economics, risk assessment, and epidemiology are included; potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.

The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6131. Quantitative Methods in Environmental and Occupational Health. 3 Credits.

Application of biostatistical and epidemiologic concepts and methods to analysis of EOH data. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.

Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.

The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6135. Researching Climate Change and Human Health. 3 Credits.

Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6011.

PUBH 6137. Environmental and Occupational Health Culminating Experience I. 1 Credit.

The first in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health who have completed all core courses and at least 9 credits in program-specific courses. Prerequisites: PUBH 6002 and PUBH 6003; PUBH 6004 or PUBH 6011; PUBH 6006 or PUBH 6012; and PUBH 6007.

PUBH 6138. Environmental and Occupational Health Culminating Experience II. 1 Credit.

The second in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health. Prerequisite: PUBH 6137.

PUBH 6140. Global Climate Change and Air Pollution. 2 Credits.

The state of the air in the Anthropocene epoch. Key concepts of atmospheric science, public health, and other societal impacts. Local and global policy frameworks. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6144. Environmental Health Data Development and Modeling. 2 Credits.

Introduction to sources of environmental data, handling and cleaning of data, and using data in both statistical and environmental exposure models. Prerequisites: PUBH 6131 or PUBH 6853.

PUBH 6146. Microbiomes and Microbial Ecology in Public Health. 2 Credits.

Introduction to key concepts of environmental microbial ecology and the human microbiome. The roles of microbes in ecosystems' functions with a focus on climate change and the roles of microbes in human health and disease. Prerequisites: PUBH 6011.

PUBH 6199. Topics in Environmental and Occupational Health. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

PUBH 6233. Epidemiologic Principles and Practice of Disease Eradication. 2 Credits.

The role of epidemiology, surveillance, research, and information technology in the eradication of vaccine preventable and parasitic human diseases. Prerequisites: PUBH 6003.

PUBH 6234. Epidemiologic Methods in Neglected Tropical Disease Control. 1 Credit.

Introduction to neglected tropical disease epidemiology providing a broad overview of select tropical medicine and public health issues; focus on applications of epidemiologic methods to the study of public health consequences of NTDs. Prerequisites: PUBH 6003. Corequisites: PUBH 6011.

PUBH 6235. Epidemiology of Obesity. 1 Credit.

Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.

The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; and PUBH 6003 or EXNS 6208.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.

Overview of the epidemiology (descriptive, analytic, and etiologic) of chronic diseases. Emphasis on epidemiologic methods and study design in relation to chronic disease, as well as public health approaches to disease control including surveillance, screening, and interventions. Prerequisites: EXNS 6204 or PUBH 6002; and EXNS 6208 or PUBH 6003.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PUBH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PUBH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PUBH 6003. Recommended background: PUBH 6250 and PUBH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PUBH 6003.

PUBH 6242. Clinical Epidemiology and Public Health: Reading the Research. 2 Credits.

Methods for reading epidemiology and public health research including case-control, cohort studies, randomized controlled trials, meta-analysis, testing and screening, prediction rules, decision and cost-effectiveness analysis. Prerequisites: PUBH 6003 or equivalent.

PUBH 6243. Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

An evidence-based problem solving applications course utilizing methods taught in PubH 6242 Clinical Epidemiology and Public Health: Reading the Research Prerequisites: PUBH 6003. Credit cannot be earned for this course and PUBH 8242.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PUBH 6003.

PUBH 6245. Infectious Disease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PUBH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Prerequisites: PUBH 6003. Corequisites: PUBH 6002.

PUBH 6248. Epidemiology of Aging. 2 Credits.

The demographics, theories, and physiology of aging; descriptive and associative epidemiology of several common age-related diseases and disorders; implications for public health. Prerequisites: PUBH 6003.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisites: PUBH 6003. Recommended background: PUBH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. PUBH 6249 may be taken as a corequisite. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6247 and PUBH 6249.

PUBH 6253. Issues in HIV Care and Treatment. 1 Credit.

This course provides an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students are able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisites: PUBH 6003, HIV/AIDS experience, or permission of the instructor.

PUBH 6258. Advanced Topics in Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epidemiology Surveillance in Public Health. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods are included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel are discussed. Prerequisites: PUBH 6003.

PUBH 6260. Advanced Data Analysis for Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PUBH 6002 and PUBH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PUBH 6002 and PUBH 6249.

PUBH 6262. Introduction to Geographic Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisites: PUBH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and so.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201, STAT 6202 and PUBH 6264.

PUBH 6267. Time Series Applications in Public Health. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation is used. Prerequisites: PUBH 6249.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PUBH 6002 and PUBH 6249; or permission of the instructor.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues, and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisites: PUBH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance are presented and discussed. Strengths and weaknesses of these various systems are discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisites: PUBH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6272. Epidemiology of Infectious Agents Associated with Human Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, are also discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisites: PUBH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisites: PUBH 6003.

PUBH 6274. Emerging Infectious Diseases for Public Health Professionals. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Emphasis on the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PUBH 6003 or MICR 6292; or permission of the instructor.

PUBH 6275. Essential Public Health Laboratory Skills. 2 Credits.

This course provides public health students with practical laboratory experience. Prerequisites: MICR 6239 or permission of the instructor.

PUBH 6276. Public Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to public health microbiology. Learn how to isolate and identify pathogens using critical thinking and problem solving skills.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues, and public health relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions and therapeutic strategies.

PUBH 6280. Microbiology and Emerging Infectious Diseases Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Biosafety training, CITI training, HIPAA training and permission of the instructor are required prior to enrollment. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6292, and PUBH 6245.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 2 Credits.

Appropriate methods to analyze survey data collected using complex sampling methods are discussed and applied to national survey data to address provocative public health research questions. An equivalent Stata course may be substituted for prerequisite 6249. Prerequisites: PUBH 6003 and PUBH 6249.

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PUBH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6299. Topics in Epidemiology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.

An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisite: PUBH 6002.

PUBH 6315. Introduction to Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Summer, Fall, Spring Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6320. Advanced Health Policy Analysis. 3 Credits.

Practical applications of basic quantitative tools in health policy. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Prerequisites: PUBH 6305 or PUBH 6012; and PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.

The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking; federal budget, authorization, and appropriation processes; common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.

Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.

How the law can both promote public health and conflict with the rights of individuals protected under the U.S. Constitution; legal concepts that underlie the public health system and inform public health policymaking; major areas of public health activity; the future of public health.

PUBH 6340. Health Economics and Finance. 3 Credits.

Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisites: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.**PUBH 6350. Health Policy Capstone. 2 Credits.**

Required for MPH graduate students in the health policy concentration in the final semester before graduation. Students synthesize and integrate knowledge across multiple public health disciplines; apply theories, principles, and skills in ways that approximate professional practice in the field of health policy; and demonstrate mastery of the required knowledge and competencies addressed in the curriculum. Prerequisites: PUBH 6012 or PUBH 6305; and PUBH 6320.

PUBH 6352. Basics of Economics for Health Policy. 1 Credit.

An introduction to modern microeconomics -- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors are analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.

Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Substance Abuse Policy. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors and hospitals), health plans, and payers (public and private). Prerequisite: PUBH 6305.

PUBH 6355. Comparative Health Policy. 2 Credits.

Archetypical health care systems, financing, and reform efforts, with emphasis on the trade-offs between efficiency and equity. Comparison of current policy challenges and solutions faced by policymakers in the U.S. and in other countries. Prerequisites: PUBH 6012 and PUBH 6305.

PUBH 6356. State Health Policy. 2 Credits.

Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.

Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisite: PUBH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.

The development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations; interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.

Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. Advanced Maternal and Child Health Policy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PUBH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.

Strategies for the prevention and control of infectious diseases, focusing on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems, vaccination programs, chemotherapy as a prevention and treatment tool, nutritional supplementation, environmental approaches, and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.

How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Federal Budget Process for Health Policy. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures and committees through which they are considered. Prerequisite: PUBH 6305.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.

The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisites: HSML 6215 or PUBH 6330.

PUBH 6367. Population Health, Public Health, and Health Reform. 2 Credits.

In-depth assessment of how a reforming health care system can be expected to change the policy landscape for population and public health in the United States; direct changes evolving at the state and local level and national payment and health system reforms. Prerequisites: One of the following: HSML 6202, PUBH 6006, PUBH 6012, or PUBH 6305.

PUBH 6368. Law, Medicine, and Ethics. 3 Credits.

Legal, ethical, and policy issues that arise in the biomedical arena; the definitions of life and death, the nature of personal identity, the requirements of justice, and the boundaries of liberty. Prerequisites: PUBH 6330 or PUBH 6335.

PUBH 6370. Medicare/Medicaid Law and Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PUBH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Fall. Prerequisite: PUBH 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Politics and policy behind the provision of primary health care in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the US. 2 Credits.

Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.

Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the health care industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.

PUBH 6384. Health Care Quality and Health Policy. 2 Credits.

The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.

Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6390. Prescription Drugs: Policy and Public Health. 3 Credits.

Key policies and public health programs related to each stage of a prescription drug's life cycle; Congressional funding focused on speeding the development and approval of needed drugs, public and private approaches to increase access to prescription drugs, and exceptions to international laws that allow some countries to violate prescription drug patents to improve the health of impoverished citizens.

PUBH 6399. Topics in Health Policy. 3 Credits.

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.

Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6410. Global Health Study Design. 1,2 Credit.

Tools necessary for designing and understanding the research that goes into developing good public health programs; basic elements for the planning and design phase of a research project. Prerequisite or corequisite: PUBH 6009 or PUBH 6501. Prerequisite: PUBH 6003.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6417. Cross-Cultural Approaches for Global Health Practice. 1 Credit.

How to communicate, negotiate, and be more effective across cultures; social aspects that affect communication within cultures and how to navigate communication in practical situations including in the work place and in risk and crisis situations. Corequisite: PUBH 6410. Prerequisite: PUBH 6416.

PUBH 6420. Understanding Commercial Determinants of Health. 1 Credit.

Conceptual understanding and frameworks for commercial determinants of health as key to improving public health.

PUBH 6421. Responsible Conduct of Research. 1 Credit.

Designed to raise awareness of the responsible conduct of research. Strategies for preventing irresponsible research practices, including unacceptable practices and research misconduct.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisites: PUBH 6007 and PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PUBH 6430 or permission of the instructor; and PUBH 6007.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisite: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.

Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to students in the MPH in global health program design, monitoring, and evaluation program. Prerequisites: PUBH 6400 and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.

Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PUBH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.

Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.

The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course examines a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6445. Quantitative Methods for Impact Evaluation. 2 Credits.

Learning to use and produce empirical research in the public health field; review of quantitative techniques and research designs used to uncover causal effects of policies and programs, with applications to public health topics. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6412.

PUBH 6450. Global Health Diplomacy. 2 Credits.

Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6451. Monitoring/Evaluation of Sexual/Reproductive Health Programs in Low- and Middle- Income Countries. 2 Credits.

Overview of key sexual and reproductive health challenges in low- and middle-income countries; designing and measuring programs to address those challenges. Taught from the perspective of applied researchers working within an organization that implements sexual and reproductive health programs and services. Prerequisites: PUBH 6437, PUBH 6500 and PUBH 6503.

PUBH 6452. Social and Behavior Change Communication in Middle- to Low-Income Countries. 2 Credits.

The ways in which behavior change and sociocultural theories underpin the development of SBCC programs in politically, culturally, and socially diverse settings. Prerequisites: PUBH 6007 and PUBH 6503.

PUBH 6455. Global Vaccinology. 3 Credits.

Concepts, methods, and tools for making new and existing lifesaving vaccines more accessible to individuals in low- and middle- income country settings. Recommended for second-year MPH students. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6461. Ethics and Accountability in Humanitarian Settings. 1 Credit.

Principles and fundamentals of ethical approaches and accountability processes in the delivery of humanitarian services and possible solutions and interventions to address them. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6462. Nutrition and Food in Large Humanitarian Emergencies. 1 Credit.

Fundamentals of food aid programs and nutritional issues in emergency humanitarian situations and appropriate local and international responses in lower-income countries. Field-based program responses in international, resource-scarce settings, as conducted by NGOs and UN agencies. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6463. Communication Strategies and Planning in Humanitarian Settings. 2 Credits.

Principles of and major challenges in communication planning with wide range of stakeholders in humanitarian settings; solutions and interventions to identify related risks and appropriately respond to and effectively plan communication strategies. PUBH 6480 may be taken as a corequisite. Prerequisites: PUBH 6007 and PUBH 6480.

PUBH 6464. Mental Health in Humanitarian Settings. 1 Credit.

Principles of and fundamental challenges to mental health in humanitarian settings, including potential solutions and interventions; foundational knowledge and skills in mental health and psychosocial support services in such settings. PUBH 6480 may be taken as a corequisite. Restricted to PUBH 6480.

PUBH 6465. Reproductive Health and Gender-Based Violence in Humanitarian Settings. 1 Credit.

Key issues, challenges, policies, and interventions related to sexual and reproductive health and gender-based violence in humanitarian settings for persons affected by armed conflict and natural disasters. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6469. Humanitarian Aid Seminar Series. 1 Credit.

Targeted talks and panel discussions with humanitarian aid workers from a variety of agencies addressing important or controversial contemporary topics in humanitarian settings. Corequisite or prerequisite: PUBH 6480.

PUBH 6480. Public Health in Humanitarian Settings. 2 Credits.

Technical aspects of high-priority public health interventions; consideration of how and why sound public health interventions should be implemented in both emergency and chronic humanitarian settings; the roles of diverse humanitarian actors.

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PUBH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.

Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.

Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.

Strategies for the control of infectious diseases with a focus on low and middle income countries; identifying and critiquing goals, strategies, and challenges of major global health intervention programs designed to prevent and control infectious diseases. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6487. Emerging Zoonotic Diseases and Global Food Production. 1 Credit.

Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Health Care. 2 Credits.

The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.

Introduction to major global food and nutrition issues, strategies used to address these problems, and commonly-used program impact theories and evaluation frameworks; application of evaluation methods and approaches to nutrition and food programs and policies. Prerequisite: PUBH 6437.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, nonprofit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Permission of the faculty member required prior to enrollment.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.

Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.

Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6494. Population, Public Health Practice, and Sustainable Development. 2 Credits.

The reciprocal connections between the dynamics of population growth, distribution, and age structure to health, well-being, and socioeconomic development.

PUBH 6495. Field Trial Methods and Application. 2 Credits.

Concepts, methods, and tools necessary to conduct community-based randomized trials in low- and middle-income country settings; the process of running a randomized field trial from selecting a topic, through implementation, to analysis and reporting. Most appropriate for students in their second year of study. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6499. Topics in Global Health. 3 Credits.

Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisite: PUBH 6007.

PUBH 6501. Program Evaluation. 3 Credits.

The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings; types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6007; and PUBH 6435 or PUBH 6500.

PUBH 6502. Practical Data Analysis for Prevention and Community Health. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis and tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students create codebooks, enter and clean data, derive new variables from existing ones, choose appropriate analytical techniques and implement them, graph and tabulate results, and document and protect work. Examples are drawn from commonly-encountered situations in prevention and community health, such as needs assessments and program evaluations. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.

The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaigns and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PUBH 6002 and PUBH 6007; or permission of the instructor.

PUBH 6508. Cost-Effectiveness Analysis of Health Promotion Interventions. 3 Credits.

Theoretical basis for and practical skills needed to estimate the effectiveness, population impact, and cost of health promotion interventions; application to policy and cost-effectiveness and cost-utility analyses. Familiarity with basic algebra and statistics is assumed. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6006 or PUBH 6012.

PUBH 6510. Community-Oriented Primary Care Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Community-Oriented Primary Care Policy and Issues. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PUBH 6510.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisites: PUBH 6003 and PUBH 6510.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk and Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course reviews the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PUBH 6007.

PUBH 6516. Community Health Information Resources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course introduces students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. Health Promotion in Health Care Settings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisites: PUBH 6007 and PUBH 6500.

PUBH 6532. Community Organization, Development, and Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PUBH 6007.

PUBH 6533. Design and Conduct of Community Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Community-Based Participatory Research. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. Emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PUBH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PUBH 6007.

PUBH 6537. Health Promotion and Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans are examined. Students are able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PUBH 6007.

PUBH 6550. Maternal and Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal and Child Health II. 3 Credits.

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PUBH 6552. Women's Health. 2 Credits.

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children and Youth with Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability are addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities are reviewed along with classification schemes. Both national and international distributions are considered from a sociopolitical viewpoint.

PUBH 6555. Reproductive Health: U.S. and Global Perspectives. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal and Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1 credit) and Spring (2 credits).

PUBH 6557. Child Development and Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender, and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevention: An Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It provides an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal and Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course broadly examines the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course focuses on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students are expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.

Elements of science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Learn the burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. Advanced Public Health Communication: Theory and Practice. 3 Credits.

Focuses on the use of communication to positively influence people's - and population's - understanding of health information, decision-making, and health behavior. Students study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prerequisite: PUBH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.

The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisite: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students study and apply a range of theories and techniques germane to the policy advocacy process. Prerequisite: PUBH 6503.

PUBH 6574. Public Health Branding: Theory and Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we examine how to brand behaviors as well as products and services. We review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. Communication Skills for Public Health Professionals. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Introduction to Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social and economic conditions. Emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. PA/MPH Clinical Leadership Seminar. 1 Credit.

For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in Prevention and Community Health. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

The anthropometric, biochemical, clinical, and dietary methods for assessing nutritional status in individuals. The process of conducting food and nutrition environment assessments. Prerequisites: EXNS 2119 or PUBH 6619; or other equivalent course with permission of the instructor.

PUBH 6612. Food Systems in Public Health. 2 Credits.

A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems.

PUBH 6613. U.S. Food Policy and Politics. 2 Credits.

The programs, regulations, and legislation that pertain to food production, food safety, nutrition assistance, and dietary guidance in the United States at the federal, state, and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.

The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6620. Designing Healthy Communities. 2 Credits.

Issues at the intersection of public health and planning; evaluating needs and creating change in communities facing food access, physical activity, and age related challenges; the built environment as a means of improving health and preventing chronic disease.

PUBH 6621. Applied Data Analysis in Exercise and Nutrition Sciences. 1 Credit.

Introduction to data management and data analysis using the SAS System; data analysis procedures for specific research questions and settings within the context of exercise and nutrition sciences. Restricted to students in the MPH in physical activity in public health program, program design and evaluation track, or with the permission of the advisor. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6682. Managing Natural Resources for Food Production. 3 Credits.

The relevance of natural resource conservation for ensuring healthy agricultural, food, and environmental systems; various approaches to achieving sustainable systems. Restricted to students in the graduate certificate in food policy leadership program.

PUBH 6683. Applied Food Policy Immersion Experience. 2 Credits.

Leadership theories and an opportunity to build leadership skills and engage with food policy and agriculture leaders from a variety of sectors. Includes site visits to public and private organizations significant in food policy. Restricted to students in the graduate certificate in food policy leadership program. Prerequisites: PUBH 6680 and PUBH 6682.

PUBH 6699. Topics in Nutrition Sciences. 3 Credits.

Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6704. Health Information Technology, Informatics, and Decision Making. 3 Credits.

Operationalizing fundamental technology, processes, policies and concepts of healthcare informatics and decision management to translate data into actionable information within the framework of improving quality, safety, productivity, and experience.

PUBH 6706. Population and Community Health Analytics. 3 Credits.

Overview of the concepts of population and community health, the informatics and analytics necessary to assess population health, and best approaches for decision makers and policy makers using and communicating population and community health data.

PUBH 6850. Introduction to SAS for Public Health Research. 1 Credit.

Conducting basic data management tasks with SAS software; creating libraries, data sets, and variables, and generating basic descriptive statistics and simple graphics of public health and biomedical data.

PUBH 6851. Introduction to R for Public Health Research. 1 Credit.

Read, clean, transform, tidy, and summarize public health data in R. Explore data and write R functions to make workflow more efficient.

PUBH 6852. Introduction to Python for Public Health Research. 1 Credit.

Introduction to the basic concepts of Python programming language, illustrated with applications in biomedical sciences and health informatics.

PUBH 6853. Use of Statistical Packages for Data Management and Data Analysis. 3 Credits.

Data management and data analysis using statistical software. Creating and manipulating variables, merging and concatenating data sets, and implementing common statistical methods such as Student's t-test, linear regression, and logistic regression. Prerequisites: PUBH 6002.

PUBH 6854. Applied Computing in Health Data Science. 3 Credits.

Concepts of computing in biomedical sciences and health informatics. Foundations of Unix shell, command line tools, R and Python programming languages, and their applications in public health. PUBH 6860 may be taken simultaneously. Prerequisites: PUBH 6860. Credit cannot be earned for this course and PUBH 4201.

PUBH 6856. Advanced SAS for Public Health Research. 1 Credit.

Advanced SAS programming. Interactive Matrix Language, SAS macro facility, Structured Query Language, and SAS/GRAPH options for creating drill-down graphs to analyze public health data sets. Prerequisites: PUBH 6002; and PUBH 6249 or PUBH 6853; or permission of the instructor. Credit cannot be earned for this course and PUBH 6268.

PUBH 6859. High Performance and Cloud Computing. 3 Credits.

Introduction to high performance computing and cloud computing, including issues such as data transfer, security, virtual machines, and containers. HPC at GW, Amazon Web Services, and Google Cloud for biohealth computing. Prerequisites: PUBH 6851 and PUBH 6852 or permission of the instructor.

PUBH 6860. Principles of Bioinformatics. 3 Credits.

Biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structure; and basic programming concepts including the shell, scripting, and databases. Prerequisites: PUBH 6002 or equivalent.

PUBH 6861. Public Health Genomics. 3 Credits.

Molecular technology and its impact on public health practice and discourse in the post-genomic era. The use of genomics to solve or help alleviate public health challenges. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6862. Applied Linear Regression Analysis for Public Health Research. 3 Credits.

Review of basic statistical inference and an overview of the construction of linear regression models for application to public health and biomedical data sets. Prerequisites: Prior completion of a course in undergraduate statistics and one semester of calculus.

PUBH 6863. Applied Meta-Analysis. 1 Credit.

Examination of meta-analysis (MA) with case studies using R. Statistical methods, including fixed- and random-effects MA; MA for binary and continuous data; heterogeneity in MA; meta-regression; and publication bias. Recommended background: Prior completion of an introductory course in biostatistical methods, such as PUBH 6002 or PUBH 6003, or an equivalent, is strongly recommended.

PUBH 6864. Applied Survival Analysis for Public Health Research. 3 Credits.

Application of survival or time-to-event data in public health studies. Censoring, survival functions, Kaplan-Meier curves, log-rank tests, Cox proportional hazards regression, parametric survival models, recurrent events, and competing risks. Prerequisites: PUBH 6249 or PUBH 6853. Recommended background: undergraduate calculus.

PUBH 6865. Applied Categorical Data Analysis. 3 Credits.

Comprehensive overview of methods for analyzing binary and multicategory response data. Contingency table methods for assessing associations and logistic regression for binary, nominal, and ordinal outcomes, including models for matched data. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6866. Principles of Clinical Trials. 3 Credits.

Introduction to basic principles for design, conduct, analysis, and reporting of clinical trials. Developing a proposal for a clinical trial. Prerequisites: PUBH 6002 or equivalent.

PUBH 6868. Quantitative Methods. 3 Credits.

Basic mathematical statistics: probability, fundamental distributions including binomial, Poisson and normal, central limit theorem, consistency, basic point estimation, hypothesis testing, linear models, and maximum likelihood estimation. Prerequisites: PUBH 6002 and prior completion of at least two courses in single variable calculus. Corequisites: PUBH 6249 or PUBH 6853.

PUBH 6869. Principles of Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting and related skills and knowledge for public health and medical research environments. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended. Credit cannot be earned for this course and PUBH 6258.

PUBH 6879. Propensity Score Methods for Causal Inference in Observational Studies. 3 Credits.

Designing observational studies; drawing causal inferences using propensity score methods; and performing propensity score analysis using R with hands-on data. Prerequisites: PUBH 6851 and PUBH 6865 or permission of the instructor.

PUBH 6883. Biostatistics Consulting Practicum. 1 Credit.

Supervised experiences involving the synthesis of biostatistical skills with consultations in one or more areas of health research. Students in the MPH programs in biostatistics and in epidemiology may register with permission of the instructor. Restricted to students in the MS in biostatistics and MS in epidemiology programs. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended.

PUBH 6884. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Theoretical background is complemented with solving practical problems. Prerequisites: PUBH 6854 or equivalent. Credit cannot be earned for this course and PUBH 4202.

PUBH 6885. Computational Biology. 3 Credits.

Introduction to modern computational biology, including omics data science, high-throughput technologies, multi-omics data integration, and analytical methods with real-world applications. Permission of the instructor is required prior to enrollment.

PUBH 6886. Statistical and Machine Learning for Public Health Research. 3 Credits.

Application and evaluation of supervised and unsupervised statistical and machine learning algorithms in the context of biomedical and public health research. Permission of the instructor is required prior to enrollment.

PUBH 6887. Applied Longitudinal Data Analysis for Public Health Research. 3 Credits.

Introduction to commonly used methods for longitudinal data analysis including fixed effects models, linear and generalized linear mixed effects models, and generalized estimating equations. Missing data. Prerequisites: PUBH 6862 and PUBH 6965; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202.

PUBH 6894. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration.

PUBH 6897. Research in Biostatistics and Bioinformatics. 1-4 Credits.

Independent research. Must be approved in advance by advisor/instructor. Restricted to graduate students in the Department of Biostatistics and Bioinformatics.

PUBH 6898. Master of Science Thesis. 1-2 Credits.

Master's thesis.

PUBH 6899. Topics in Biostatistics and Bioinformatics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.

Thesis research. Restricted to students in the MS in epidemiology program.

PUBH 8010. Doctoral Independent Study. 1-3 Credits.

Doctoral students complete an independent study plan to meet predetermined project and/or research work under the supervision of a faculty member. Restricted to GWSPH doctoral students.

PUBH 8110. Research Rotations. 2 Credits.

Students conduct formal rotations with a laboratory or research group to gain research and reporting experience with the mentorship of EOH faculty. Includes identification of an environmental health research problem, collection or analysis of data, and reporting on the results. May be repeated for credit. Restricted to students in the PhD in environmental program or with the permission of the instructor.

PUBH 8116. Communicating Research Results. 2 Credits.

The importance of strategic communication to public health progress. Students gain communication skills that help to transcend educational barriers and facilitate connections with peers, policymakers, and the broader public. Restricted to doctoral students who have satisfactorily completed the comprehensive examination or with the permission of the dissertation chair.

PUBH 8144. Advanced Environmental Health Data Development and Modeling. 1 Credit.

Advanced doctoral level material on environmental exposure assessment using methods covered in PUBH 6144. Restricted to doctoral candidates. Prerequisites: PUBH 6131 or PUBH 6853. Corequisites: PUBH 6144.

PUBH 8242. Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

Evidence-based problem-solving approach using methods covered in PUBH 6242. Restricted to doctoral students. Prerequisites: PUBH 6003 or equivalent. Corequisites: PUBH 6242. Credit cannot be earned for this course and PUBH 6243.

PUBH 8244. Doctoral Topics: Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6244.

PUBH 8245. Doctoral Topics: Infectious Disease Epidemiology. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Spring Prerequisites: PUBH 6003. Corequisites: PUBH 6245.

PUBH 8250. Doctoral Topics: Epidemiology of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6250.

PUBH 8259. Doctoral Topics: Epidemiologic Surveillance in Public Health. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PUBH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequisites: PUBH 6002 and PUBH 6003. Corequisites: PUBH 6259.

PUBH 8283. Doctoral Biostatistics Consulting Practicum. 2 Credits.

Working under supervision, students develop an experience-based understanding of how biostatistical skills are used in one or more areas of health research. Students must have completed at least 6 credits in any combination of general or specialized graduate-level statistics courses, such as PUBH 6202, PUBH 6260, STAT 6201, or STAT 6202, before enrolling in this course. Restricted to PhD students.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and PUBH 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PUBH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or permission of the instructor.

PUBH 8401. Foundations in Public Health Leadership. 3 Credits.

Course modules cover personal leadership; leadership models, theories, concepts, tools, and skills; and practical application of leadership to real world situations. Restricted to doctoral candidates.

PUBH 8402. Leadership and Decision Making: Skills Based Approach. 2 Credits.

Using leadership and decision making skills to solve complex health problems and implement successful solutions to improve population health in all communities; decision making, program management, quality and risk management, human resources and budget, governance, and change management.

PUBH 8403. Leadership in Public Health Policy and Practice. 2 Credits.

Students work in teams on projects for clients from public health-related agencies or organizations in the Washington, DC, area that address issues in environmental and occupational health, global health, health behavior, and health policy. Restricted to students in the DrPh program. Prerequisite: PUBH 8402.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.

Examination and assessment of issues related to the intersection of health care systems and health policy, and how health policy and health services research can inform the development and evaluation of health care systems and health policy. Restricted to doctoral candidates. Prerequisite: PUBH 6315.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.

Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.

Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.

Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics: Principles of Human Health Risk Science. 3 Credits.

This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to students in the environmental and occupational health program, or with permission of the instructor.

PUBH 8412. Advanced Topics: Environmental and Occupational Health Research and Practice. 3 Credits.

This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisites: PUBH 8411 or permission of the instructor.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.

Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisites: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measurement in Public Health and Health Services. 3 Credits.

Review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior. Explore current measurement issues in health research.

PUBH 8420. Advanced Analysis and Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Fall. Prerequisites: PUBH 8417 and PUBH 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.

Design of protocol suitable for implementation as part of DrPH dissertation requirement. Permission of the instructor, completion of required coursework, and successful completion of the comprehensive examination required prior to enrollment.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation research for DrPH. Prerequisite: PUBH 8422.

PUBH 8434. Behavioral Medicine and Public Health. 3 Credits.

Investigation into the field of behavioral medicine, which integrates behavioral, psychosocial, and biomedical sciences, with specific applications to public health. Restricted to PhD students in the social and behavioral sciences in public health program or with the permission of the instructor.

PUBH 8435. Dissertation Proposal Development for Social and Behavioral Sciences. 2 Credits.

Advise and assist doctoral students in developing and defending their dissertation proposal. Restricted to doctoral students who have successfully completed comprehensive examinations.

PUBH 8610. Statistical Methods for Health Policy. 3 Credits.

Application of statistical analysis in health policy and public health research using Stata® to analyze a variety of large public health data sets. Prior completion of at least one graduate-level statistics course is required. Restricted to doctoral students. Credit cannot be earned for this course and PUBH 6310.

PUBH 8620. Seminar: Foundations of U.S. Health Policy. 3 Credits.

Reintroduction to the basics of U.S. health policy, combining advanced legal, policy, and regulatory content acquisition with advanced health law and policy analysis skills. Restricted to doctoral students in health policy or with the permission of the instructor.

PUBH 8622. Health Care Payments, Systems, and Delivery Models. 3 Credits.

Survey of long-standing practices and recent developments in provider payment and the organization of health care delivery in the United States. Restricted to doctoral students in the health policy program or with the permission of the instructor.

PUBH 8875. Linear Models in Biostatistics. 3 Credits.

Introduction to the theory of linear models with applications to public health and biomedical data. Least squares, maximum likelihood, and distribution theory for linear regression. Prerequisites: PUBH 6862; and PUBH 6868 or PUBH 8364 or STAT 6201. Corequisites: STAT 6202. Recommended background: prior completion of coursework in linear algebra and multivariable calculus.

PUBH 8877. Generalized Linear Models in Biostatistics. 3 Credits.

Theoretical development of most commonly used methods for categorical and count data presented within the unified framework of the generalized linear model. Prerequisites: PUBH 6865; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202. Recommended background: prior completion of coursework in linear algebra.

PUBH 8878. Statistical Genetics. 3 Credits.

Application of statistical concepts to family- and population-based genetic data. Human evolution, genome-wide association studies, gene-environment interactions, and genetic architecture with emphasis on applications to real data and analyses. Prerequisites: PUBH 6860.

PUBH 8999. Dissertation Research. 1-12 Credits.

Dissertation research.

HEALTH POLICY AND MANAGEMENT

In early 2015, the Department of Health Policy and the Department of Health Services Management and Leadership consolidated to create a larger, integrated department that is even better prepared to lead education, research, and practice efforts related to public health policy, health care policy, and health services management. This positive evolution creates new and dynamic synergies for faculty, staff, students, and alumni, and maximizes our education and research potential.

The mission of the Department of Health Policy and Management—a practice-oriented academic community in Washington, DC—is to improve health and health systems locally, nationally, and globally through: excellence in education; innovative scholarship; applied research that is translated into practice and policy; and the promotion of transformational leadership that advances health policy and health services management.

We are committed to:

- Preparing graduates to be innovative and effective leaders in public health and health policy, health services delivery, and health system transformation.
- Conducting rigorous multidisciplinary research that addresses significant health challenges, is objective, and is translated to inform and affect health policy, health care management, and public health practice.
- Being a trusted resource for shaping and advancing health policy and management practices because of our research integrity and rigor, the real-world leadership experiences of our faculty and staff, and our exceptional students.
- Leveraging our unique location in Washington, DC, which allows for strong collaborations with health policy and management leaders and practitioners.
- Improving the health and health care of under-served and vulnerable populations.
- Promoting and learning from the diversity among our faculty, staff, students, and alumni in terms of background, experience, and thought.

Visit the Department of Health Policy and Management website (<https://publichealth.gwu.edu/departments/health-policy-and-management/>) for additional information.

GRADUATE

Master's programs

- Master of Health Administration (p. 1331)
- Master of Health Administration (MHA@GW (p. 1333))

- Master of Public Health in the field of health policy (p. 1346)
- Master of Science in the field of management of health informatics analytics (p. 1364)

Specialist program

- Health Services Administration Specialist (p. 1330)

Doctoral programs

- Doctor of Philosophy in the field of health policy (p. 1382)
- Doctor of Public Health in the field of health policy (p. 1388)

CERTIFICATES

- Graduate certificate in health administration generalist (p. 1390)
- Graduate certificate in health policy (p. 1391)

FACULTY

University Professor V.N. Gamble

Professors R.I. Bonar, A. Dor, L.H. Friedman, J. Heinrich (*Research*), K.B. Horton (*Research*), D.L. Hughes (*Research*), L.C. Ku, J.W. Levi, A.R. Markus (*Chair*), M.L. McCarthy, P.M. Pittman, M.J. Regenstein, S. Rosenbaum, J.B. Teitelbaum, J.H. Thorpe, L.S. Wen (*Visiting*),

Associate Professors D.G. Anderson (*Teaching*), J.Z. Beckerman (*Teaching*), L. Cartwright-Smith, C.P. Chen, M.M. Goldstein (*Teaching*), L. Helmchen, N.K. Seiler, P.W. Shin,

Assistant Professors K. Edwards (*Teaching*), E. Gray (*Teaching*), Q. Luo (*Research*), L.E. Masselink, A. Moghtaderi, J. Phoenix (*Research*), W. Psek, A.M. Vichare

Teaching Instructors P. MacTaggart, J.A. Volarich

Special Services S.E. Wilensky

COURSES

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

- Health Services Management and Leadership (HSML) (p. 1624)
- Public Health (PUBH) (p. 1777)

PREVENTION AND COMMUNITY HEALTH

The Department of Prevention and Community Health is concerned with social and behavioral change for the health and well-being of people around the world. Its degree programs focus on prevention and the promotion of health and well-being with the active participation of individuals and communities, and are appropriate for students who are interested in putting into practice the latest public health research, or making significant scholarly contributions to the evidence base of public health. Master of public health students study four interrelated fields—community-oriented primary care; health promotion; maternal and child health; and public health communication and marketing. Doctoral students develop innovations in the science of health behavior.

GRADUATE

Master's programs

- Master of Public Health in the field of community oriented primary care (p. 1335)
- Master of Public Health in the field of health promotion (p. 1347)
- Master of Public Health in the field of maternal and child health (p. 1350)
- Master of Public Health in the field of public health communication and marketing (p. 1353)

Doctoral program

- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1383)
- Doctor of Public Health in the field of health behavior (p. 1387)

FACULTY

Professors L.C. Abrams, C.J. Berg, W.H. Dietz, M.C. Edberg, W.D. Evans, D.L. Kerrigan (*Chair*), M.A. Napolitano

Associate Professors J. Bingenheimer, T. Henry (*Teaching*), D.M. Huebner, K.A. McDonnell, O.A. Price, K.M. Roche, C.E. Rodriguez-Diaz, M.S. Ruiz, A.N. Vyas

Assistant Professors E.L. Andrade, C.L. Heminger (*Teaching*), M.W. Long, K. Ndiaye (*Teaching*), T.L. Taggart

Adjunct Professor Y.E. Hancock, A.L. Hinzey

Adjunct Instructor A.G. Franz

COURSES

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.
Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.
Continuing Research Credit- Doctoral.

PUBH 1010. First-Year Experience in Public Health. 1 Credit.
Designed to assist students in the transition to GW and the public health major by introducing skills and resources needed to succeed personally, academically, and professionally, particularly in a public health context.

PUBH 1099. Variable Topics. 1-36 Credits.

PUBH 1101. Introduction to Public Health and Health Services. 3 Credits.
Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.
Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 1102W. History of Public Health. 3 Credits.
Social history of public health from the late nineteenth century to the present; historical context for contemporary public health problems. Includes a significant engagement in writing as a form critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: UW 1020.

PUBH 1299. Undergraduate Public Health Study Abroad. 1-6 Credits.
May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 2110. Public Health Biology. 3 Credits.
Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisites: BISC 1005; or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.
Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.
Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.
Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.
Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.
Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.
A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3115. Global Health and Human Rights. 3 Credits.
Concepts of health as a human right and the impact of ethical violations on the mental and physical health of individuals; the efforts of the international community in addressing health consequences of vulnerable populations.

PUBH 3116. Global Health Systems Performance. 3 Credits.
Introduction to the U.S. and international health systems, both public and private, and the WHO Health Systems Framework; how environmental, ethical, cultural, and political actions shape health systems in different parts of the world. Restricted to juniors and seniors.

PUBH 3130. Health Services Management and Economics. 3 Credits.
Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisites: PUBH 1101 and STAT 1127.

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.

Political, social, and economic determinants of health; how health status is measured with an emphasis on low-income countries, the health of the poor, and inequity and inequality; burden of diseases that impact development and their basic epidemiological characteristics, including who they affect, when they occur, and where risk is greatest.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisite: PUBH 3133.

PUBH 3142. Introduction to Biostatistics for Public Health. 3 Credits.

Applying biostatistical principles to analyze studies in health services literature. Selecting statistical methods based on research questions, calculating basic statistics for estimation and inference, interpreting results of statistical analyses.

PUBH 3150. Sustainable Energy and Environmental Health. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues.

PUBH 3151W. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PUBH 3152. Qualitative Research Methods in Public Health. 3 Credits.

Introduction to characteristics and methods relevant to the design and conduct of qualitative research in public health investigations; data collection methods, coding, data analysis, and reporting results.

PUBH 3199. Topics in Public Health. 1-5 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 3201. Introduction to Bioinformatics. 3 Credits.

Introduction to bioinformatics, including biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structural bioinformatics; and programming concepts in Unix and Python including the Unix environment, the shell, scripting, databases, regular expressions, and pipeline development. Prerequisites: BISC 1112 or BISC 1116 and BISC 1126; and STAT 1127. Credit cannot be earned for this course and BISC 2584, CSCI 3571.

PUBH 3202. Introduction to Genomics. 3 Credits.

Principles of genomics; genome projects, including the human genome, molecular techniques, analytical approaches, computational tools for genome research, and genomic data generation and analysis. Prerequisites: BISC 1111; BISC 1112.

PUBH 3299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and EXNS 3995.

PUBH 4140W. Senior Seminar. 3 Credits.

Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4141. Senior Seminar Community Needs Assessment. 3 Credits.

Culminating experience for students in undergraduate public health programs. Restricted to seniors in the BS in public health program and students in the minor in public health.

PUBH 4199. Independent Study. 3 Credits.

Outline of intended project must be approved prior to registration by instructor and dean's office. Restricted to public health majors.

PUBH 4201. Practical Computing. 3 Credits.

Basic concepts of computer programming in biomedical sciences and health informatics; foundations of R and Python languages; best programming practices in health applications. Prerequisites: BISC 1111 and BISC 1115; or BISC 1112 and BISC 1116.

PUBH 4202. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Prerequisite: PUBH 4201.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.

Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6009. Fundamentals of Public Health Program Evaluation. 2 Credits.

Topics include designing program evaluation studies to produce and interpret evidence to improve public health; options for evaluation study design and evidence generation; and qualitative data collection and analysis methods. Prerequisites: PUBH 6007. Recommended background: Prior completion of PUBH 6002.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of the instructor or advisor required prior to enrollment.

PUBH 6011. Environmental and Biological Foundations of Public Health. 3 Credits.

The connection between population health and exposures to chemical, physical, and biological agents in the environment; interconnection between dimensions of environmental systems and all living things; biological sciences as they relate to environmental impacts.

PUBH 6012. Fundamentals of Health Policy. 2 Credits.

Comparative study of the structure, financing, and delivery of public health and health care in the United States and abroad; core elements of policy analysis are used to develop skills in analyzing a public health problem and presenting possible solutions both orally and in writing.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.

Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience are introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6021. Essentials of Public Health Practice and Leadership I. 1 Credit.

The skills necessary for being an effective practitioner and leader; optimizing self-management and contributions in teams as public health professionals.

PUBH 6022. Essentials of Public Health Practice and Leadership II. 1 Credit.

The development of organizations and systems in public health; organizational management tools and collaborative, outcome-oriented advocacy techniques. PUBH 6021 may be taken as a corequisite. Prerequisite: PUBH 6021.

PUBH 6023. Interprofessional Education Experience. 0 Credits.

Completion of an interprofessional education experience (IPE) is required for all MPH students. Maximizes the student's capacity for collaboration with others to better address public health and health care challenges. A variety of options are available for students to complete this requirement before graduation. Restricted to MPH students. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011, PUBH 6012, and PUBH 6021.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.

Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.

Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.

Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.

The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011 and PUBH 6012.

PUBH 6060. MPH@GW Culminating Experience I. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Most students will have completed PUBH 6014 or PUBH 6022 and other MPH core coursework prior to enrollment. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6007; and PUBH 6004 or PUBH 6011; and PUBH 6006 or PUBH 6012; and PUBH 6009 or PUBH 6437.

PUBH 6061. MPH@GW Culminating Experience II. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Students may already have completed PUBH 6060 or it may be taken as a corequisite. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6060.

PUBH 6080. Pathways to Public Health. 0 Credits.

Introduces the 12 foundational public health learning objectives to GWSPH students in non-MPH graduate programs. Must be completed before the last day of classes in the student's first semester of matriculation.

PUBH 6090. Practicum/Culminating Experience. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Permission of the advisor required prior to enrollment.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 3 Credits.

In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.

Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems; epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies; survey design and sources and evaluation of biases and confounding; emphasis on written and oral communication skills. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.

The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.

Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6124. Risk Management and Communication. 3 Credits.

Culminating course using problem-based learning methods to examine a variety of real-world environmental and occupational health issues in-depth. Students integrate cumulative knowledge across all required courses and demonstrate professional competencies. Prerequisites: PUBH 6121, PUBH 6123 and PUBH 6126.

PUBH 6126. Assessment and Control of Environmental Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.

Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries; principles from behavioral sciences, development economics, risk assessment, and epidemiology are included; potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.

The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6131. Quantitative Methods in Environmental and Occupational Health. 3 Credits.

Application of biostatistical and epidemiologic concepts and methods to analysis of EOH data. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.

Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.

The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6135. Researching Climate Change and Human Health. 3 Credits.

Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6011.

PUBH 6137. Environmental and Occupational Health Culminating Experience I. 1 Credit.

The first in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health who have completed all core courses and at least 9 credits in program-specific courses. Prerequisites: PUBH 6002 and PUBH 6003; PUBH 6004 or PUBH 6011; PUBH 6006 or PUBH 6012; and PUBH 6007.

PUBH 6138. Environmental and Occupational Health Culminating Experience II. 1 Credit.

The second in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health. Prerequisite: PUBH 6137.

PUBH 6140. Global Climate Change and Air Pollution. 2 Credits.

The state of the air in the Anthropocene epoch. Key concepts of atmospheric science, public health, and other societal impacts. Local and global policy frameworks. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6144. Environmental Health Data Development and Modeling. 2 Credits.

Introduction to sources of environmental data, handling and cleaning of data, and using data in both statistical and environmental exposure models. Prerequisites: PUBH 6131 or PUBH 6853.

PUBH 6146. Microbiomes and Microbial Ecology in Public Health. 2 Credits.

Introduction to key concepts of environmental microbial ecology and the human microbiome. The roles of microbes in ecosystems' functions with a focus on climate change and the roles of microbes in human health and disease. Prerequisites: PUBH 6011.

PUBH 6199. Topics in Environmental and Occupational Health. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

PUBH 6233. Epidemiologic Principles and Practice of Disease Eradication. 2 Credits.

The role of epidemiology, surveillance, research, and information technology in the eradication of vaccine preventable and parasitic human diseases. Prerequisites: PUBH 6003.

PUBH 6234. Epidemiologic Methods in Neglected Tropical Disease Control. 1 Credit.

Introduction to neglected tropical disease epidemiology providing a broad overview of select tropical medicine and public health issues; focus on applications of epidemiologic methods to the study of public health consequences of NTDs. Prerequisites: PUBH 6003. Corequisites: PUBH 6011.

PUBH 6235. Epidemiology of Obesity. 1 Credit.

Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.

The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; and PUBH 6003 or EXNS 6208.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.

Overview of the epidemiology (descriptive, analytic, and etiologic) of chronic diseases. Emphasis on epidemiologic methods and study design in relation to chronic disease, as well as public health approaches to disease control including surveillance, screening, and interventions. Prerequisites: EXNS 6204 or PUBH 6002; and EXNS 6208 or PUBH 6003.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PUBH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PUBH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PUBH 6003. Recommended background: PUBH 6250 and PUBH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PUBH 6003.

PUBH 6242. Clinical Epidemiology and Public Health: Reading the Research. 2 Credits.

Methods for reading epidemiology and public health research including case-control, cohort studies, randomized controlled trials, meta-analysis, testing and screening, prediction rules, decision and cost-effectiveness analysis. Prerequisites: PUBH 6003 or equivalent.

PUBH 6243. Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

An evidence-based problem solving applications course utilizing methods taught in PubH 6242 Clinical Epidemiology and Public Health: Reading the Research Prerequisites: PUBH 6003. Credit cannot be earned for this course and PUBH 8242.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PUBH 6003.

PUBH 6245. Infectious Disease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PUBH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Prerequisites: PUBH 6003. Corequisites: PUBH 6002.

PUBH 6248. Epidemiology of Aging. 2 Credits.

The demographics, theories, and physiology of aging; descriptive and associative epidemiology of several common age-related diseases and disorders; implications for public health. Prerequisites: PUBH 6003.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisites: PUBH 6003. Recommended background: PUBH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. PUBH 6249 may be taken as a corequisite. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6247 and PUBH 6249.

PUBH 6253. Issues in HIV Care and Treatment. 1 Credit.

This course provides an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students are able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisites: PUBH 6003, HIV/AIDS experience, or permission of the instructor.

PUBH 6258. Advanced Topics in Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epidemiology Surveillance in Public Health. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods are included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel are discussed. Prerequisites: PUBH 6003.

PUBH 6260. Advanced Data Analysis for Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PUBH 6002 and PUBH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PUBH 6002 and PUBH 6249.

PUBH 6262. Introduction to Geographic Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisites: PUBH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201, STAT 6202 and PUBH 6264.

PUBH 6267. Time Series Applications in Public Health. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation is used. Prerequisites: PUBH 6249.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PUBH 6002 and PUBH 6249; or permission of the instructor.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues, and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisites: PUBH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance are presented and discussed. Strengths and weaknesses of these various systems are discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisites: PUBH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6272. Epidemiology of Infectious Agents Associated with Human Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, are also discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisites: PUBH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisites: PUBH 6003.

PUBH 6274. Emerging Infectious Diseases for Public Health Professionals. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Emphasis on the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PUBH 6003 or MICR 6292; or permission of the instructor.

PUBH 6275. Essential Public Health Laboratory Skills. 2 Credits.

This course provides public health students with practical laboratory experience Prerequisites: MICR 6239 or permission of the instructor.

PUBH 6276. Public Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to public health microbiology. Learn how to isolate and identify pathogens using critical thinking and problem solving skills.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues, and public health relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions and therapeutic strategies.

PUBH 6280. Microbiology and Emerging Infectious Diseases Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Biosafety training, CITI training, HIPAA training and permission of the instructor are required prior to enrollment. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6292, and PUBH 6245.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 2 Credits.

Appropriate methods to analyze survey data collected using complex sampling methods are discussed and applied to national survey data to address provocative public health research questions. An equivalent Stata course may be substituted for prerequisite 6249. Prerequisites: PUBH 6003 and PUBH 6249.

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PUBH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6299. Topics in Epidemiology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.

An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisite: PUBH 6002.

PUBH 6315. Introduction to Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Summer, Fall, Spring Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6320. Advanced Health Policy Analysis. 3 Credits.

Practical applications of basic quantitative tools in health policy. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Prerequisites: PUBH 6305 or PUBH 6012; and PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.

The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking; federal budget, authorization, and appropriation processes; common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.

Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.

How the law can both promote public health and conflict with the rights of individuals protected under the U.S. Constitution; legal concepts that underlie the public health system and inform public health policymaking; major areas of public health activity; the future of public health.

PUBH 6340. Health Economics and Finance. 3 Credits.

Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisites: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.**PUBH 6350. Health Policy Capstone. 2 Credits.**

Required for MPH graduate students in the health policy concentration in the final semester before graduation. Students synthesize and integrate knowledge across multiple public health disciplines; apply theories, principles, and skills in ways that approximate professional practice in the field of health policy; and demonstrate mastery of the required knowledge and competencies addressed in the curriculum. Prerequisites: PUBH 6012 or PUBH 6305; and PUBH 6320.

PUBH 6352. Basics of Economics for Health Policy. 1 Credit.

An introduction to modern microeconomics -- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors are analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.

Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Substance Abuse Policy. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors and hospitals), health plans, and payers (public and private). Prerequisite: PUBH 6305.

PUBH 6355. Comparative Health Policy. 2 Credits.

Archetypical health care systems, financing, and reform efforts, with emphasis on the trade-offs between efficiency and equity. Comparison of current policy challenges and solutions faced by policymakers in the U.S. and in other countries. Prerequisites: PUBH 6012 and PUBH 6305.

PUBH 6356. State Health Policy. 2 Credits.

Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.

Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisite: PUBH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.

The development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations; interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.

Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. Advanced Maternal and Child Health Policy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PUBH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.

Strategies for the prevention and control of infectious diseases, focusing on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems, vaccination programs, chemotherapy as a prevention and treatment tool, nutritional supplementation, environmental approaches, and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.

How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Federal Budget Process for Health Policy. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures and committees through which they are considered. Prerequisite: PUBH 6305.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.

The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisites: HSML 6215 or PUBH 6330.

PUBH 6367. Population Health, Public Health, and Health Reform. 2 Credits.

In-depth assessment of how a reforming health care system can be expected to change the policy landscape for population and public health in the United States; direct changes evolving at the state and local level and national payment and health system reforms. Prerequisites: One of the following: HSML 6202, PUBH 6006, PUBH 6012, or PUBH 6305.

PUBH 6368. Law, Medicine, and Ethics. 3 Credits.

Legal, ethical, and policy issues that arise in the biomedical arena; the definitions of life and death, the nature of personal identity, the requirements of justice, and the boundaries of liberty. Prerequisites: PUBH 6330 or PUBH 6335.

PUBH 6370. Medicare/Medicaid Law and Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PUBH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Fall. Prerequisite: PUBH 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Politics and policy behind the provision of primary health care in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the US. 2 Credits.

Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.

Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the health care industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.**PUBH 6384. Health Care Quality and Health Policy. 2 Credits.**

The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.

Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6390. Prescription Drugs: Policy and Public Health. 3 Credits.

Key policies and public health programs related to each stage of a prescription drug's life cycle; Congressional funding focused on speeding the development and approval of needed drugs, public and private approaches to increase access to prescription drugs, and exceptions to international laws that allow some countries to violate prescription drug patents to improve the health of impoverished citizens.

PUBH 6399. Topics in Health Policy. 3 Credits.

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.

Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6410. Global Health Study Design. 1,2 Credit.

Tools necessary for designing and understanding the research that goes into developing good public health programs; basic elements for the planning and design phase of a research project. Prerequisite or corequisite: PUBH 6009 or PUBH 6501. Prerequisite: PUBH 6003.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6417. Cross-Cultural Approaches for Global Health Practice. 1 Credit.

How to communicate, negotiate, and be more effective across cultures; social aspects that affect communication within cultures and how to navigate communication in practical situations including in the work place and in risk and crisis situations. Corequisite: PUBH 6410. Prerequisite: PUBH 6416.

PUBH 6420. Understanding Commercial Determinants of Health. 1 Credit.

Conceptual understanding and frameworks for commercial determinants of health as key to improving public health.

PUBH 6421. Responsible Conduct of Research. 1 Credit.

Designed to raise awareness of the responsible conduct of research. Strategies for preventing irresponsible research practices, including unacceptable practices and research misconduct.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisites: PUBH 6007 and PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PUBH 6430 or permission of the instructor; and PUBH 6007.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisite: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.

Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to students in the MPH in global health program design, monitoring, and evaluation program. Prerequisites: PUBH 6400 and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.

Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PUBH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.

Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.

The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course examines a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6445. Quantitative Methods for Impact Evaluation. 2 Credits.

Learning to use and produce empirical research in the public health field; review of quantitative techniques and research designs used to uncover causal effects of policies and programs, with applications to public health topics. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6412.

PUBH 6450. Global Health Diplomacy. 2 Credits.

Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6451. Monitoring/Evaluation of Sexual/Reproductive Health Programs in Low- and Middle- Income Countries. 2 Credits.

Overview of key sexual and reproductive health challenges in low- and middle-income countries; designing and measuring programs to address those challenges. Taught from the perspective of applied researchers working within an organization that implements sexual and reproductive health programs and services. Prerequisites: PUBH 6437, PUBH 6500 and PUBH 6503.

PUBH 6452. Social and Behavior Change Communication in Middle- to Low-Income Countries. 2 Credits.

The ways in which behavior change and sociocultural theories underpin the development of SBCC programs in politically, culturally, and socially diverse settings. Prerequisites: PUBH 6007 and PUBH 6503.

PUBH 6455. Global Vaccinology. 3 Credits.

Concepts, methods, and tools for making new and existing lifesaving vaccines more accessible to individuals in low- and middle-income country settings. Recommended for second-year MPH students. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6461. Ethics and Accountability in Humanitarian Settings. 1 Credit.

Principles and fundamentals of ethical approaches and accountability processes in the delivery of humanitarian services and possible solutions and interventions to address them. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6462. Nutrition and Food in Large Humanitarian Emergencies. 1 Credit.

Fundamentals of food aid programs and nutritional issues in emergency humanitarian situations and appropriate local and international responses in lower-income countries. Field-based program responses in international, resource-scarce settings, as conducted by NGOs and UN agencies. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6463. Communication Strategies and Planning in Humanitarian Settings. 2 Credits.

Principles of and major challenges in communication planning with wide range of stakeholders in humanitarian settings; solutions and interventions to identify related risks and appropriately respond to and effectively plan communication strategies. PUBH 6480 may be taken as a corequisite. Prerequisites: PUBH 6007 and PUBH 6480.

PUBH 6464. Mental Health in Humanitarian Settings. 1 Credit.

Principles of and fundamental challenges to mental health in humanitarian settings, including potential solutions and interventions; foundational knowledge and skills in mental health and psychosocial support services in such settings. PUBH 6480 may be taken as a corequisite. Restricted to PUBH 6480.

PUBH 6465. Reproductive Health and Gender-Based Violence in Humanitarian Settings. 1 Credit.

Key issues, challenges, policies, and interventions related to sexual and reproductive health and gender-based violence in humanitarian settings for persons affected by armed conflict and natural disasters. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6469. Humanitarian Aid Seminar Series. 1 Credit.

Targeted talks and panel discussions with humanitarian aid workers from a variety of agencies addressing important or controversial contemporary topics in humanitarian settings. Corequisite or prerequisite: PUBH 6480.

PUBH 6480. Public Health in Humanitarian Settings. 2 Credits.

Technical aspects of high-priority public health interventions; consideration of how and why sound public health interventions should be implemented in both emergency and chronic humanitarian settings; the roles of diverse humanitarian actors.

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PUBH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.

Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.

Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.

Strategies for the control of infectious diseases with a focus on low and middle income countries; identifying and critiquing goals, strategies, and challenges of major global health intervention programs designed to prevent and control infectious diseases. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6487. Emerging Zoonotic Diseases and Global Food Production. 1 Credit.

Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Health Care. 2 Credits.

The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.

Introduction to major global food and nutrition issues, strategies used to address these problems, and commonly-used program impact theories and evaluation frameworks; application of evaluation methods and approaches to nutrition and food programs and policies. Prerequisite: PUBH 6437.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, nonprofit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Permission of the faculty member required prior to enrollment.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.

Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.

Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6494. Population, Public Health Practice, and Sustainable Development. 2 Credits.

The reciprocal connections between the dynamics of population growth, distribution, and age structure to health, well-being, and socioeconomic development.

PUBH 6495. Field Trial Methods and Application. 2 Credits.

Concepts, methods, and tools necessary to conduct community-based randomized trials in low- and middle-income country settings; the process of running a randomized field trial from selecting a topic, through implementation, to analysis and reporting. Most appropriate for students in their second year of study. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6499. Topics in Global Health. 3 Credits.

Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisite: PUBH 6007.

PUBH 6501. Program Evaluation. 3 Credits.

The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings; types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6007; and PUBH 6435 or PUBH 6500.

PUBH 6502. Practical Data Analysis for Prevention and Community Health. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis and tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students create codebooks, enter and clean data, derive new variables from existing ones, choose appropriate analytical techniques and implement them, graph and tabulate results, and document and protect work. Examples are drawn from commonly-encountered situations in prevention and community health, such as needs assessments and program evaluations. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.

The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaigns and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PUBH 6002 and PUBH 6007; or permission of the instructor.

PUBH 6508. Cost-Effectiveness Analysis of Health Promotion Interventions. 3 Credits.

Theoretical basis for and practical skills needed to estimate the effectiveness, population impact, and cost of health promotion interventions; application to policy and cost-effectiveness and cost-utility analyses. Familiarity with basic algebra and statistics is assumed. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6006 or PUBH 6012.

PUBH 6510. Community-Oriented Primary Care Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Community-Oriented Primary Care Policy and Issues. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PUBH 6510.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisites: PUBH 6003 and PUBH 6510.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk and Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course reviews the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PUBH 6007.

PUBH 6516. Community Health Information Resources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course introduces students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. Health Promotion in Health Care Settings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisites: PUBH 6007 and PUBH 6500.

PUBH 6532. Community Organization, Development, and Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PUBH 6007.

PUBH 6533. Design and Conduct of Community Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Community-Based Participatory Research. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. Emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PUBH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PUBH 6007.

PUBH 6537. Health Promotion and Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans are examined. Students are able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PUBH 6007.

PUBH 6550. Maternal and Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal and Child Health II. 3 Credits.**PUBH 6552. Women's Health. 2 Credits.**

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children and Youth with Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability are addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities are reviewed along with classification schemes. Both national and international distributions are considered from a sociopolitical viewpoint.

PUBH 6555. Reproductive Health: U.S. and Global Perspectives. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal and Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1 credit) and Spring (2 credits).

PUBH 6557. Child Development and Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender, and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevention: An Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It provides an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal and Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course broadly examines the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course focuses on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students are expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.

Elements of science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Learn the burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. Advanced Public Health Communication: Theory and Practice. 3 Credits.

Focuses on the use of communication to positively influence people's – and population's – understanding of health information, decision-making, and health behavior. Students study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prerequisite: PUBH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.

The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisite: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students study and apply a range of theories and techniques germane to the policy advocacy process. Prerequisite: PUBH 6503.

PUBH 6574. Public Health Branding: Theory and Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we examine how to brand behaviors as well as products and services. We review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. Communication Skills for Public Health Professionals. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Introduction to Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social and economic conditions. Emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. PA/MPH Clinical Leadership Seminar. 1 Credit.

For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in Prevention and Community Health. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

The anthropometric, biochemical, clinical, and dietary methods for assessing nutritional status in individuals. The process of conducting food and nutrition environment assessments. Prerequisites: EXNS 2119 or PUBH 6619; or other equivalent course with permission of the instructor.

PUBH 6612. Food Systems in Public Health. 2 Credits.

A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems.

PUBH 6613. U.S. Food Policy and Politics. 2 Credits.

The programs, regulations, and legislation that pertain to food production, food safety, nutrition assistance, and dietary guidance in the United States at the federal, state, and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.

The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6620. Designing Healthy Communities. 2 Credits.

Issues at the intersection of public health and planning; evaluating needs and creating change in communities facing food access, physical activity, and age related challenges; the built environment as a means of improving health and preventing chronic disease.

PUBH 6621. Applied Data Analysis in Exercise and Nutrition Sciences. 1 Credit.

Introduction to data management and data analysis using the SAS System; data analysis procedures for specific research questions and settings within the context of exercise and nutrition sciences. Restricted to students in the MPH in physical activity in public health program, program design and evaluation track, or with the permission of the advisor. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6682. Managing Natural Resources for Food Production. 3 Credits.

The relevance of natural resource conservation for ensuring healthy agricultural, food, and environmental systems; various approaches to achieving sustainable systems. Restricted to students in the graduate certificate in food policy leadership program.

PUBH 6683. Applied Food Policy Immersion Experience. 2 Credits.

Leadership theories and an opportunity to build leadership skills and engage with food policy and agriculture leaders from a variety of sectors. Includes site visits to public and private organizations significant in food policy. Restricted to students in the graduate certificate in food policy leadership program. Prerequisites: PUBH 6680 and PUBH 6682.

PUBH 6699. Topics in Nutrition Sciences. 3 Credits.

Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6704. Health Information Technology, Informatics, and Decision Making. 3 Credits.

Operationalizing fundamental technology, processes, policies and concepts of healthcare informatics and decision management to translate data into actionable information within the framework of improving quality, safety, productivity, and experience.

PUBH 6706. Population and Community Health Analytics. 3 Credits.

Overview of the concepts of population and community health, the informatics and analytics necessary to assess population health, and best approaches for decision makers and policy makers using and communicating population and community health data.

PUBH 6850. Introduction to SAS for Public Health Research. 1 Credit.

Conducting basic data management tasks with SAS software; creating libraries, data sets, and variables, and generating basic descriptive statistics and simple graphics of public health and biomedical data.

PUBH 6851. Introduction to R for Public Health Research. 1 Credit.

Read, clean, transform, tidy, and summarize public health data in R. Explore data and write R functions to make workflow more efficient.

PUBH 6852. Introduction to Python for Public Health Research. 1 Credit.

Introduction to the basic concepts of Python programming language, illustrated with applications in biomedical sciences and health informatics.

PUBH 6853. Use of Statistical Packages for Data Management and Data Analysis. 3 Credits.

Data management and data analysis using statistical software. Creating and manipulating variables, merging and concatenating data sets, and implementing common statistical methods such as Student's t-test, linear regression, and logistic regression. Prerequisites: PUBH 6002.

PUBH 6854. Applied Computing in Health Data Science. 3 Credits.

Concepts of computing in biomedical sciences and health informatics. Foundations of Unix shell, command line tools, R and Python programming languages, and their applications in public health. PUBH 6860 may be taken simultaneously. Prerequisites: PUBH 6860. Credit cannot be earned for this course and PUBH 4201.

PUBH 6856. Advanced SAS for Public Health Research. 1 Credit.

Advanced SAS programming. Interactive Matrix Language, SAS macro facility, Structured Query Language, and SAS/GRAPH options for creating drill-down graphs to analyze public health data sets. Prerequisites: PUBH 6002; and PUBH 6249 or PUBH 6853; or permission of the instructor. Credit cannot be earned for this course and PUBH 6268.

PUBH 6859. High Performance and Cloud Computing. 3 Credits.

Introduction to high performance computing and cloud computing, including issues such as data transfer, security, virtual machines, and containers. HPC at GW, Amazon Web Services, and Google Cloud for biohealth computing. Prerequisites: PUBH 6851 and PUBH 6852 or permission of the instructor.

PUBH 6860. Principles of Bioinformatics. 3 Credits.

Biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structure; and basic programming concepts including the shell, scripting, and databases. Prerequisites: PUBH 6002 or equivalent.

PUBH 6861. Public Health Genomics. 3 Credits.

Molecular technology and its impact on public health practice and discourse in the post-genomic era. The use of genomics to solve or help alleviate public health challenges. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6862. Applied Linear Regression Analysis for Public Health Research. 3 Credits.

Review of basic statistical inference and an overview of the construction of linear regression models for application to public health and biomedical data sets. Prerequisites: Prior completion of a course in undergraduate statistics and one semester of calculus.

PUBH 6863. Applied Meta-Analysis. 1 Credit.

Examination of meta-analysis (MA) with case studies using R. Statistical methods, including fixed- and random-effects MA; MA for binary and continuous data; heterogeneity in MA; meta-regression; and publication bias. Recommended background: Prior completion of an introductory course in biostatistical methods, such as PUBH 6002 or PUBH 6003, or an equivalent, is strongly recommended.

PUBH 6864. Applied Survival Analysis for Public Health Research. 3 Credits.

Application of survival or time-to-event data in public health studies. Censoring, survival functions, Kaplan-Meier curves, log-rank tests, Cox proportional hazards regression, parametric survival models, recurrent events, and competing risks. Prerequisites: PUBH 6249 or PUBH 6853. Recommended background: undergraduate calculus.

PUBH 6865. Applied Categorical Data Analysis. 3 Credits.

Comprehensive overview of methods for analyzing binary and multicategory response data. Contingency table methods for assessing associations and logistic regression for binary, nominal, and ordinal outcomes, including models for matched data. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6866. Principles of Clinical Trials. 3 Credits.

Introduction to basic principles for design, conduct, analysis, and reporting of clinical trials. Developing a proposal for a clinical trial. Prerequisites: PUBH 6002 or equivalent.

PUBH 6868. Quantitative Methods. 3 Credits.

Basic mathematical statistics: probability, fundamental distributions including binomial, Poisson and normal, central limit theorem, consistency, basic point estimation, hypothesis testing, linear models, and maximum likelihood estimation. Prerequisites: PUBH 6002 and prior completion of at least two courses in single variable calculus. Corequisites: PUBH 6249 or PUBH 6853.

PUBH 6869. Principles of Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting and related skills and knowledge for public health and medical research environments. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended. Credit cannot be earned for this course and PUBH 6258.

PUBH 6879. Propensity Score Methods for Causal Inference in Observational Studies. 3 Credits.

Designing observational studies; drawing causal inferences using propensity score methods; and performing propensity score analysis using R with hands-on data. Prerequisites: PUBH 6851 and PUBH 6865 or permission of the instructor.

PUBH 6883. Biostatistics Consulting Practicum. 1 Credit.

Supervised experiences involving the synthesis of biostatistical skills with consultations in one or more areas of health research. Students in the MPH programs in biostatistics and in epidemiology may register with permission of the instructor. Restricted to students in the MS in biostatistics and MS in epidemiology programs. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended.

PUBH 6884. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Theoretical background is complemented with solving practical problems. Prerequisites: PUBH 6854 or equivalent. Credit cannot be earned for this course and PUBH 4202.

PUBH 6885. Computational Biology. 3 Credits.

Introduction to modern computational biology, including omics data science, high-throughput technologies, multi-omics data integration, and analytical methods with real-world applications. Permission of the instructor is required prior to enrollment.

PUBH 6886. Statistical and Machine Learning for Public Health Research. 3 Credits.

Application and evaluation of supervised and unsupervised statistical and machine learning algorithms in the context of biomedical and public health research. Permission of the instructor is required prior to enrollment.

PUBH 6887. Applied Longitudinal Data Analysis for Public Health Research. 3 Credits.

Introduction to commonly used methods for longitudinal data analysis including fixed effects models, linear and generalized linear mixed effects models, and generalized estimating equations. Missing data. Prerequisites: PUBH 6862 and PUBH 6965; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202.

PUBH 6894. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration.

PUBH 6897. Research in Biostatistics and Bioinformatics. 1-4 Credits.

Independent research. Must be approved in advance by advisor/instructor. Restricted to graduate students in the Department of Biostatistics and Bioinformatics.

PUBH 6898. Master of Science Thesis. 1-2 Credits.

Master's thesis.

PUBH 6899. Topics in Biostatistics and Bioinformatics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.

Thesis research. Restricted to students in the MS in epidemiology program.

PUBH 8010. Doctoral Independent Study. 1-3 Credits.

Doctoral students complete an independent study plan to meet predetermined project and/or research work under the supervision of a faculty member. Restricted to GWSPH doctoral students.

PUBH 8110. Research Rotations. 2 Credits.

Students conduct formal rotations with a laboratory or research group to gain research and reporting experience with the mentorship of EOH faculty. Includes identification of an environmental health research problem, collection or analysis of data, and reporting on the results. May be repeated for credit. Restricted to students in the PhD in environmental program or with the permission of the instructor.

PUBH 8116. Communicating Research Results. 2 Credits.

The importance of strategic communication to public health progress. Students gain communication skills that help to transcend educational barriers and facilitate connections with peers, policymakers, and the broader public. Restricted to doctoral students who have satisfactorily completed the comprehensive examination or with the permission of the dissertation chair.

PUBH 8144. Advanced Environmental Health Data Development and Modeling. 1 Credit.

Advanced doctoral level material on environmental exposure assessment using methods covered in PUBH 6144. Restricted to doctoral candidates. Prerequisites: PUBH 6131 or PUBH 6853. Corequisites: PUBH 6144.

PUBH 8242. Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

Evidence-based problem-solving approach using methods covered in PUBH 6242. Restricted to doctoral students. Prerequisites: PUBH 6003 or equivalent. Corequisites: PUBH 6242. Credit cannot be earned for this course and PUBH 6243.

PUBH 8244. Doctoral Topics: Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6244.

PUBH 8245. Doctoral Topics: Infectious Disease Epidemiology. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Spring Prerequisites: PUBH 6003. Corequisites: PUBH 6245.

PUBH 8250. Doctoral Topics: Epidemiology of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6250.

PUBH 8259. Doctoral Topics: Epidemiologic Surveillance in Public Health. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PUBH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequisites: PUBH 6002 and PUBH 6003. Corequisites: PUBH 6259.

PUBH 8283. Doctoral Biostatistics Consulting Practicum. 2 Credits.

Working under supervision, students develop an experience-based understanding of how biostatistical skills are used in one or more areas of health research. Students must have completed at least 6 credits in any combination of general or specialized graduate-level statistics courses, such as PUBH 6202, PUBH 6260, STAT 6201, or STAT 6202, before enrolling in this course. Restricted to PhD students.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and PUBH 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PUBH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or permission of the instructor.

PUBH 8401. Foundations in Public Health Leadership. 3 Credits.

Course modules cover personal leadership; leadership models, theories, concepts, tools, and skills; and practical application of leadership to real world situations. Restricted to doctoral candidates.

PUBH 8402. Leadership and Decision Making: Skills Based Approach. 2 Credits.

Using leadership and decision making skills to solve complex health problems and implement successful solutions to improve population health in all communities; decision making, program management, quality and risk management, human resources and budget, governance, and change management.

PUBH 8403. Leadership in Public Health Policy and Practice. 2 Credits.

Students work in teams on projects for clients from public health-related agencies or organizations in the Washington, DC, area that address issues in environmental and occupational health, global health, health behavior, and health policy. Restricted to students in the DrPh program. Prerequisite: PUBH 8402.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.

Examination and assessment of issues related to the intersection of health care systems and health policy, and how health policy and health services research can inform the development and evaluation of health care systems and health policy. Restricted to doctoral candidates. Prerequisite: PUBH 6315.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.

Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.

Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.

Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics: Principles of Human Health Risk Science. 3 Credits.

This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to students in the environmental and occupational health program, or with permission of the instructor.

PUBH 8412. Advanced Topics: Environmental and Occupational Health Research and Practice. 3 Credits.

This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisites: PUBH 8411 or permission of the instructor.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.

Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisites: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PUBH 8416.

PUBH 8419. Measurement in Public Health and Health Services. 3 Credits.

Review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior. Explore current measurement issues in health research.

PUBH 8420. Advanced Analysis and Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Fall. Prerequisites: PUBH 8417 and PUBH 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.

Design of protocol suitable for implementation as part of DrPH dissertation requirement. Permission of the instructor, completion of required coursework, and successful completion of the comprehensive examination required prior to enrollment.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation research for DrPH. Prerequisite: PUBH 8422.

PUBH 8434. Behavioral Medicine and Public Health. 3 Credits.

Investigation into the field of behavioral medicine, which integrates behavioral, psychosocial, and biomedical sciences, with specific applications to public health. Restricted to PhD students in the social and behavioral sciences in public health program or with the permission of the instructor.

PUBH 8435. Dissertation Proposal Development for Social and Behavioral Sciences. 2 Credits.

Advise and assist doctoral students in developing and defending their dissertation proposal. Restricted to doctoral students who have successfully completed comprehensive examinations.

PUBH 8610. Statistical Methods for Health Policy. 3 Credits.

Application of statistical analysis in health policy and public health research using Stata® to analyze a variety of large public health data sets. Prior completion of at least one graduate-level statistics course is required. Restricted to doctoral students. Credit cannot be earned for this course and PUBH 6310.

PUBH 8620. Seminar: Foundations of U.S. Health Policy. 3 Credits.

Reintroduction to the basics of U.S. health policy, combining advanced legal, policy, and regulatory content acquisition with advanced health law and policy analysis skills. Restricted to doctoral students in health policy or with the permission of the instructor.

PUBH 8622. Health Care Payments, Systems, and Delivery Models. 3 Credits.

Survey of long-standing practices and recent developments in provider payment and the organization of health care delivery in the United States. Restricted to doctoral students in the health policy program or with the permission of the instructor.

PUBH 8875. Linear Models in Biostatistics. 3 Credits.

Introduction to the theory of linear models with applications to public health and biomedical data. Least squares, maximum likelihood, and distribution theory for linear regression. Prerequisites: PUBH 6862; and PUBH 6868 or PUBH 8364 or STAT 6201. Corequisites: STAT 6202. Recommended background: prior completion of coursework in linear algebra and multivariable calculus.

PUBH 8877. Generalized Linear Models in Biostatistics. 3 Credits.

Theoretical development of most commonly used methods for categorical and count data presented within the unified framework of the generalized linear model. Prerequisites: PUBH 6865; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202. Recommended background: prior completion of coursework in linear algebra.

PUBH 8878. Statistical Genetics. 3 Credits.

Application of statistical concepts to family- and population-based genetic data. Human evolution, genome-wide association studies, gene-environment interactions, and genetic architecture with emphasis on applications to real data and analyses. Prerequisites: PUBH 6860.

UNDERGRADUATE PROGRAMS

Bachelor's programs

- Bachelor of Science with a major in exercise science (p. 1304)
- Bachelor of Science with a major in exercise science, pre-athletic training/sports medicine concentration (p. 1307)
- Bachelor of Science with a major in exercise science, pre-medical professions concentration (p. 1310)
- Bachelor of Science with a major in exercise science, pre-physical therapy concentration (p. 1313)
- Bachelor of Science with a major in nutrition science (p. 1316)
- Bachelor of Science with a major in nutrition science, pre-medical professions concentration (p. 1319)
- Bachelor of Science with a major in public health (p. 1322)
- Bachelor of Science with a major in public health, pre-medical professions concentration (p. 1324)

Combined program

- Dual Bachelor of Science in nutrition science and Master of Public Health in public health nutrition (p. 1327)
- Dual Bachelor of Science in public health and Master of Public Health

Minors

- Minor in bioinformatics (p. 1327)
- Minor in exercise science (p. 1328)
- Minor in nutrition science
- Minor in public health

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE

Program Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major also may be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

124 credits and maintenance of a minimum grade point average of 2.5 in the exercise science core requirements.

University General Education Requirement*

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	

Two writing in the disciplines (WID) courses (may also be counted in another category).

One critical or creative analysis in the humanities course.

One quantitative reasoning course. For exercise science and nutrition science majors, must be satisfied with STAT 1051 or STAT 1053 or STAT 1127 .

One scientific reasoning course with laboratory experience. For exercise science and nutrition science majors, must be satisfied with BISC 1111.

Two critical, creative, or quantitative analysis in the social sciences courses. For exercise science and nutrition science majors, must be satisfied with ANTH 1002, or ANTH 1003, or ANTH 1004; and COMM 1040 or COMM 1041.

A list of approved courses can be found on the University General Education Requirements (p. 42) page.

Exercise Science Core Requirements

Code	Title	Credits
Required (38 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (taken for 2 credits)	

EXNS 4110	Current Issues in Exercise Science
PSYC 1001	General Psychology
PUBH 1101	Introduction to Public Health and Health Services
Course requirements also fulfilling University General Education Requirements (13 credits)	
ANTH 1002	Sociocultural Anthropology
or ANTH 1003	Archaeology
or ANTH 1004	Language in Culture and Society
BISC 1111	Introductory Biology: Cells and Molecules
COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

Concentration Requirements

Code	Title	Credits
Electives (60 credits)		

42 credits of guided electives planned with the advisor

18 credits of general electives

Students must maintain a minimum GPA of 2.5 in exercise science core courses with a grade of C- or above in each core course to graduate.

Guided Electives

Code	Title	Credits
ANTH 1005	The Biological Bases of Human Behavior	
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds	
ANTH 3413	Evolution of the Human Brain	
ANTH 3504	Illness, Healing, and Culture	
BIOC 3261	Introductory Medical Biochemistry	
BIOC 3262	Biochemistry Laboratory	

BIOC 3560	Diet, Health, and Longevity
BISC 1112	Introductory Biology: The Biology of Organisms
BISC 2202	Cell Biology
BISC 2207	Genetics
BISC 2208	Genetics Laboratory
BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology
BISC 2220	Developmental Neurobiology
BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
BISC 2336	Introductory Microbiology
BISC 2337	Introductory Microbiology Laboratory
or BISC 2337W	Introductory Microbiology
BISC 2581	Human Gross Anatomy
BISC 3208	Molecular Biology Laboratory
BISC 3209	Molecular Biology
BISC 3122	Human Physiology
BISC 3123	Human Physiology Lab
BISC 3165	Biochemistry I
BISC 3166	Biochemistry II
BISC 3261	Introductory Medical Biochemistry
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3262	Biochemistry Laboratory
CHEM 3165	Biochemistry I

CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
CHEM 3263W	Special Topics in Biochemistry
EHS 1002	CPR and First Aid
EHS 1040	Emergency Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergency Medicine Clinical Scribe
EHS 2110	Emergency Department Critical Care Assessment and Procedures
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2110	Injury Prevention and Control
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2120	Assessment of Nutritional Status
EXNS 2121	Orthopedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 2124	Lifecycle Nutrition
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (Credits taken beyond those required for graduation)
EXNS 3111W	Exercise and Nutrition Science Research Methods
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine

EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga and the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Lifetime Fitness
HSCI 2100	Writing and Composition in the Health Sciences
HSCI 2101	Psychosocial Aspects of Health and Illness *
HSCI 2102	Pathophysiology *
HSCI 2110	Disease Prevention and Health Promotion Concepts *
HSCI 2112	Writing in the Health Sciences
or HSCI 2112W	Writing in the Health Sciences
HSCI 2117	Introduction to Statistics for Health Sciences *
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 2570	Peer Education

PSYC 3128	Health Psychology
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3135W	Health Policy
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics
or PUBH 3151W	Current Issues in Bioethics

Note: LSPA courses do not count towards the academic requirements for the bachelor of science with a major in exercise science degree.

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-ATHLETIC TRAINING/SPORTS MEDICINE CONCENTRATION

Program Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

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General Education requirement

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or HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	

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One quantitative reasoning course. For exercise science and nutrition science majors, must be satisfied with STAT 1051 or STAT 1053 or STAT 1127 .

One scientific reasoning course with laboratory experience. For exercise science and nutrition science majors, must be satisfied with BISC 1111.

Two critical, creative, or quantitative analysis in the social sciences courses. For exercise science and nutrition science majors, must be satisfied with ANTH 1002, or ANTH 1003, or ANTH 1004; and COMM 1040 or COMM 1041.

A list of approved courses can be found on the University General Education Requirements (p. 42) page.

Exercise science core requirement*

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Required (38 credits)		
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EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (taken for 2 credits)	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	

PUBH 1101	Introduction to Public Health and Health Services
Course requirements also fulfilling University General Education Requirements (13 credits)	
ANTH 1002	Sociocultural Anthropology
or ANTH 1003	Archaeology
or ANTH 1004	Language in Culture and Society
BISC 1111	Introductory Biology: Cells and Molecules
COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

*In order to graduate, students must maintain a minimum GPA of 2.5 in core Exercise Science (EXNS) courses and earn a minimum grade of C- in each core course.

Pre-athletic training/sports medicine concentration requirements

Code	Title	Credits
Required (25 credits)		
EXNS 2110	Injury Prevention and Control	
EXNS 2121	Orthopedic Taping and Bracing	
EXNS 3117	Injury Assessment	
EXNS 3118	Therapeutic Modalities in Sports Medicine	
EXNS 3119	Therapeutic Exercise in Sports Medicine	
EXNS 3121	Medical Issues in Sports Medicine	
EXNS 3123W	Psychology of Injury and Rehabilitation	
EXNS 3125	Athletic Training Practicum	
Electives (35 credits)		
17 credits in guided electives planned with the advisor.		
18 credits in general electives.		

Exercise science guided electives

Code	Title	Credits
ANTH 1005	The Biological Bases of Human Behavior	
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds	
ANTH 3413	Evolution of the Human Brain	
ANTH 3504	Illness, Healing, and Culture	
BIOC 3261	Introductory Medical Biochemistry	
BIOC 3262	Biochemistry Laboratory	
BIOC 3560	Diet, Health, and Longevity	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2208	Genetics Laboratory	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2220	Developmental Neurobiology	
BISC 2320	Neural Circuits and Behavior	
BISC 2322	Human Physiology	
BISC 2336	Introductory Microbiology	
BISC 2337	Introductory Microbiology Laboratory	
or BISC 2337W	Introductory Microbiology	
BISC 2581	Human Gross Anatomy	
BISC 3208	Molecular Biology Laboratory	
BISC 3209	Molecular Biology	
BISC 3122	Human Physiology	
BISC 3123	Human Physiology Lab	
BISC 3165	Biochemistry I	
BISC 3166	Biochemistry II	
BISC 3261	Introductory Medical Biochemistry	
BISC 3262	Biochemistry Laboratory	
BISC 3263	Special Topics in Biochemistry	

BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3262	Biochemistry Laboratory
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
CHEM 3263W	Special Topics in Biochemistry
EHS 1002	CPR and First Aid
EHS 1040	Emergency Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergency Medicine Clinical Scribe
EHS 2110	Emergency Department Critical Care Assessment and Procedures
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2110	Injury Prevention and Control
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2120	Assessment of Nutritional Status
EXNS 2121	Orthopedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 2124	Lifecycle Nutrition

EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (Credits taken beyond those required for graduation)
EXNS 3111W	Exercise and Nutrition Science Research Methods
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga and the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Lifetime Fitness
HSCI 2100	Writing and Composition in the Health Sciences
HSCI 2101	Psychosocial Aspects of Health and Illness *
HSCI 2102	Pathophysiology *
HSCI 2110	Disease Prevention and Health Promotion Concepts *
HSCI 2112	Writing in the Health Sciences
or HSCI 2112W	Writing in the Health Sciences

HSCI 2117	Introduction to Statistics for Health Sciences *
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 2570	Peer Education
PSYC 3128	Health Psychology
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3135W	Health Policy
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics
or PUBH 3151W	Current Issues in Bioethics

Note: LSPA courses do not count toward the academic requirements for the bachelor of science with a major in exercise science, pre-athletic training/sports medicine concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-MEDICAL PROFESSIONS CONCENTRATION

Program Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professions concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 19 credits in University General Education requirements, 30 credits in core public health courses, 3 credits in public health research methods courses, 12 credits in approved public health elective courses, and 56 credits in additional general electives. The pre-medical professional requirements may be fulfilled by either cross counting courses that also meet the University General Education requirements or through credits allotted to general electives.

University General Education Requirement

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	

Two writing in the disciplines (WID) courses (may also be counted in another category).

One critical or creative analysis in the humanities course.

One quantitative reasoning course. For exercise science and nutrition science majors, must be satisfied with STAT 1051 or STAT 1053 or STAT 1127 .

One scientific reasoning course with laboratory experience. For exercise science and nutrition science majors, must be satisfied with BISC 1111.

Two critical, creative, or quantitative analysis in the social sciences courses. For exercise science and nutrition science majors, must be satisfied with ANTH 1002, or ANTH 1003, or ANTH 1004; and COMM 1040 or COMM 1041.

A list of approved courses can be found on the University General Education Requirements (p. 42) page.

Exercise science core requirements

Code	Title	Credits
Required (38 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (taken for 2 credits)	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	
PUBH 1101	Introduction to Public Health and Health Services	
Course requirements also fulfilling University General Education Requirements (13 credits)		
ANTH 1002	Sociocultural Anthropology	
or ANTH 1003	Archaeology	
or ANTH 1004	Language in Culture and Society	
BISC 1111	Introductory Biology: Cells and Molecules	
COMM 1040	Public Communication	
or COMM 1041	Interpersonal Communication	
STAT 1051	Introduction to Business and Economic Statistics	
or STAT 1053	Introduction to Statistics in Social Science	
or STAT 1127	Statistics for the Biological Sciences	

Pre-medical professional concentration requirements

Code	Title	Credits
Required (31 credits)		
BISC 1112	Introductory Biology: The Biology of Organisms	

CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2152	Organic Chemistry II
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2154	Organic Chemistry Laboratory II
MATH 1220	Calculus with Precalculus I (or higher)
PHYS 1011	General Physics I
PHYS 1012	General Physics II

Electives (29 credits)

11 credits in guided electives planned with the advisor

18 credits in general electives.

Students must maintain a minimum of 2.5 GPA in the core Exercise Science courses and earn a minimum grade of C- in each core course to graduate.

Exercise science Guided Electives

Code	Title	Credits
ANTH 1005	The Biological Bases of Human Behavior	
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds	
ANTH 3413	Evolution of the Human Brain	
ANTH 3504	Illness, Healing, and Culture	
BIOC 3261	Introductory Medical Biochemistry	
BIOC 3262	Biochemistry Laboratory	
BIOC 3560	Diet, Health, and Longevity	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 2202	Cell Biology	
BISC 2207	Genetics	
BISC 2208	Genetics Laboratory	
BISC 2213	Biology of Cancer	
BISC 2214	Developmental Biology	
BISC 2220	Developmental Neurobiology	

BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
BISC 2336	Introductory Microbiology
BISC 2337	Introductory Microbiology Laboratory
or BISC 2337W	Introductory Microbiology
BISC 2581	Human Gross Anatomy
BISC 3208	Molecular Biology Laboratory
BISC 3209	Molecular Biology
BISC 3122	Human Physiology
BISC 3123	Human Physiology Lab
BISC 3165	Biochemistry I
BISC 3166	Biochemistry II
BISC 3261	Introductory Medical Biochemistry
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3262	Biochemistry Laboratory
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
CHEM 3263W	Special Topics in Biochemistry
EHS 1002	CPR and First Aid
EHS 1040	Emergency Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergency Medicine Clinical Scribe

EHS 2110	Emergency Department Critical Care Assessment and Procedures
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2110	Injury Prevention and Control
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2120	Assessment of Nutritional Status
EXNS 2121	Orthopedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 2124	Lifecycle Nutrition
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (Credits taken beyond those required for graduation)
EXNS 3111W	Exercise and Nutrition Science Research Methods
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation
HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga and the Meaning of Life
HLWL 1106	Drug Awareness

HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Lifetime Fitness
HSCI 2100	Writing and Composition in the Health Sciences
HSCI 2101	Psychosocial Aspects of Health and Illness *
HSCI 2102	Pathophysiology *
HSCI 2110	Disease Prevention and Health Promotion Concepts *
HSCI 2112	Writing in the Health Sciences
or HSCI 2112W	Writing in the Health Sciences
HSCI 2117	Introduction to Statistics for Health Sciences *
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 2570	Peer Education
PSYC 3128	Health Psychology
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health

PUBH 3130 Health Services Management and Economics

PUBH 3131 Epidemiology: Measuring Health and Disease

PUBH 3135W Health Policy

PUBH 3137 Global Public Health Nutrition

PUBH 3151 Current Issues in Bioethics

or PUBH 3151W Current Issues in Bioethics

Note: LSPA courses do not count towards the academic requirements for the Bachelor of Science with a major in exercise science, pre-medical professional concentration.

BACHELOR OF SCIENCE WITH A MAJOR IN EXERCISE SCIENCE, PRE-PHYSICAL THERAPY CONCENTRATION

Program Director B. Westerman

The bachelor of science with a major in exercise science degree program prepares individuals for careers in medicine and other health related professions including athletic training/ sports medicine, physical therapy, physician's assistant or nursing, exercise physiology and rehabilitation, sport psychology as well as fitness and health promotion.

Students in the exercise science major may select the pre-medical professional concentration (for those planning to enter a medical, physician assistant, or nursing program upon graduation), the pre-physical therapy concentration, or the pre-athletic training/sports medicine concentration. The exercise science major may also be taken without a concentration.

REQUIREMENTS

The following requirements must be fulfilled:

124 credits and maintenance of a minimum grade point average of 2.5 in the exercise science core requirements.

University General Education Requirement (26 credits)

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	

Two writing in the disciplines (WID) courses (may also be counted in another category).

One critical or creative analysis in the humanities course.

One quantitative reasoning course. For exercise science and nutrition science majors, must be satisfied with STAT 1051 or STAT 1053 or STAT 1127 .

One scientific reasoning course with laboratory experience. For exercise science and nutrition science majors, must be satisfied with BISC 1111.

Two critical, creative, or quantitative analysis in the social sciences courses. For exercise science and nutrition science majors, must be satisfied with ANTH 1002, or ANTH 1003, or ANTH 1004; and COMM 1040 or COMM 1041.

A list of approved courses can be found on the University General Education Requirements (p. 42) page.

Exercise science core requirements

Code	Title	Credits
Required (38 credits)		
EXNS 1103	Professional Foundations in Exercise Science	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
EXNS 2111	Exercise Physiology I	
EXNS 2112	Exercise Physiology II	
EXNS 2113	Kinesiology	
EXNS 2116	Exercise and Health Psychology	
EXNS 2119	Introduction to Nutrition Science	
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (taken for 2 credits)	
EXNS 4110	Current Issues in Exercise Science	
PSYC 1001	General Psychology	
PUBH 1101	Introduction to Public Health and Health Services	
Course requirements also fulfilling University General Education Requirements (13 credits)		
ANTH 1002	Sociocultural Anthropology	
or ANTH 1003	Archaeology	
or ANTH 1004	Language in Culture and Society	
BISC 1111	Introductory Biology: Cells and Molecules	
COMM 1040	Public Communication	

or COMM 1041 Interpersonal Communication

STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

Pre-physical therapy concentration requirements

Code	Title	Credits
Required (26 credits)		
BISC 1112	Introductory Biology: The Biology of Organisms	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
MATH 1220	Calculus with Precalculus I	
PHYS 1011	General Physics I	
PHYS 1012	General Physics II	
PSYC 2011	Abnormal Psychology	
or PSYC 2013	Developmental Psychology	

Electives

14 credits of guided electives planned with the advisor

18 credits of general electives

Exercise science guided electives

Code	Title	Credits
ANTH 1005	The Biological Bases of Human Behavior	
ANTH 2502	Anthropology of Science and Technology: Twenty-First Century Brave New Worlds	
ANTH 3413	Evolution of the Human Brain	
ANTH 3504	Illness, Healing, and Culture	
BIOC 3261	Introductory Medical Biochemistry	
BIOC 3262	Biochemistry Laboratory	
BIOC 3560	Diet, Health, and Longevity	
BISC 1112	Introductory Biology: The Biology of Organisms	

BISC 2202	Cell Biology
BISC 2207	Genetics
BISC 2208	Genetics Laboratory
BISC 2213	Biology of Cancer
BISC 2214	Developmental Biology
BISC 2220	Developmental Neurobiology
BISC 2320	Neural Circuits and Behavior
BISC 2322	Human Physiology
BISC 2336	Introductory Microbiology
BISC 2337	Introductory Microbiology Laboratory
or BISC 2337W	Introductory Microbiology
BISC 2581	Human Gross Anatomy
BISC 3208	Molecular Biology Laboratory
BISC 3209	Molecular Biology
BISC 3122	Human Physiology
BISC 3123	Human Physiology Lab
BISC 3165	Biochemistry I
BISC 3166	Biochemistry II
BISC 3261	Introductory Medical Biochemistry
BISC 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
CHEM 3262	Biochemistry Laboratory
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II

CHEM 3263W	Special Topics in Biochemistry
EHS 1002	CPR and First Aid
EHS 1040	Emergency Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergency Medicine Clinical Scribe
EHS 2110	Emergency Department Critical Care Assessment and Procedures
EXNS 1112	Current Issues in Coaching
EXNS 1114	Community Nutrition
EXNS 1117	Principles of Coaching
EXNS 1118	Sport and Nutrition
EXNS 1119W	Children and Sport
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2110	Injury Prevention and Control
EXNS 2117	Sport Psychology
or EXNS 2117W	Sport Psychology
EXNS 2120	Assessment of Nutritional Status
EXNS 2121	Orthopedic Taping and Bracing
EXNS 2122	Food Systems in Public Health
EXNS 2124	Lifecycle Nutrition
EXNS 3101	Independent Study
EXNS 3102	Applied Sport Psychology
EXNS 3110	Field Experience - Exercise and Nutrition Sciences (Credits taken beyond those required for graduation)
EXNS 3111W	Exercise and Nutrition Sciences Research Methods
EXNS 3117	Injury Assessment
EXNS 3118	Therapeutic Modalities in Sports Medicine
EXNS 3119	Therapeutic Exercise in Sports Medicine
EXNS 3121	Medical Issues in Sports Medicine
EXNS 3123W	Psychology of Injury and Rehabilitation

HLWL 1101	Special Topics
HLWL 1102	Stress Management
HLWL 1103	Issues in Men's Health
HLWL 1104	Outdoor and Environmental Education
HLWL 1105	Yoga and the Meaning of Life
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
or HLWL 1108W	Weight and Society
HLWL 1109	Human Sexuality
HLWL 1110	Issues in Alternative Medicine
HLWL 1112	Issues in Women's Health
HLWL 1114	Personal Health and Wellness
HLWL 1117	Lifetime Fitness
HSCI 2100	Writing and Composition in the Health Sciences
HSCI 2101	Psychosocial Aspects of Health and Illness *
HSCI 2102	Pathophysiology *
HSCI 2110	Disease Prevention and Health Promotion Concepts *
HSCI 2112	Writing in the Health Sciences
or HSCI 2112W	Writing in the Health Sciences
HSCI 2117	Introduction to Statistics for Health Sciences *
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 2570	Peer Education
PSYC 3128	Health Psychology
PUBH 1102	History of Public Health

PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3135W	Health Policy
PUBH 3137	Global Public Health Nutrition
PUBH 3151	Current Issues in Bioethics
or PUBH 3151W	Current Issues in Bioethics

*Some University General Education requirements will count for both General Education and Exercise Science Core requirements. See program guide.

BACHELOR OF SCIENCE WITH A MAJOR IN NUTRITION SCIENCE

Program Director A. Sylvestsky

Nutrition science is the study of how nutrients and food components influence growth, metabolism, health, and disease and also includes human behavior as it relates to food choices. It is a multi-faceted and cross-disciplinary field, encompassing chemistry, biology, physiology, and public health. Nutrition scientists work to develop, extend, and apply all aspects of nutrition through research to improve clinical practice and public health.

The mission of the bachelor of science with a major in nutrition science program is to provide undergraduate students with an in-depth understanding of the scientific aspects of food and nutrition. The program also aims to lay the groundwork for integrating nutrition science across disciplines and provides students with the foundation required to apply nutrition to the health sciences.

REQUIREMENTS

The following requirements must be fulfilled: 124 credits and maintenance of a minimum grade point average of 2.5 in the nutrition science core requirements.

University General Education Requirement

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	
Two writing in the disciplines (WID) courses (may also be counted in another category).		
One critical or creative analysis in the humanities course.		
One quantitative reasoning course. For exercise science and nutrition science majors, must be satisfied with STAT 1051 or STAT 1053 or STAT 1127 .		
One scientific reasoning course with laboratory experience. For exercise science and nutrition science majors, must be satisfied with BISC 1111.		
Two critical, creative, or quantitative analysis in the social sciences courses. For exercise science and nutrition science majors, must be satisfied with ANTH 1002, or ANTH 1003, or ANTH 1004; and COMM 1040 or COMM 1041.		

A list of approved courses can be found on the University General Education Requirements (p. 42) page.

Nutrition science core courses

Code	Title	Credits
Basic math and science (34 credits)		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
BISC 3165	Biochemistry I	
or CHEM 3165	Biochemistry I	
CHEM 1111	General Chemistry I	
CHEM 1112	General Chemistry II	
CHEM 2151	Organic Chemistry I	
CHEM 2153	Organic Chemistry Laboratory I	
CHEM 2152	Organic Chemistry II	
CHEM 2154	Organic Chemistry Laboratory II	
EXNS 1110	Applied Anatomy and Physiology I	
EXNS 1111	Applied Anatomy and Physiology II	
MATH 1220	Calculus with Precalculus I (or higher)	

Nutrition science (26 credits)	
ANTH 1002	Sociocultural Anthropology
or ANTH 1003	Archaeology
or ANTH 1004	Language in Culture and Society
COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
EXNS 1109	Professional Foundations in Nutrition Science ¹
EXNS 2119	Introduction to Nutrition Science
EXNS 2120	Assessment of Nutritional Status
EXNS 2122	Food Systems in Public Health ²
or	
EXNS 3199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic International Nutrition only) ²
or	
EXNS 4199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic Metabolism in Exercise and Nutrition Science topic only) ²
EXNS 2123	Nutrition and Chronic Disease
EXNS 2124	Lifecycle Nutrition
EXNS 3111W	Exercise and Nutrition Science Research Methods
EXNS 4112	Nutrition Science Senior Capstone Seminar
PUBH 1101	Introduction to Public Health and Health Services
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

Electives

19 credits in guided electives and 18 credits in general electives. ³

Nutrition science Guided Electives

Code	Title	Credits		
ANTH 1005	The Biological Bases of Human Behavior		EHS 2108	Emergency Medicine Clinical Scribe
ANTH 3413	Evolution of the Human Brain		EHS 2110	Emergency Department Critical Care Assessment and Procedures
ANTH 3504	Illness, Healing, and Culture		EXNS 1114	Community Nutrition
BISC 2202	Cell Biology		EXNS 1118	Sport and Nutrition
BISC 2207	Genetics		EXNS 1199	Topics in Exercise and Nutrition Sciences
BISC 2213	Biology of Cancer		EXNS 2111	Exercise Physiology I
BISC 2214	Developmental Biology		EXNS 2112	Exercise Physiology II
BISC 2220	Developmental Neurobiology		EXNS 2116	Exercise and Health Psychology
BISC 2320	Neural Circuits and Behavior		EXNS 2122	Food Systems in Public Health
BISC 2322	Human Physiology		EXNS 3101	Independent Study ⁴
BISC 2336	Introductory Microbiology		EXNS 3110	Field Experience - Exercise and Nutrition Sciences ⁴
BISC 2337	Introductory Microbiology Laboratory		EXNS 3199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic International Nutrition only) ²
BISC 2581	Human Gross Anatomy		EXNS 3995	Undergraduate Research ⁴
BISC 2583	Biology of Proteins		EXNS 4199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic Metabolism in Exercise and Nutrition Sciences only) ²
BISC 3209	Molecular Biology		HLWL 1102	Stress Management
BISC 3212	Immunology		HLWL 1106	Drug Awareness
BISC 3261	Introductory Medical Biochemistry		HLWL 1108	Weight and Society
BISC 3262	Biochemistry Laboratory		HLWL 1114	Personal Health and Wellness
or CHEM 3262	Biochemistry Laboratory		HSCI 2101	Psychosocial Aspects of Health and Illness
BISC 3263	Special Topics in Biochemistry		HSCI 2102	Pathophysiology
BISC 3320	Human Neurobiology		HSCI 2103	Health Policy and the Health Care System
CHEM 3166	Biochemistry II		HSCI 2110	Disease Prevention and Health Promotion Concepts
or CHEM 3166W	Biochemistry II		HSCI 2112	Writing in the Health Sciences
CHEM 3262	Biochemistry Laboratory		or HSCI 2112W	Writing in the Health Sciences
CHEM 3263W	Special Topics in Biochemistry		PHYS 1011	General Physics I
CHEM 3564	Lipid Biotechnology		PHYS 1012	General Physics II
CHEM 4122	Instrumental Analytical Chemistry			
EHS 1002	CPR and First Aid			
EHS 1040	Emergency Medical Tech-Basic			
EHS 1041	EMT - Basic Lab			
EHS 1058	EMT Instructor Development			

BACHELOR OF SCIENCE WITH A MAJOR IN NUTRITION SCIENCE, PRE-MEDICAL PROFESSIONS CONCENTRATION

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 19 credits in University General Education requirements, 31 credits in core public health courses including 3 credits in public health research methods courses, 12 credits in approved public health elective courses, and 58 credits in additional general electives. The pre-medical professional requirements may be fulfilled by either cross counting courses that also meet the University General Education requirements or through credits allotted to general electives

University General Education Requirement

Code	Title	Credits
UW 1020	University Writing	
or HONR 1015	Honors Seminar: UW 1020: Origins and Evolution of Modern Thought	

Two writing in the disciplines (WID) courses (may also be counted in another category).

One critical or creative analysis in the humanities course.

One quantitative reasoning course. For exercise science and nutrition science majors, must be satisfied with STAT 1051 or STAT 1053 or STAT 1127 .

One scientific reasoning course with laboratory experience. For exercise science and nutrition science majors, must be satisfied with BISC 1111.

Two critical, creative, or quantitative analysis in the social sciences courses. For exercise science and nutrition science majors, must be satisfied with ANTH 1002, or ANTH 1003, or ANTH 1004; and COMM 1040 or COMM 1041.

A list of approved courses can be found on the University General Education Requirements (p. 42) page.

Nutrition science core requirements

Code	Title	Credits
Basic math and science (34 credits)		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	

PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 2570	Peer Education
PSYC 3128	Health Psychology
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health
PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3135W	Health Policy
PUBH 3137	Global Public Health Nutrition

¹Students who have taken EXNS 1103 should not take EXNS 1109

²EXNS 3199 and EXNS 4199 count toward this requirement only when taken in the topics indicated.

³The courses listed above under guided electives have been identified as highly relevant to the BS in Nutrition Science curriculum. 20 elective credits must be selected from this list. General electives (18 additional elective credits) may also be selected from this list, or they may be any other undergraduate course at the University except for LSPA courses.

⁴Only 3 credits taken in EXNS 3101, EXNS 3110, or EXNS 3995 count toward the guided electives requirement. Additional credits in these courses count as general electives.

Note: Courses offered online may be taken in the summer session only.

BISC 3165	Biochemistry I
or CHEM 3165	Biochemistry I
CHEM 1111	General Chemistry I
CHEM 1112	General Chemistry II
CHEM 2151	Organic Chemistry I
CHEM 2153	Organic Chemistry Laboratory I
CHEM 2152	Organic Chemistry II
CHEM 2154	Organic Chemistry Laboratory II
EXNS 1110	Applied Anatomy and Physiology I
EXNS 1111	Applied Anatomy and Physiology II
MATH 1220	Calculus with Precalculus I (or higher)
Nutrition science (26 credits)	
ANTH 1002	Sociocultural Anthropology
or ANTH 1003	Archaeology
or ANTH 1004	Language in Culture and Society
COMM 1040	Public Communication
or COMM 1041	Interpersonal Communication
EXNS 1109	Professional Foundations in Nutrition Science ¹
EXNS 2119	Introduction to Nutrition Science
EXNS 2120	Assessment of Nutritional Status
EXNS 2122	Food Systems in Public Health ²
or	
EXNS 3199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic International Nutrition only) ²
or	
EXNS 4199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic Metabolism in Exercise and Nutrition Science topic only) ²
EXNS 2123	Nutrition and Chronic Disease
EXNS 2124	Lifecycle Nutrition
EXNS 3111W	Exercise and Nutrition Science Research Methods

EXNS 4112	Nutrition Science Senior Capstone Seminar
PUBH 1101	Introduction to Public Health and Health Services
STAT 1051	Introduction to Business and Economic Statistics
or STAT 1053	Introduction to Statistics in Social Science
or STAT 1127	Statistics for the Biological Sciences

Electives

19 credits in guided electives and 18 credits in general electives. ³

Code	Title	Credits
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Pre-medical professional concentration requirements

Required

PHYS 1011 General Physics I

PHYS 1012 General Physics II

EXNS 1199 Topics in Exercise and Nutrition Sciences (in topic Medical Terminology only)

Electives

11 credits in pre-approved guided elective courses.

18 credits in general elective courses.

Nutrition science Guided Electives

Code	Title	Credits
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ANTH 1005 The Biological Bases of Human Behavior

ANTH 3413 Evolution of the Human Brain

ANTH 3504 Illness, Healing, and Culture

BISC 2202 Cell Biology

BISC 2207 Genetics

BISC 2213 Biology of Cancer

BISC 2214 Developmental Biology

BISC 2220 Developmental Neurobiology

BISC 2320 Neural Circuits and Behavior

BISC 2322 Human Physiology

BISC 2336	Introductory Microbiology
BISC 2337	Introductory Microbiology Laboratory
BISC 2581	Human Gross Anatomy
BISC 2583	Biology of Proteins
BISC 3209	Molecular Biology
BISC 3212	Immunology
BISC 3261	Introductory Medical Biochemistry
BISC 3262	Biochemistry Laboratory
or CHEM 3262	Biochemistry Laboratory
BISC 3263	Special Topics in Biochemistry
BISC 3320	Human Neurobiology
CHEM 3166	Biochemistry II
or CHEM 3166W	Biochemistry II
CHEM 3262	Biochemistry Laboratory
CHEM 3263W	Special Topics in Biochemistry
CHEM 3564	Lipid Biotechnology
CHEM 4122	Instrumental Analytical Chemistry
EHS 1002	CPR and First Aid
EHS 1040	Emergency Medical Tech-Basic
EHS 1041	EMT - Basic Lab
EHS 1058	EMT Instructor Development
EHS 2108	Emergency Medicine Clinical Scribe
EHS 2110	Emergency Department Critical Care Assessment and Procedures
EXNS 1114	Community Nutrition
EXNS 1118	Sport and Nutrition
EXNS 1199	Topics in Exercise and Nutrition Sciences
EXNS 2111	Exercise Physiology I
EXNS 2112	Exercise Physiology II
EXNS 2116	Exercise and Health Psychology
EXNS 2122	Food Systems in Public Health
EXNS 3101	Independent Study ⁴

EXNS 3110	Field Experience - Exercise and Nutrition Sciences ⁴
EXNS 3199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic International Nutrition only) ²
EXNS 3995	Undergraduate Research ⁴
EXNS 4199	Advanced Topics in Exercise and Nutrition Sciences (taken in topic Metabolism in Exercise and Nutrition Sciences only) ²
HLWL 1102	Stress Management
HLWL 1106	Drug Awareness
HLWL 1108	Weight and Society
HLWL 1114	Personal Health and Wellness
HSCI 2101	Psychosocial Aspects of Health and Illness
HSCI 2102	Pathophysiology
HSCI 2103	Health Policy and the Health Care System
HSCI 2110	Disease Prevention and Health Promotion Concepts
HSCI 2112	Writing in the Health Sciences
or HSCI 2112W	Writing in the Health Sciences
PHYS 1011	General Physics I
PHYS 1012	General Physics II
PSYC 2011	Abnormal Psychology
or PSYC 2011W	Abnormal Psychology
PSYC 2013	Developmental Psychology
PSYC 2014	Cognitive Psychology
PSYC 2015	Biological Psychology
PSYC 2570	Peer Education
PSYC 3128	Health Psychology
PUBH 1102	History of Public Health
PUBH 2110	Public Health Biology
PUBH 2112	Principles of Health Education and Health Promotion
PUBH 2113	Impact of Culture upon Health

PUBH 2116	Global Delivery of Health Systems
PUBH 2117	Service Learning in Public Health
PUBH 3130	Health Services Management and Economics
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3135W	Health Policy
PUBH 3137	Global Public Health Nutrition

¹Students who have taken EXNS 1103 should not take EXNS 1109

²EXNS 3199 and EXNS 4199 count toward this requirement only when taken in the topics indicated. Credit for these courses may be applied toward the core course requirement or the guided electives requirement, but not both.

³The courses listed above under guided electives have been identified as highly relevant to the BS in Nutrition Science curriculum. 20 elective credits must be selected from this list. General electives (18 additional elective credits) may also be selected from this list, or they may be any other undergraduate course at the University except for LSPA courses.

⁴Only 3 credits taken in EXNS 3101, EXNS 3110, or EXNS 3995 count toward the guided electives requirement. Additional credits in these courses count as general electives.

Note: Courses offered online may be taken in the summer session only.

BACHELOR OF SCIENCE WITH A MAJOR IN PUBLIC HEALTH

Program Director E. Gray

The bachelor of science with a major in public health degree program is intended to convey to students technical detail and analytic skills with a liberal arts philosophical base. It has the educational objectives of nurturing critical thinking, analysis, and synthesis of information, and recognizing the historical and societal associations of current trends in public health and health care delivery. While nurturing students' capacity to think analytically and creatively, the program strives to deepen students' commitment to improving the public's health.

Students who began their academic career at GW become eligible to apply to the public health major in the fall semester of their sophomore year. Applicants must have a minimum grade-point average of 3.0.

Visit the program website (<http://publichealth.gwu.edu/programs/public-health-bs/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 120 credits, including 19 credits in University General Education Requirement courses, 31 credits in core public health courses including 3 credits in public health research methods, 12 credits in approved public health elective courses, and 58 credits in additional electives.

Code	Title	Credits
Prerequisites		
As a prerequisite to PUBH 2110, one of the following courses:		
BISC 1005	The Biology of Nutrition and Health	
BISC 1006	The Ecology and Evolution of Organisms	
BISC 1007	Food, Nutrition, and Service	
BISC 1008	Understanding Organisms through Service Learning	
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
HONR 1033	Honors Seminar: Scientific Reasoning and Discovery (Biology Only)	
As a prerequisite to PUBH 2112 and PUBH 3135W:		
PUBH 1101	Introduction to Public Health and Health Services	
As a prerequisite to PUBH 3130:		
ECON 1011	Principles of Economics I	
As a prerequisite to PUBH 3131, one of the following statistics courses; STAT 1127 is preferred:		
STAT 1051	Introduction to Business and Economic Statistics	
STAT 1053	Introduction to Statistics in Social Science	
STAT 1111	Business and Economic Statistics I	
STAT 1127	Statistics for the Biological Sciences	
As prerequisites to PUBH 4140W and PUBH 4141, the research methods selective and the following courses:		

PUBH 3130	Health Services Management and Economics	
PUBH 3135W	Health Policy	
Code	Title	Credits
Required for the major		
Public health core: 31 credits, including the research methods selective.		
PUBH 1010	First-Year Experience in Public Health *	
PUBH 1101	Introduction to Public Health and Health Services	
PUBH 2110	Public Health Biology	
PUBH 2112	Principles of Health Education and Health Promotion	
PUBH 3130	Health Services Management and Economics	
PUBH 3131	Epidemiology: Measuring Health and Disease	
PUBH 3132	Health and Environment	
PUBH 3133	Global Health and Development	
PUBH 3135W	Health Policy	
PUBH 4140W	Senior Seminar	
or PUBH 4141	Senior Seminar Community Needs Assessment	
Research methods selective		
3 credits from the following:		
EHS 2107	Theory and Practice of Research in a Clinical Setting	
EXNS 3111	Exercise and Nutrition Science Research Methods	
PUBH 3152	Qualitative Research Methods in Public Health	
PUBH 3199	Topics in Public Health (in topic Public Health Research Methods only)	
Electives		
12 credits in approved elective courses. No more than 9 credits may be taken through study abroad programs and/or domestic non-GW courses.		
ANTH 3503	Psychological Anthropology	

ANTH 3504	Illness, Healing, and Culture
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
AMST 3950	Special Topics (Narrative Medicine in American History only)
BADM 4101	Business Ethics and the Legal Environment
BIOC 3560	Diet, Health, and Longevity
BISC 3450	Evolutionary Medicine
or BISC 3450W	Evolutionary Medicine
EHS 2107	Theory and Practice of Research in a Clinical Setting
EHS 2109	Infectious Diseases and Bioterrorism
EHS 2175	Community Risk Management and Safety in EHS
EXNS 1114	Community Nutrition
EXNS 1199	Topics in Exercise and Nutrition Sciences (ONLY: Nutrition & Disease and International Nutrition)
EXNS 2116	Exercise and Health Psychology
EXNS 2119	Introduction to Nutrition Science
EXNS 2122	Food Systems in Public Health
EXNS 2123	Nutrition and Chronic Disease
EXNS 3995	Undergraduate Research **
GEOG 1003	Society and Environment
GEOG 2104	Introduction to Cartography and GIS
GEOG 2127	Population Geography
GEOG 2137	Environmental Hazards
GEOG 3106	Intermediate Geographic Information Systems
HIST 3363	Race, Medicine, and Public Health
HLWL 1106	Drug Awareness
HLWL 1109	Human Sexuality
HSCI 2101	Psychosocial Aspects of Health and Illness (Residential delivery only)

HSCI 2105	Current Issues in Bioethics (Residential delivery only)
PHIL 2124	Philosophies of Disability
PHIL 2125W	Philosophy of Race and Gender
PHIL 2281	Philosophy of the Environment
PSYC 3128	Health Psychology
PSYC 3199	Current Topics in Psychology (Substance Abuse and Addictions only)
PUBH 1102	History of Public Health
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2117	Service Learning in Public Health
PUBH 3115	Global Health and Human Rights
PUBH 3116	Global Health Systems Performance
PUBH 3136	Health Law
PUBH 3137	Global Public Health Nutrition
PUBH 3150	Sustainable Energy and Environmental Health
PUBH 3151W	Current Issues in Bioethics
PUBH 3199	Topics in Public Health
PUBH 3201	Introduction to Bioinformatics
PUBH 3202	Introduction to Genomics
PUBH 3995	Undergraduate Research **
PUBH 4201	Practical Computing
PUBH 4202	Bioinformatics Algorithms and Data Structures
STAT 2118	Regression Analysis
STAT 2183 or STAT 2183W	Intermediate Statistics Lab/Packages Intermediate Statistical Laboratory: Statistical Computing Packages

*Internal transfer students may be eligible to satisfy this requirement with course alternatives to PUBH 1010. See program guide available from the GWSPH.

**A total of 6 credits may be taken in PUBH 3995. Students may apply up to 3 of those credits toward their major elective requirement.

Students must take all required courses at GW unless an exception is granted by the GWSPH Dean of Undergraduate Programs. Permission is granted only if there are strong extenuating circumstances that call for such an exception.

Students must comply with policies and procedures as outlined in University Regulations (p. 27), GWSPH Regulations (p. 1178), and the program guide. Students should pay particular attention to SPH requirements for completing human research training, completing 8 hours of professional enhancement activities, and passing the academic integrity quiz.

GENERAL EDUCATION

Coursework for the university general education requirement in the bachelor of science in public health is distributed as follows:

- Communication—one approved course in university writing and two approved writing-in-the-disciplines (WID) courses;
- Critical Analysis in the Humanities—one approved course in humanities that involves critical thinking skills;
- Quantitative Reasoning—one approved course in either mathematics or statistics;
- Scientific Reasoning—one approved laboratory course that employs the process of scientific inquiry; and,
- Critical Analysis in the Social Sciences—two approved courses in the social sciences

A list of qualifying courses can found under University General Education Requirement (p.) in this Bulletin.

BACHELOR OF SCIENCE WITH A MAJOR IN PUBLIC HEALTH, PRE-MEDICAL PROFESSIONS CONCENTRATION

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
Prerequisites		
As a prerequisite to PUBH 2110, one of the following courses:		
BISC 1005	The Biology of Nutrition and Health	
BISC 1006	The Ecology and Evolution of Organisms	
BISC 1007	Food, Nutrition, and Service	
BISC 1008	Understanding Organisms through Service Learning	

BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
HONR 1033	Honors Seminar: Scientific Reasoning and Discovery (Biology Only)	
As a prerequisite to PUBH 2112 and PUBH 3135W:		
PUBH 1101	Introduction to Public Health and Health Services	
As a prerequisite to PUBH 3130:		
ECON 1011	Principles of Economics I	
As a prerequisite to PUBH 3131, one of the following statistics courses; STAT 1127 is preferred:		
STAT 1051	Introduction to Business and Economic Statistics	
STAT 1053	Introduction to Statistics in Social Science	
STAT 1111	Business and Economic Statistics I	
STAT 1127	Statistics for the Biological Sciences	
As prerequisites to PUBH 4140W and PUBH 4141, completion of the research methods selective and the following courses:		
PUBH 3130	Health Services Management and Economics	
PUBH 3135W	Health Policy	
Code	Title	Credits
Public health core courses		
31 credits, including the research methods selective.		
PUBH 1010	First-Year Experience in Public Health *	
PUBH 1101	Introduction to Public Health and Health Services	
PUBH 2110	Public Health Biology	
PUBH 2112	Principles of Health Education and Health Promotion	
PUBH 3130	Health Services Management and Economics	
PUBH 3131	Epidemiology: Measuring Health and Disease	

PUBH 3132	Health and Environment
PUBH 3133	Global Health and Development
PUBH 3135W	Health Policy
PUBH 4140W	Senior Seminar
or PUBH 4141	Senior Seminar Community Needs Assessment
Research methods selective	
3 credits from the following:	
EHS 2107	Theory and Practice of Research in a Clinical Setting
EXNS 3111	Exercise and Nutrition Science Research Methods
PUBH 3152	Qualitative Research Methods in Public Health
PUBH 3199	Topics in Public Health (in topic Public Health Research Methods only)
Approved electives	
12 credits in approved elective courses. No more than 9 credits may be taken through study abroad programs and/or domestic non-GW courses.	
ANTH 3503	Psychological Anthropology
ANTH 3504	Illness, Healing, and Culture
ANTH 3513	Anthropology of Human Rights
or ANTH 3513W	Anthropology of Human Rights
AMST 3950	Special Topics (Narrative Medicine in American History only)
BADM 4101	Business Ethics and the Legal Environment
BIOC 3560	Diet, Health, and Longevity
BISC 3450	Evolutionary Medicine
or BISC 3450W	Evolutionary Medicine
EHS 2107	Theory and Practice of Research in a Clinical Setting
EHS 2109	Infectious Diseases and Bioterrorism
EHS 2175	Community Risk Management and Safety in EHS
EXNS 1114	Community Nutrition

EXNS 1199	Topics in Exercise and Nutrition Sciences (ONLY: Nutrition & Disease and International Nutrition)
EXNS 2116	Exercise and Health Psychology
EXNS 2119	Introduction to Nutrition Science
EXNS 2122	Food Systems in Public Health
EXNS 2123	Nutrition and Chronic Disease
EXNS 3995	Undergraduate Research **
GEOG 1003	Society and Environment
GEOG 2104	Introduction to Cartography and GIS
GEOG 2127	Population Geography
GEOG 2137	Environmental Hazards
GEOG 3106	Intermediate Geographic Information Systems
HIST 3363	Race, Medicine, and Public Health
HLWL 1106	Drug Awareness
HLWL 1109	Human Sexuality
HSCI 2101	Psychosocial Aspects of Health and Illness (Residential delivery only)
HSCI 2105	Current Issues in Bioethics (Residential delivery only)
PHIL 2124	Philosophies of Disability
PHIL 2125W	Philosophy of Race and Gender
PHIL 2281	Philosophy of the Environment
PSYC 3128	Health Psychology
PSYC 3199	Current Topics in Psychology (Substance Abuse and Addictions only)
PUBH 1102	History of Public Health
PUBH 2113	Impact of Culture upon Health
PUBH 2114	Environment, Health, and Development
PUBH 2117	Service Learning in Public Health
PUBH 3115	Global Health and Human Rights
PUBH 3116	Global Health Systems Performance
PUBH 3136	Health Law
PUBH 3137	Global Public Health Nutrition

PUBH 3150 Sustainable Energy and Environmental Health

PUBH 3151W Current Issues in Bioethics

PUBH 3199 Topics in Public Health

PUBH 3201 Introduction to Bioinformatics

PUBH 3202 Introduction to Genomics

PUBH 3995 Undergraduate Research **

PUBH 4201 Practical Computing

PUBH 4202 Bioinformatics Algorithms and Data Structures

STAT 2118 Regression Analysis

STAT 2183 Intermediate Statistics Lab/Packages

or STAT 2183W Intermediate Statistical Laboratory: Statistical Computing Packages

Code	Title	Credits
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Pre-medical professional concentration requirements

The following courses (41 credits) are required for students in the pre-medical professional concentration. These credits are accounted for either by also fulfilling General Education requirements, thus counting toward both requirements; and/or counting as general electives. Students should consult a GWSPH undergraduate advisors for assistance in course selection.

BISC 1111 Introductory Biology: Cells and Molecules

BISC 1112 Introductory Biology: The Biology of Organisms

CHEM 1111 General Chemistry I

CHEM 1112 General Chemistry II

CHEM 2151 Organic Chemistry I

CHEM 2152 Organic Chemistry II

CHEM 2153 Organic Chemistry Laboratory I

CHEM 2154 Organic Chemistry Laboratory II

BISC 3261 Introductory Medical Biochemistry

or CHEM 3165 Biochemistry I

MATH 1220 Calculus with Precalculus I

or MATH 1221 Calculus with Precalculus II

PHYS 1011	General Physics I
or PHYS 1012	General Physics II
PSYC 1001	General Psychology
or SOC 1001	Introduction to Sociology

*Internal transfer students may be eligible to satisfy this requirement with course alternatives to PUBH 1010. See program guide available from the GWSPH.

**A total of 6 credits may be taken in PUBH 3995. Students may apply up to 3 of those credits toward the major elective requirement.

Students must take all required courses at GW unless an exception is granted by the GWSPH Dean of Undergraduate Programs. Permission is granted only if there are strong extenuating circumstances that call for such an exception.

Students must comply with policies and procedures as outlined in University Regulations (p. 27), GWSPH Regulations (p. 1178), and the program guide. Students should pay special attention to SPH requirements for completing human research training, completing 8 hours of professional enhancement activities, and passing the academic integrity quiz.

DUAL BS IN NUTRITION SCIENCE AND MPH IN PUBLIC HEALTH NUTRITION

Program Director A. Sylvestsky

The Milken Institute School of Public Health offers a dual bachelor of science with a major in nutrition science (p. 1316) and master of public health in the field of public health nutrition (p. 1355) degree program. The program allows students to take up to 9 graduate credits as part of their undergraduate degree, thereby decreasing the number of credits normally required for the master's degree.

Visit the program website (<https://publichealth.gwu.edu/content/nutrition-science-bs/>) for additional information.

DUAL BS WITH A MAJOR IN PUBLIC HEALTH AND MASTER OF PUBLIC HEALTH

Program Director E. Gray

The Milken Institute School of Public Health accepts a small number of outstanding students who demonstrate academic excellence and a strong commitment to public health into its dual bachelor of science with a major in public health (p. 1322) and master of public health (p. 1183) (BS/MPH) degree program each year. The program allows students to take up to 9 graduate credits as part of their undergraduate

degree, thereby decreasing the number of credits normally required for the master's degree. All requirements for both degrees must be fulfilled.

The BS/MPH program is designed to help pre-professional students who are interested in public health issues to become leaders dedicated to improving the health and well-being of local, national, and international communities. Current public health undergraduate students may apply to the program after their sophomore or junior academic year. Interested students may apply to any of the MPH programs.

Visit the program website (<https://publichealth.gwu.edu/programs/public-health-bs/>) for additional information.

GENERAL EDUCATION

Coursework for the university general education requirement in the bachelor of science in public health is distributed as follows:

- Communication—one approved course in university writing and two approved writing-in-the-disciplines (WID) courses;
- Critical Analysis in the Humanities—one approved course in humanities that involves critical thinking skills;
- Quantitative Reasoning—one approved course in either mathematics or statistics;
- Scientific Reasoning—one approved laboratory course that employs the process of scientific inquiry; and,
- Critical Analysis in the Social Sciences—two approved courses in the social sciences

Please visit the university general education requirement (p. 42) page for a list of qualifying courses.

MINOR IN BIOINFORMATICS REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 12 credits in required courses and 6 credits in elective courses.

Code	Title	Credits
Required		
PUBH 3201	Introduction to Bioinformatics	
PUBH 3202	Introduction to Genomics	
PUBH 4201	Practical Computing	
PUBH 4202	Bioinformatics Algorithms and Data Structures	
Electives		

6 credits from the following courses:

ANTH 2406	Human Evolutionary Genetics
BISC 2207	Genetics
BISC 3209	Molecular Biology
BME 2820	Biomedical Engineering Programming I
BME 2825	Biomedical Engineering Programming II
BME 3820	Principles and Practice of Biomedical Engineering
CHEM 3165	Biochemistry I
CHEM 3166	Biochemistry II
CSCI 3212	Algorithms
CSCI 3221	Programming Languages
CSCI 4364	Machine Learning
CSCI 4572	Computational Biology
MATH 3359	Introduction to Mathematical Modeling
MATH 3553	Introduction to Numerical Analysis
MATH 3613	Introduction to Combinatorics
MATH 3730	Computability Theory
MATH 3740	Computational Complexity
PUBH 3131	Epidemiology: Measuring Health and Disease
PUBH 3151	Current Issues in Bioethics
PUBH 3151W	Current Issues in Bioethics
PUBH 4199	Independent Study
STAT 3119	Analysis of Variance
STAT 3187	Introduction to Sampling
STAT 4157	Introduction to Mathematical Statistics I
STAT 4188	Nonparametric Statistics Inference
STAT 4189	Mathematical Probability and Applications I

MINOR IN EXERCISE SCIENCE REQUIREMENTS

The following requirements must be fulfilled: 13 credits in required courses plus two elective courses to total 18 to 21 credits.

Code	Title	Credits
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Required (13 credits)

EXNS 1103	Professional Foundations in Exercise Science
EXNS 1110	Applied Anatomy and Physiology I
EXNS 1111	Applied Anatomy and Physiology II
EXNS 2111	Exercise Physiology I

Electives

Two courses from the following (minimum 5 credits):

EXNS 1118	Sport and Nutrition
EXNS 2110	Injury Prevention and Control
EXNS 2112	Exercise Physiology II
EXNS 2113	Kinesiology
EXNS 2116	Exercise and Health Psychology
EXNS 2119	Introduction to Nutrition Science
EXNS 3110	Field Experience - Exercise and Nutrition Sciences

Note: Students in the BS in exercise science program (all tracks) are not eligible to declare a minor in exercise science.

MINOR IN NUTRITION SCIENCE REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
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Required (9 credits)

EXNS 2119	Introduction to Nutrition Science
EXNS 2122	Food Systems in Public Health *

or

EXNS 3199	Advanced Topics in Exercise and Nutrition Sciences (International Nutrition topic only) *
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or

EXNS 4199	Advanced Topics in Exercise and Nutrition Sciences (Metabolism in Exercise and Nutrition Science topic only) *
EXNS 2124	Lifecycle Nutrition
Electives (9 credits)	
Three courses selected from the following, at least two of which must be at the 2000 level or above:	
EXNS 1114	Community Nutrition
EXNS 1118	Sport and Nutrition
EXNS 2120	Assessment of Nutritional Status
EXNS 2122	Food Systems in Public Health *
EXNS 2123	Nutrition and Chronic Disease
EXNS 3199	Advanced Topics in Exercise and Nutrition Sciences (topic International Nutrition only) *
EXNS 4199	Advanced Topics in Exercise and Nutrition Sciences (topic Metabolism in Exercise and Nutrition Science only) *
GEOG 2133	People, Land, and Food
EXNS 3111W	Exercise and Nutrition Sciences Research Methods
PUBH 3137	Global Public Health Nutrition

*EXNS 2122, EXNS 3199, and EXNS 4199 cannot be double counted as both a required and an elective course. EXNS 3199 and EXNS 4199 count as a required or elective course only when taken in the topics indicated.

Students enrolled in the BS in nutrition science degree program are not eligible to declare this minor.

MINOR IN PUBLIC HEALTH

Program Director E. Gray

The following requirements must be fulfilled: 18 credits, including 9 credits in required courses and 9 credits in elective courses.

Code	Title	Credits
Required (9 credits)		
PUBH 1101	Introduction to Public Health and Health Services	

PUBH 3131	Epidemiology: Measuring Health and Disease (one semester of STAT prerequisite- STAT 1127 preferred)
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PUBH 3133	Global Health and Development *
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Electives (9 credits)

Any PUBH course (excluding PUBH 4140W and PUBH 4141) or any course from the School of Public Health's approved PUBH elective course list from the bachelor of science in public health program. In addition, students may take up to 3 elective credits from the SPH approved study abroad or non-GW course lists.*

*See bachelor of science in public health (p. 1322) for elective options. Advising documents are maintained by and available from the SPH Undergraduate Advisors.

Public health minors may double count only one course between the minor and their majors(s) or other minor.

In order to graduate with the minor in public health, students must earn a minimum grade of C- in all required and elective courses in the minor curriculum.

MASTER'S PROGRAMS

Master of Public Health

- Master of Public Health in the field of biostatistics (p. 1334) (p. 1334)
- Master of Public Health in the field of community oriented primary care (p. 1335)
- Master of Public Health in the field of environmental health science and policy (p. 1336)
- Master of Public Health in the field of epidemiology (p. 1338)
- Master of Public Health in the field of global environmental health (p. 1339)
- Master of Public Health in the field of global health policy (p. 1341)
- Master of Public Health in the field of global health program design, monitoring, and evaluation (p. 1343)
- Master of Public Health in the field of global health epidemiology and disease control (p. 1344)
- Master of Public Health in the field of health policy (p. 1346)
- Master of Public Health in the field of health promotion (p. 1347)
- Master of Public Health in the field of humanitarian health (p. 1349)
- Master of Public Health in the field of maternal and child health (p. 1350)
- Master of Public Health in the field of physical activity in public health (p. 1351)

- Master of Public Health in the field of public health communication and marketing (p. 1353)
- Master of Public Health in the field of public health nutrition (p. 1355)
- Master of Public Health (MPH@GW) (p. 1357)

Master of Science

- Master of Science in the field of biostatistics (p. 1358)
- Master of Science in the field of epidemiology (p. 1360)
- Master of Science in the field of exercise science with a concentration in strength and conditioning (p. 1361)
- Master of Science in the field of health and biomedical data (<http://bulletin.gwu.edu/public-health/biostatistics-bioinformatics/ms-health-and-biomedical-data-science/>)
- Master of Science in the field of public health microbiology and emerging infectious diseases (p. 1362)
- Master of Science in the field of management of health informatics and analytics (p. 1364)

Master of Health Administration

- Master of Health Administration (p. 1331)
- Master of Health Administration (MHA@GW) (p. 1333)

Specialist program

- Health Services Administration Specialist (p. 1330)

Combined programs

- Dual Master of Public Health and Doctor of Medicine (p. 1364)
- Dual Master of Public Health and Master of Arts in any Elliott School graduate program (p. 1036)
- Dual Master of Health Administration and graduate certificate in health care corporate compliance (p. 1365)
- Dual Master of Public Health in the field of health policy and graduate certificate in health care corporate compliance (p. 1366)
- Joint Master of Science in Health Sciences in the field of physician assistant and Master of Public Health (p. 1366)
- Joint Master of Public Health or SPH graduate certificate and Juris Doctor or Master of Laws (p. 1374)

HEALTH SERVICES ADMINISTRATION SPECIALIST

Program Director R. Bonar

The health services administration specialist degree helps develop leaders who possess the values, knowledge, and skills to achieve optimal delivery of healthcare. The program is designed for individuals who have earned a post-baccalaureate degree and wish to either change careers by

gaining knowledge and skills in health services administration or to upgrade their formal knowledge and skills in healthcare administration to include the latest advancements in the field.

Applicants must hold a post-baccalaureate degree from an accredited college or university.

Visit the program website (<https://publichealth.gwu.edu/programs/health-services-administration-specialist/>) for additional program information.

REQUIREMENTS

Course Requirements

All Health Services Administration Specialist degree candidates complete 30 graduate credits of approved coursework.

1. 30 graduate credits are required. The Specialist has one required course: HSML 6270 Research in Health Services Administration (Independent Study). All other courses are chosen in consultation with the program director.
2. The program director must pre-approve all course selections and sequencing by developing a "program of study" with the student prior to initial registration. Specialist candidates must meet with the program director each semester before registration; all changes to the program of study must be approved.
3. The program director may approve up to 8 graduate credits that have not been applied to a previous graduate degree as transfer credit into the Specialist degree program. Course(s) must be relevant to the Specialist degree; credit must have been earned from an accredited institution within the past three years with a grade of *B* or above.
4. Grade Point Requirement: A 3.0 (*B* average) overall grade-point average, or above is required.
5. Time Limit Requirement: The degree must be completed within four years.

Program Requirements

Code	Title	Credits
Required course:		
HSML 6270	Research in Health Services Administration	
HSML courses that may be taken for the specialist:		
HSML 6202	Introduction to Health Services Delivery	
HSML 6203	Introduction to Health Management	
HSML 6204	Quality and Performance Improvement	
HSML 6206	Quantitative Methods & Epidemiology/Health Services	
HSML 6207	Health Services Information Applications	

HSML 6208	Medical Informatics
HSML 6209	Health Services Finance
HSML 6210	Health Services Financial Applications
HSML 6211	Health Economics
HSML 6212	Community Health Management and Advocacy
HSML 6213	Health Services, Marketing, and Planning
HSML 6215	Health Law for Managers
HSML 6216	Human Resources Management and Organizational Behavior
HSML 6218	Seminar: Health Services Management and Leadership
HSML 6231	Management of Acute Care Hospitals
HSML 6236	Post-Acute Care Management and Leadership
HSML 6237	Managing the Skilled Nursing Facility
HSML 6238	Ambulatory Care Management
HSML 6244	Supply Chain Management in Health Services
HSML 6245	Disaster Management for Health Care Organizations
HSML 6246	Service Line and Project Management
HSML 6247	Consulting in Health Care
HSML 6285	Readings in Health Services Management
HSML 6286	Readings in Health Services Management
HSML 6299	Topics in HSML

MASTER OF HEALTH ADMINISTRATION

Program Director R. Bonar

The mission of the GW master of health administration (MHA) program is to train the next generation of leaders in the healthcare industry to improve health and health systems on a local, national, and global scale. Graduates will contribute to the improved efficacy of healthcare. They will use research and evidence to inform decisions about policies that affect diverse populations. In addition, the MHA coursework prepares

students to become skilled executives in healthcare delivery systems. Attending a school situated in Washington D.C., the nation's health policy and management epicenter ensures that graduates will become transformational leaders in healthcare.

An MHA degree incorporates coursework in business and medical informatics training, knowledge of health care systems, management theory, finance, quality, law, policy, critical values in decision making and much more. At the George Washington University, we are proud to educate students who are committed to improving healthcare and health policy and engaging in and promoting improvements in programs and services. We emphasize these qualities in the MHA program because they are essential for future leaders in healthcare delivery. Students who graduate with a Master of Health Administration degree will be able to:

- Effectively manage organizational change and promote organizational and clinical excellence.
- Manage health services organizations under alternative financing mechanisms.
- Lead and manage human resources in diverse organizational environments.
- Manage information resources to assist in effective administrative decision making and clinical management.
- Use statistical, quantitative, and economic analyses.
- Utilize leadership skills to improve both business and clinical outcomes of health services organizations.

The only two prerequisites for matriculation into the MHA program are an undergraduate course in introductory accounting and an introductory course in statistics. Students must have earned a grade of B or better in both subjects to be considered for admittance into the Master of Health Administration degree program.

Visit the program website (<https://publichealth.gwu.edu/programs/health-administration-mha/>) for additional program information.

REQUIREMENTS

Prerequisites for admission into the MHA program include an undergraduate course in financial accounting and an introductory course in statistics earned with a minimum grade of B.

The following requirements must be fulfilled: 50 credits, including 31 credits in core courses, a 2-credit health policy selective course, 11 to 14 credits in elective courses, and 3 to 6 credits in field experience.

Students select one of five focus areas. The following two focus areas require 6 credits in a residency to fulfill the field experience requirements: acute and ambulatory care management and post-acute care management (including long-term care). The following three focus areas require 3 credits in an internship to fulfill the field experience

requirement: information systems and financial management; operations management; and strategic management and policy.

Code	Title	Credits
Required		
Core		
HSML 6202	Introduction to Health Services Delivery	
HSML 6203	Introduction to Health Management	
HSML 6204	Quality and Performance Improvement	
HSML 6206	Quantitative Methods and Epidemiology/Health Services	
HSML 6207	Health Services Information Applications	
HSML 6208	Medical Informatics	
HSML 6209	Health Services Finance	
HSML 6210	Health Services Financial Applications	
HSML 6211	Health Economics	
HSML 6212	Community Health Management and Advocacy	
HSML 6213	Health Services, Marketing, and Planning	
HSML 6215	Health Law for Managers	
HSML 6216	Human Resources Management and Organizational Behavior	
HSML 6218	Seminar: Health Services Management and Leadership	
HSML 6254	Seminar: Ethics in Health Services Management	
PUBH 6080	Pathways to Public Health	
Health policy selectives		
One health policy course from the following:		
PUBH 6315	Introduction to Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6356	State Health Policy	
PUBH 6370	Medicare/Medicaid Law and Policy	
PUBH 6374	Pharmaceutical Policy	

PUBH 6378	HIV Policy in the US
PUBH 6380	Bridging Health Policy and Health Information Technology
Electives	
Students whose focus area requires a residency select 11 credits in courses from the following list; students whose focus area requires an internship select 14 credits in courses:	
HSML 6231	Management of Acute Care Hospitals
HSML 6236	Post-Acute Care Management and Leadership
HSML 6237	Managing the Skilled Nursing Facility
HSML 6238	Ambulatory Care Management
HSML 6244	Supply Chain Management in Health Services
HSML 6245	Disaster Management for Health Care Organizations
HSML 6246	Service Line and Project Management
HSML 6247	Consulting in Health Care
HSML 6263	Advanced Health Financial Applications
HSML 6270	Research in Health Services Administration (Independent Study)
HSML 6285 & HSML 6286	Readings in Health Services Management and Readings in Health Services Management
HSML 6299	Topics in HSML
Field experience	
Students select either the residency or internship focus area.	
Residency:	
Students pursuing the residency focus area in acute and ambulatory care management or post-acute care management (including long-term care) take the following two courses for a total of 6 credits:	
HSML 6274	Fellowship
HSML 6275	Fellowship
Internship:	

Students pursuing an internship in information systems and financial management, operations management, or strategic management and policy take the following 3-credit course:

HSML 6271

Residency

Graduation Requirements

1. Graduate Credit Requirement: 50 graduate credits are required.
2. Grade Point Requirement: A 3.0 (B average) overall grade-point average is required.
3. Time Limit Requirement: The degree must be completed within five years.
4. Transfer Credit Policy: Up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MHA, upon approval. Credits must have been earned from a CAHME accredited institution in the last three years with a grade-point average of 3.0 or above.
5. Transfer to Degree Program Policy: Up to 18 credits may be transferred to the MHA from the Health Administration Generalist Certificate. Students wishing to transfer to a degree program may apply to do so via the online change of concentration petition after completion of three or more courses and a cumulative GPA of 3.0 or above. A grade of B or above is required for a course to be eligible for transfer. Students interested in applying to an MHA degree program should meet with the program director regarding program-specific admission requirements. Transfer credits must have been completed within the past three years.
6. Residency or Internship Requirement: Successful completion of a 6 credit residency or 3-credit internship.

MASTER OF HEALTH ADMINISTRATION (MHA@GWU)

Program Director L. Friedman

The online Master of Health Administration (MHA) program is designed to educate health care professionals seeking to improve health care structures across the globe. The MHA coursework and curriculum aim to build your expertise across multiple skill sets, leverage research to positively affect diverse populations and prepare you for an executive role in health care administration.

The program features a multidisciplinary curriculum that concentrates on core principles of health care management, health economics, financial leadership and policy.

MHA@GW focuses on enhancing the skill sets necessary for successful health organization leadership, including:

- Leadership and ethics
- Management and strategy
- Information technology and decision science
- Community health and quantitative methods

- Finance and economics
- Quality improvement
- Law and regulation

REQUIREMENTS

The following requirements must be fulfilled: 50 credits in required courses, including 9 credits in immersion experiences.

Code	Title	Credits
Core online course requirements		
HSML 6264	Health Care Management and Strategy	
HSML 6265	Medical Informatics and Decision Management	
HSML 6266	Health Care Financial Management	
HSML 6267	Community and Population Health	
HSML 6268	Health Economics and Quantitative Methods	
HSML 6269	Quality and Performance Improvement	
HSML 6280	Health Law and Policy	
HSML 6281	Systems Thinking and Learning	
HSML 6282	Organizational Research Project I	
HSML 6283	Organization Research Project II	
PUBH 6080	Pathways to Public Health *	
On-site immersion requirements		
HSML 6255	Leadership and Ethics I	
HSML 6256	Leadership and Ethics II	
HSML 6258	Health System Analysis	
HSML 6259	Organization Research Project and Portfolio Presentation	

*PUBH 6080 is required only for students who do not have an MPH degree.

Graduation Requirements

1. Graduate Credit Requirement: 50 graduate credits are required.
2. Grade Point Requirement: A 3.0 (B average) overall grade-point average is required.
3. Time Limit Requirement: The degree must be completed within five years.
4. ePortfolio: All MHA@GW students must complete a comprehensive leadership portfolio

MASTER OF PUBLIC HEALTH IN THE FIELD OF BIOSTATISTICS

Program Director H. Hoffman

Mission

The mission of the master of public health in the field of biostatistics degree program is to educate students in the methodological and quantitative skills needed to apply statistical methods to the biological, biomedical, and health services sciences. In addition to enhancing students' capacity to think critically and creatively, the program deepens their commitment to improving the public's health and to engaging in and promoting public service—qualities essential to biostatisticians and public health practitioners.

Goals

The goals of the biostatistics program are to ensure that graduates:

- Understand and adhere to high scientific standards for research.
- Understand how to apply statistical methods to biological/biomedical sciences and health services.
- Understand and follow guidelines for ethical treatment of research participants.
- Communicate research findings to a lay audience.
- Respect cultural diversity throughout all of the above.

Visit the program website (<https://publichealth.gwu.edu/programs/biostatistics-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 14 credits in core courses, 22 credits in program-specific courses, 7 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses (14 credits)		
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	

PUBH 6012	Fundamentals of Health Policy
PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II (Includes Practicum)
PUBH 6023	Interprofessional Education Experience
Departmental/program-specific courses (22 credits)	
PUBH 6850	Introduction to SAS for Public Health Research
PUBH 6851	Introduction to R for Public Health Research
PUBH 6852	Introduction to Python for Public Health Research
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
PUBH 6862	Applied Linear Regression Analysis for Public Health Research
PUBH 6864	Applied Survival Analysis for Public Health Research
PUBH 6865	Applied Categorical Data Analysis
PUBH 6866	Principles of Clinical Trials
PUBH 6868	Quantitative Methods
PUBH 6869	Principles of Biostatistical Consulting
Culminating experience (2 credits)	
PUBH 6015	Culminating Experience

Electives

7 credits in any graduate-level SPH courses.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.

7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

Visit the program website (<https://publichealth.gwu.edu/programs/community-oriented-primary-care-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 6 credits in departmental core courses, 14 credits in program-specific courses, 8 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Departmental courses		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
Program-specific courses		
PUBH 6504	Social and Behavioral Science Research Methods	
PUBH 6510	Community-Oriented Primary Care Principles and Practice	
PUBH 6512	Community-Oriented Primary Care Policy and Issues	
PUBH 6513	Community Health Management	
PUBH 6514	Preventing Health Disparities	

MASTER OF PUBLIC HEALTH IN THE FIELD OF COMMUNITY ORIENTED PRIMARY CARE

Program Director C. Rodriguez-Diaz

The MPH in community-oriented primary care trains health professionals and public health practitioners to implement and evaluate evidence-based interventions to improve community health, clinical care, outcomes, and patient experience, while lowering health care costs and decreasing health disparities.

Join other students whose "real life" culminating experiences have included early childhood literacy programs, hospice care, childhood obesity, medication coverage for the elderly, use of geographic information systems to improve access to care, and community health promoter training in Mexico.

Most courses are scheduled in the late afternoons and early evening allow our students to work while pursuing their degree. If you have a job, you may need to arrange with your employer to take a class in the afternoon.

PUBH 6516 Community Health Information Resources

Electives

8 credits- Any PUBH graduate courses

Culminating experience

PUBH 6015 Culminating Experience (taken for two credits)

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>), within their first semester of study.

11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF ENVIRONMENTAL HEALTH SCIENCE AND POLICY

Program Director K. Applebaum

The Department of Environmental and Occupational Health is at the center of national and global conversations about the role of science in protecting workers, the public, and the environment from toxic substances and dangerous conditions. Faculty and staff in the department have earned a national reputation as researchers and leaders in articulating how public health science is best used in regulatory decision making. Congressional committees, federal agencies, national scientific organizations, international public health entities and the media contact them frequently to discuss environmental hazards and the policies addressing them.

The MPH in environmental health science and policy program educates individuals who are committed to improving public health through reducing risks posed by environmental and occupational hazards. Students learn to apply critical and analytic skills to better understand how environmental and occupational exposures impact human health. With courses scheduled in the late afternoons and early evenings, students can obtain valuable career experience while they earn the degree.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 22 credits in program-specific courses, 4 credits in elective courses, a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	

PUBH 6012	Fundamentals of Health Policy
PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
Program-specific courses	
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6124	Risk Management and Communication
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6131	Quantitative Methods in Environmental and Occupational Health

Program-specific electives

A minimum of 4 credits from the following program-specific elective courses:

PUBH 6127	Introduction to Environmental Health Microbiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6130	Sustainable Energy and the Environment
PUBH 6133	Social Dimensions in Climate Change and Health
PUBH 6135	Researching Climate Change and Human Health
PUBH 6140	Global Climate Change and Air Pollution
PUBH 6199	Topics in Environmental and Occupational Health

Additional electives

4 credits in any graduate-level SPH courses. If more than 4 credits in program-specific elective courses are taken, the number of credits required in this category is reduced accordingly.

Culminating experience

PUBH 6137	Environmental and Occupational Health Culminating Experience I
PUBH 6138	Environmental and Occupational Health Culminating Experience II

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF EPIDEMIOLOGY

Program Co-Directors M. Magnus, H. Young

Mission

The mission of the master of public health in the field of epidemiology degree program is to help students develop the necessary methodological and quantitative skills to work successfully in the field. While nurturing students' capacity to think critically and creatively, students are encouraged to deepen their commitment to improving the public's health and to engaging in and promoting public service qualities essential for future epidemiologists and public health practitioners.

Goals

The goals of the program are to ensure that graduates:

- Understand and adhere to high scientific standards for research;
- Understand and follow guidelines for ethical treatment of research participants;
- Can communicate research findings to a lay audience; and
- Respect cultural diversity throughout all of the above.

Visit the program website (<https://publichealth.gwu.edu/programs/epidemiology-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 20 credits in program-specific courses, 6 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	

PUBH 6012	Fundamentals of Health Policy
PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II (Includes Practicum)
PUBH 6023	Interprofessional Education Experience
Departmental courses	
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
PUBH 6260	Advanced Data Analysis for Public Health
Program-specific epidemiology foundational courses	
At least two courses (4 credits) from the following:	
PUBH 6237	Chronic Disease Epidemiology
PUBH 6241	Nutritional Epidemiology
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research
PUBH 6244	Cancer Epidemiology
PUBH 6245	Infectious Disease Epidemiology
PUBH 6248	Epidemiology of Aging
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epidemiology Surveillance in Public Health
Program-specific electives	
4 credits in Epidemiology/Biostatistics department courses or from following list:	
PUBH 6299	Topics in Epidemiology (Behavioral Epidemiology)
PUBH 6899	Topics in Biostatistics and Bioinformatics
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6127	Introduction to Environmental Health Microbiology
PUBH 6455	Global Vaccinology

PUBH 6484	Prevention and Control of Vector Borne Diseases
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases
EXNS 6208	Physical Activity: Physiology and Epidemiology
Additional electives	
6 credits in any graduate-level SPH courses.	
Culminating experience	
PUBH 6015	Culminating Experience (taken for 2 credits)

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection

regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).

10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL ENVIRONMENTAL HEALTH

Program Director S. Anenberg

The mission of GW's master of public health (MPH) in global environmental health program, offered jointly by the Departments of Environmental and Occupational Health and Global Health, is to prepare students to work in resource-poor settings and apply analytic skills to prevent or lessen problems associated with environmental hazards for human health. The program focuses on traditional environmental health hazards, such as lack of access to clean water, inadequate sanitation, poor hygiene, household air pollution, solid waste disposal, and vector-borne diseases such as malaria.

In addition, the program curriculum is designed to enhance students' capacity to think critically and creatively. The global environmental health program enrolls students who are committed to improving public health around the globe and engaging in and promoting public service. The emphasis on these qualities is essential for future environmental and occupational health professionals and public health practitioners. Graduates of the program can expect to be prepared to:

- Assess environmental exposures and understand the effects of these exposures on human health.
- Interpret epidemiologic and other research findings related to global environmental health risks.
- Assume leadership roles in designing, implementing, and evaluating programs that focus on modification of environmental health-related behaviors at local, regional, national, and/or global levels.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 17 credits in program-specific courses, 9 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Program-specific environmental and occupational health courses		
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6126	Assessment and Control of Environmental Hazards	
PUBH 6128	Global Environmental and Occupational Health	
PUBH 6131	Quantitative Methods in Environmental and Occupational Health	
Program-specific global health courses		
PUBH 6400	Global Health Frameworks	
PUBH 6411	Global Health Qualitative Research Methods	
PUBH 6435	Global Health Program Development and Implementation	
Electives		
9 credits in environmental health courses from the following sample list or any graduate-level PUBH course:		
PUBH 6123	Toxicology: Applications for Public Health Policy	
PUBH 6127	Introduction to Environmental Health Microbiology	
PUBH 6130	Sustainable Energy and the Environment	
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries	
PUBH 6133	Social Dimensions in Climate Change and Health	
PUBH 6135	Researching Climate Change and Human Health	
PUBH 6262	Introduction to Geographic Information Systems	
PUBH 6271	Disaster Epidemiology	
PUBH 6441	Global Health Organizations and Regulations	
PUBH 6480	Public Health in Humanitarian Settings	
PUBH 6199	Topics in Environmental and Occupational Health	
Culminating experience		
PUBH 6137	Environmental and Occupational Health Culminating Experience I	
PUBH 6138	Environmental and Occupational Health Culminating Experience II	
Graduation Requirements		
<ol style="list-style-type: none"> 1. Graduate credit requirement: 45 graduate credits. 2. Course requirements: Successful completion of core and program-specific courses. 3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022. 4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023). 5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average. 6. Time limit requirement: The degree must be completed within five years. 7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned 		

- toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
 9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
 10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
 11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH POLICY

Program Director C. Santos-Burgoa

The mission of GW's master of public health (MPH) in global health policy program is to prepare professionals to assist in public health decision making related to national, regional, and global interventions and institutions. Students learn to support policy analysis and use diverse analytic tools, including epidemiology and international comparative policy methods, with attention to culture and equity. Program graduates integrate scientific knowledge and global evidence to advise decision making and action by diverse global health systems and other sectors, and to provide insight into policies and processes that impact population health, all with an emphasis on underserved populations and development.

Students enrolled in the global health policy program are committed to improving public health on a global scale and engaging in and promoting public service. These qualities are essential for future health professionals and public health practitioners.

Graduates of the global health policy program can expect to be able to:

- Assess the burden and determinants of health problems, their social distribution and inequities, and the interdependence of countries.

- Apply common economic, epidemiological, and comparative policy analysis methods and tools for evidence to assess burden of disease, determining efficacy and effectiveness of interventions for global infectious and chronic disease control.
- Use global evidence for local action using systematic reviews and local facts to drive well informed health policy decisions. Translate evidence to support program and health systems policy recommendations.
- Work with other disciplines and with sectors beyond health to develop innovative policy options.
- Develop strong cultural sensitivity and intercultural competency within diverse health and political systems
- Act in global health diplomacy in policy-shaping and negotiations to improve health while strengthening relations among nations.
- Assume leadership roles in the global health policy development process.
- Work with methodological rigor of international policy design, program priority setting, and negotiation.
- Communicate the results of research to a culturally broad set of constituents.

Visit the program website (<https://publichealth.gwu.edu/programs/global-health-policy-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 14 credits in program-specific courses, 4 credits in selective courses, 8 credits of electives and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	

PUBH 6021	Essentials of Public Health Practice and Leadership I	IAFF 6502	Professional Skills I ³
PUBH 6022	Essentials of Public Health Practice and Leadership II	or IAFF 6503	Professional Skills II
PUBH 6023	Interprofessional Education Experience	ORSC 6224	Persuasion and Negotiation
Program-specific		PMGT 6404	Principled Political Leadership
PUBH 6315	Introduction to Health Policy Analysis	PPPA 6056	Regulatory Comment Clinic
PUBH 6400	Global Health Frameworks	PPPA 6062	Community Development Policy and Management
PUBH 6412	Global Health Quantitative Research Methods	PUBH 6262	Introduction to Geographic Information Systems
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs	PUBH 6410	Global Health Study Design
PUBH 6417	Cross-Cultural Approaches for Global Health Practice	PUBH 6411	Global Health Qualitative Research Methods
PUBH 6441	Global Health Organizations and Regulations	PUBH 6435	Global Health Program Development and Implementation
PUBH 6450	Global Health Diplomacy	PUBH 6436	Global Health Program Management and Leadership
Selectives		PUBH 6480	Public Health in Humanitarian Settings
4 credits from the following list of courses. Alternative courses may be taken with prior permission of the advisor.		PUBH 6482	International Food and Nutrition Policy
PUBH 6442	Comparative Global Health Systems	PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
or PUBH 6355	Comparative Health Policy	PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases
PUBH 6440	Global Health Economics and Finance (PUBH 6399 must be taken in topic Cost-Benefit Analysis in Healthcare) ¹	PUBH 6499	Topics in Global Health (National and Global Public Health Systems) ²
or PUBH 6399	Topics in Health Policy	PUBH 6499	Topics in Global Health (Health Financing in Low and Middle Income Countries) ²
Electives		PUBH 6499	Topics in Global Health (Synthesizing Evidence) ²
8 credits in elective courses. These may be taken from the following list or they may be additional selective courses.		PUBH 6575	Communication Skills for Public Health Professionals
ECON 6284	Survey of International Macroeconomics and Finance Theory and Policy	Culminating Experience	
IAFF 6138	Special Topics in International Development Studies (Gender, Disaster and Policy) ²	PUBH 6015	Culminating Experience (taken for 2 credits)
IAFF 6158	Special Topics in International Science and Technology Policy (Policy of Science, Technology and Development) ²	¹ For PUBH 6399, only the topic Cost-Benefit Analysis in Healthcare counts toward program requirements.	
IAFF 6198	Special Topics in International Economic Policy (International Trade and Investment Policy) ²		

²For IAFF 6138, IAFF 6158, IAFF 6198, and PUBH 6499, only the specific topics listed here count toward program requirements.

³See program guide for the topics in IAFF 6502 and IAFF 6503 that qualify as preapproved electives.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH
IN THE FIELD OF GLOBAL
HEALTH PROGRAM DESIGN,
MONITORING, AND EVALUATION

Program Director S. Baird

The MPH in global health design, monitoring and evaluation prepares the next generation of global health professionals to implement, monitor, and evaluate global health programs and initiatives. These skills will ensure that students are able to contribute to improved global health program performance, and make evidence-based decisions for investment of scarce resources to improve global health outcomes.

Visit the program website (<https://publichealth.gwu.edu/programs/global-health-program-design-monitoring-and-evaluation-mph/>)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 18 credits in department and program-specific courses, 10 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Global health departmental		
PUBH 6400	Global Health Frameworks	
PUBH 6410	Global Health Study Design	

PUBH 6412	Global Health Quantitative Research Methods
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6435	Global Health Program Development and Implementation
PUBH 6501	Program Evaluation

Selectives

At least 6 credits in courses from the following:

PUBH 6411	Global Health Qualitative Research Methods
PUBH 6436	Global Health Program Management and Leadership
PUBH 6440	Global Health Economics and Finance
PUBH 6445	Quantitative Methods for Impact Evaluation
PUBH 6495	Field Trial Methods and Application
PUBH 6489	Evaluation of Food and Nutrition Programs and Policies
PUBH 6508	Cost-Effectiveness Analysis of Health Promotion Interventions
PUBH 6493	Fundamentals of Supply Chain Management in Developing Countries
PUBH 6494	Population, Public Health Practice, and Sustainable Development
PUBH 6399	Topics in Health Policy (Cost-Benefit Analysis in Health Care) *

Electives

At least 10 credits in PUBH courses.

Culminating experience

PUBH 6015	Culminating Experience
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*For PUBH 6399, only the topic Cost-Benefit Analysis in Health Care counts toward program requirements

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.

4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH EPIDEMIOLOGY AND DISEASE CONTROL

Program Director C. Mores

The mission of the MPH global health epidemiology and disease control program is to prepare the next generation of global health professionals to develop and rigorously appraise infectious and chronic disease control-related programs using analytical and creative assessment skills. The ability to do so will provide students with requisite skills to effectively contribute to improving the performance of global health programs. In turn, global health epidemiology and disease control degree graduates impact underserved communities around the world.

The program curriculum is designed to enhance students' capacity to think critically and innovatively. Students are committed to improving public health on a global scale and engaging in and promoting public service. These qualities are essential for future health professionals and public health practitioners.

Program graduates can expect to be able to:

- Use common epidemiological tools to help generate evidence on interventions targeted to infectious and chronic disease control.
- Work in real-world settings to strengthen methodological rigor.
- Generate and use data for assessing burden of disease and determining efficacy and effectiveness of interventions for infectious and chronic diseases.
- Translate evidence to support program and health systems improvements and to make policy recommendations.
- Communicate the results of research to a broad set of stakeholders.

Visit the program website (<https://publichealth.gwu.edu/programs/global-health-epidemiologyand-disease-control-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 16 credits in program-specific courses, 10 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	

PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
Program-specific	
PUBH 6247	Design of Health Studies
PUBH 6252	Advanced Epidemiology Methods
PUBH 6400	Global Health Frameworks
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Electives	
10 credits taken in any PUBH courses.	
Culminating experience	
PUBH 6015	Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.

8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY

Program Director L. Cartwright-Smith

Dedicated to health policy education and research, our faculty members include some of the nation's best-known health policy experts, as well as leaders from the public and private health policy sectors. Our program joins stimulating classes with hands-on experience with critical health policy issues. Our graduates can be found in congressional offices, federal health agencies, the most prominent professional health societies in Washington, D.C., trade associations and health policy consultancies. With courses scheduled in the late afternoons and early evenings, our programs allow students to attain valuable career experience while they earn their degrees.

The MPH in health policy provides students with in-depth analysis skills for employment in government, private sector health policy consulting and not-for-profit advocacy. Additionally, this program is available to attorneys, GW law students and GW medical students who wish to enhance training with a thorough understanding of health policy.

Visit the program website (<https://publichealth.gwu.edu/programs/health-policy-mp/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 18 credits in program-specific courses, 8 credits in elective courses, and a 2-credit capstone.

Program Requirements

Code	Title	Credits
Required		
Core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Program-specific		
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Introduction to Health Policy Analysis	
PUBH 6320	Advanced Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6330	Health Services and Law	
or PUBH 6335	Public Health and Law	
PUBH 6340	Health Economics and Finance	
Health policy selective		
2 credits from the following:		
PUBH 6356	State Health Policy	
PUBH 6367	Population Health, Public Health, and Health Reform	
PUBH 6370	Medicare/Medicaid Law and Policy	
PUBH 6384	Health Care Quality and Health Policy	

Capstone

PUBH 6350 Health Policy Capstone

Electives

8 credits in any graduate-level PUBH or HSML courses.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.

11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH PROMOTION

Program Director B. Bingenheimer

Students in the master of public health (MPH) in health promotion program learn to use proven social and behavioral theory and behavior change models and strategies to improve health behaviors and practices for a variety of populations. They acquire the skills to plan, design, implement, evaluate, and communicate programs and research targeted toward health promotion and disease prevention for the public.

The program is designed to prepare individuals to become responsible and productive public health professionals, capable of assessing, implementing, managing and evaluating health promotion and health education programs for the public and for at-risk populations. Through required courses and electives, students are trained in social and behavioral approaches and applications for improving public health via interventions at the individual, group, organizational, and societal levels.

The health promotion program explores how best to advocate for social practices, policy, and law that provide supportive environments for the improvement of public health. Students put their knowledge into practice, both in the classroom and in the field. With courses scheduled in the late afternoons and early evenings, the programs allow students to obtain valuable career experience while they earn their degree.

Visit the program website (<http://publichealth.gwu.edu/programs/health-promotion-mp/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 6 credits in departmental core courses, 8 credits in program-specific courses, 14 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	

PUBH 6007	Social and Behavioral Approaches to Public Health
PUBH 6011	Environmental and Biological Foundations of Public Health
PUBH 6012	Fundamentals of Health Policy
PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
Departmental	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6501	Program Evaluation
Program-specific	
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6504	Social and Behavioral Science Research Methods

Electives

14 credits from the following suggested list or other graduate-level PUBH courses:

PUBH 6514	Preventing Health Disparities
PUBH 6516	Community Health Information Resources
PUBH 6531	Health Promotion in Health Care Settings
PUBH 6532	Community Organization, Development, and Advocacy
PUBH 6535	Promotion of Mental Health
PUBH 6536	Workplace Health Promotion
PUBH 6537	Health Promotion and Aging
PUBH 6556	Maternal and Child Nutrition
PUBH 6560	School Health and Safety
PUBH 6562	Physical Activity and Obesity Interventions: From the Individual to the Environment

PUBH 6573	Media Advocacy for Public Health
PUBH 6599	Topics in Prevention and Community Health
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Culminating experience

PUBH 6015	Culminating Experience
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Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.

11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF HUMANITARIAN HEALTH

Program Director: R. Asgary

The MPH in humanitarian health program equips students with the necessary knowledge, attitudes and self-efficacy/skill-sets to assess needs, design and implement programs, and contribute to better decision-making, performance efficiency, and sound policy making within aid system and in humanitarian settings.

Visit the program website (<https://publichealth.gwu.edu/programs/humanitarian-health-mph/>) for additional program information

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 20 credits in program-specific courses, 6 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
PUBH 6015	Culminating Experience	

Program-specific courses

PUBH 6400	Global Health Frameworks
PUBH 6480	Public Health in Humanitarian Settings
PUBH 6410	Global Health Study Design
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6416	Ethical and Cultural Issues in Global Health Research and Programs
PUBH 6461	Ethics and Accountability in Humanitarian Settings
PUBH 6462	Nutrition and Food in Large Humanitarian Emergencies
PUBH 6463	Communication Strategies and Planning in Humanitarian Settings
PUBH 6464	Mental Health in Humanitarian Settings
PUBH 6465	Reproductive Health and Gender-Based Violence in Humanitarian Settings
PUBH 6469	Humanitarian Aid Seminar Series
PUBH 6492	Global Health Programs and Approaches to the Control of Chronic Diseases
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries

Electives

6 credits in PUBH courses.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an

accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.

8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF MATERNAL AND CHILD HEALTH

Program Director A. Vyas

Mission Statement

The maternal and child health program (MCH) at the Milken Institute School of Public Health (SPH) is a master of public health (MPH) degree program designed to train individuals to become responsible and productive public health professionals with an emphasis on MCH populations. This program investigates maternal and child health from a multi-disciplinary perspective that integrates the life course, biological, demographic, epidemiological, developmental, environmental, behavioral, and social characteristics that are unique to the health and well-being of women, children, and families.

Goals

The goals of this educational program are to provide and improve:

- Knowledge and skills to assess the health care needs of women, children, and families; and
- Ability to plan, design, implement, evaluate, and communicate programs and research targeted toward

health promotion and disease prevention among women, children, and families

Visit the program website (<https://publichealth.gwu.edu/programs/maternal-and-child-health-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 6 credits in departmental core courses, 16 credits in program-specific courses, 6 credits in elective courses, and a 2-credit culminating experience.

Begin planning practicum during year 1; complete culminating experience in year 2.

Code	Title	Credits
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Departmental courses		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
Program-specific courses		
PUBH 6550	Maternal and Child Health I	
PUBH 6551	Maternal and Child Health II	
Electives		

10 credits in courses selected from the following. Students should consult the advisor regarding modification/additions to this list.

EXNS 6242 Nutrition Throughout the Life Cycle

HDEV 6109 Child Development

PUBH 6235 Epidemiology of Obesity

PUBH 6240 Pediatric HIV/AIDS

PUBH 6269 Reproductive Epidemiology

PUBH 6335 Public Health and Law

PUBH 6359 Reproductive Health Policy

PUBH 6400 Global Health Frameworks

PUBH 6452 Social and Behavior Change Communication in Middle- to Low-Income Countries

PUBH 6455 Global Vaccinology

PUBH 6481 Global Mental Health

PUBH 6503 Introduction to Public Health Communication and Marketing

PUBH 6514 Preventing Health Disparities

PUBH 6552 Women's Health

PUBH 6553 Adolescent Health

PUBH 6555 Reproductive Health: U.S. and Global Perspectives

PUBH 6560 School Health and Safety

PUBH 6561 Maternal and Child Health Policy Analysis

PUBH 6563 Global Child Health

PUBH 6620 Designing Healthy Communities

Additional electives

6 credits in any graduate-level courses.

Culminating experience

PUBH 6015 Culminating Experience

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.

3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PHYSICAL ACTIVITY IN PUBLIC HEALTH

Program Director and Advisor L. DiPietro

Mission Statement

The sedentary lifestyle and its consequent metabolic and cardiovascular complications now assumes a considerable public health burden in the United States. Indeed, the promotion of physical activity for people of all ages has become a top priority on public health agendas around the world. The mission of the master of public health (MPH) degree program in the Department of Exercise and Nutrition Sciences

is to develop and train graduate students to integrate physical activity into the core of public health practice. The program encompasses an ecological perspective to the role of physical activity in the etiology, prevention, and treatment of chronic diseases at the community, national, and global levels. The program is designed to train students as public health scientists and practitioners in order to assist public and private agencies with program development and evaluation with regard to physical activity, health promotion, and disease prevention.

Goals

The goals of the MPH in the field of physical activity in public health are to ensure that graduates:

- Understand the pathophysiology of selected chronic disease processes.
- Understand exercise physiology and the role of physical activity and exercise in health promotion and disease prevention.
- Develop skills in physical activity assessment using state-of-the-art technology.
- Utilize epidemiological methods to develop and test hypotheses pertaining to physical activity and health and disease outcomes at the population level.
- Develop skills in designing, implementing, and evaluating interventions for improving physical activity at the community level.
- Appreciate the role of public health policy in altering physical activity patterns at the community level.

Visit the program website (<https://publichealth.gwu.edu/programs/physical-activity-public-health-mp/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, (varying by track – Option A or B) including 15 to 17 credits in core courses, 19 to 22 credits in program-specific courses, 6 to 7 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Prerequisite		
EXNS 2111	Exercise Physiology I	4
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	3
PUBH 6003	Principles and Practices of Epidemiology	0,3

PUBH 6007	Social and Behavioral Approaches to Public Health	2
PUBH 6009	Fundamentals of Public Health Program Evaluation (students following Option B [below] do not take PUBH 6009)	0,2
PUBH 6011	Environmental and Biological Foundations of Public Health	3
PUBH 6012	Fundamentals of Health Policy	2
PUBH 6021	Essentials of Public Health Practice and Leadership I	1
PUBH 6022	Essentials of Public Health Practice and Leadership II	1
PUBH 6023	Interprofessional Education Experience	0
PUBH 6015	Culminating Experience	1-3

Departmental courses

EXNS 6202	Advanced Exercise Physiology I (Departmental Courses)	0-3
EXNS 6203	Advanced Exercise Physiology II	0-3
EXNS 6208	Physical Activity: Physiology and Epidemiology	2
PUBH 6620	Designing Healthy Communities	2

Program-specific: All courses in either Option A or Option B

Option A: Epidemiology (9 credits)

PUBH 6247	Design of Health Studies	3
PUBH 6252	Advanced Epidemiology Methods	3
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis	0,3

Option B: Program design and evaluation (12 credits)

PUBH 6500	Planning and Implementing Health Promotion Programs	2
PUBH 6501	Program Evaluation	3
PUBH 6503	Introduction to Public Health Communication and Marketing	3
EXNS 6204	Biostatistical Methods and Research Design	3

Electives

7 credits if Option A is selected and 6 credits if Option B is selected, in any graduate-level GW courses. Sample electives include:

EXNS 6212	Exercise in Selected Chronic Diseases	3
EXNS 6242	Nutrition Throughout the Life Cycle	2
PUBH 6260	Advanced Data Analysis for Public Health	3
PUBH 6262	Introduction to Geographic Information Systems	1
PUBH 6502	Practical Data Analysis for Prevention and Community Health	1
PUBH 6536	Workplace Health Promotion	2
PUBH 6556	Maternal and Child Nutrition	2

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>)

and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.

11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH COMMUNICATION AND MARKETING

Program Director W.D. Evans

Mission

Based on an ecological model of health, the mission of the master of public health in the field of public health communication and marketing program is to educate public health professionals to use communication and marketing as strategic tools to influence people, places, and environmental conditions in ways that advance public health objectives.

Goals

Graduates will possess the skills necessary to become highly effective public health practitioners and leaders. Their specific expertise in the strategic use of communication and marketing tools will enable them to work collaboratively with a broad range of other public health experts to plan high-impact health enhancement initiatives, and to implement or supervise the implementation of the communication and marketing components of public health initiatives.

Specifically, students will become proficient at developing, implementing, and evaluating:

- Communication programs that help people make sound health decisions and effectively manage their health behaviors.
- Marketing programs that improve the health capacity of communities by enhancing the competitiveness of the healthful (versus unhealthful) products and services offered to community members.
- Communication programs that promote the adoption of policies--in the public and private sector--which enhance health.

Visit the program website (<https://publichealth.gwu.edu/programs/public-health-communication-and-marketing-mp/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 15 credits in core courses, 6 credits in departmental core courses, 22 credits in program-specific courses and electives, and a 2-credit culminating experience.

Code	Title	Credits		
Required				
Core courses			PUBH 6452	Social and Behavior Change Communication in Middle- to Low-Income Countries
PUBH 6002	Biostatistical Applications for Public Health		PUBH 6463	Communication Strategies and Planning in Humanitarian Settings
PUBH 6003	Principles and Practices of Epidemiology		PUBH 6563	Global Child Health
PUBH 6007	Social and Behavioral Approaches to Public Health		Policy related	
PUBH 6011	Environmental and Biological Foundations of Public Health		PUBH 6054	Community Engagement and Advocacy
PUBH 6012	Fundamentals of Health Policy		or PUBH 6532	Community Organization, Development, and Advocacy
PUBH 6021	Essentials of Public Health Practice and Leadership I		PUBH 6315	Introduction to Health Policy Analysis
PUBH 6022	Essentials of Public Health Practice and Leadership II		PUBH 6335	Public Health and Law
PUBH 6023	Interprofessional Education Experience		PUBH 6390	Prescription Drugs: Policy and Public Health
Departmental courses			Digital health	
PUBH 6500	Planning and Implementing Health Promotion Programs		INFR 6101	Principles of Medical Informatics
PUBH 6501	Program Evaluation		HSML 6293	The Internet of Medical Things
Program-specific courses			PUBH 6599	Topics in Prevention and Community Health (Social Media and Mobile Health in Public Health Campaigns) *
PUBH 6503	Introduction to Public Health Communication and Marketing		Methods related	
PUBH 6504	Social and Behavioral Science Research Methods		PUBH 6099	Topics in Public Health (Social Impact Design Thinking) *
PUBH 6570	Advanced Public Health Communication: Theory and Practice		PUBH 6133	Social Dimensions in Climate Change and Health
PUBH 6571	Social Marketing: Theory and Practice		PUBH 6262	Introduction to Geographic Information Systems
Program-specific electives			PUBH 6263	Advanced GIS
10 credits in courses selected from the following:			PUBH 6508	Cost-Effectiveness Analysis of Health Promotion Interventions
Global health			PUBH 6516	Community Health Information Resources
PUBH 6058	Researching Violence Against Women and Girls		PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6132	Water, Sanitation, and Hygiene (WASH) in Low-Income Countries		PUBH 6572	Marketing Research for Public Health
PUBH 6400	Global Health Frameworks		Other approved electives	
			PUBH 6574	Public Health Branding: Theory and Practice

PUBH 6853 Use of Statistical Packages for Data Management and Data Analysis

Alternatively, elective SPH courses may be taken with prior approval of the advisor.

Culminating experience

PUBH 6015 Culminating Experience

*For PUBH 6599 and PUBH 6099, only the specified topics count toward program requirements.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.

11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH IN THE FIELD OF PUBLIC HEALTH NUTRITION

Program Director K. Lora

Mission

The mission of the master of public health (MPH) degree program in the field of public health nutrition is to develop and train graduate students to integrate nutrition into the core of public health practice. The program encompasses a social ecological perspective on the role of nutrition in the etiology, prevention, and treatment of both acute and chronic disease at the individual, community, national, and global levels. This program is designed to train students as public health scientists and practitioners in order to assist public and private agencies with program development, implementation, and evaluation with regard to nutrition in health promotion and disease prevention.

Goals

The goals of this MPH program in the field of public health nutrition are to ensure that graduates:

- Understand the pathophysiology of common acute and chronic disease processes and the role that nutrition may play in the development of these diseases.
- Understand the factors impacting the accessibility, availability, adequacy, and safety of the food and water systems serving a community, and the relationship between community food and water systems and health outcomes.
- Develop skills in nutrition assessment of both individuals and communities.
- Utilize appropriate epidemiologic methods for developing and testing hypotheses relating to nutrition and health outcomes at the population level.
- Develop skills in designing, implementing, and evaluating nutrition interventions to improve the health of communities.
- Appreciate the role of public health policy in altering the food environment at the community level.

Visit the program website (<https://publichealth.gwu.edu/programs/public-health-nutrition-mph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 13 credits in program-specific courses, 7 credits in research methods courses,

6 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Prerequisites		
Introductory coursework in nutrition and either advanced nutrition or nutritional biochemistry.		
Required		
Core courses		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6015	Culminating Experience	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Public health nutrition core		
EXNS 6242	Nutrition Throughout the Life Cycle	
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6611	Nutrition Assessment	
PUBH 6612	Food Systems in Public Health	
PUBH 6613	U.S. Food Policy and Politics	
or PUBH 6482	International Food and Nutrition Policy	
PUBH 6620	Designing Healthy Communities	
Research methods		
PUBH 6241	Nutritional Epidemiology	

EXNS 6204	Biostatistical Methods and Research Design
2 credits in additional research methods courses selected from the following:	
PUBH 6236	Systematic Review of Public Health Literature
PUBH 6247	Design of Health Studies
PUBH 6260	Advanced Data Analysis for Public Health
PUBH 6262	Introduction to Geographic Information Systems
PUBH 6263	Advanced GIS
PUBH 6273	Ethnographic Methods
PUBH 6281	Analysis of Complex Surveys Using SAS and Stata
PUBH 6299	Topics in Epidemiology (in topic Dissemination and Implementation Research in Health only)
PUBH 6310	Statistical Analysis in Health Policy
PUBH 6410	Global Health Study Design
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6412	Global Health Quantitative Research Methods
PUBH 6488	Cost-effectiveness Analysis in Public Health and Health Care
PUBH 6489	Evaluation of Food and Nutrition Programs and Policies
PUBH 6504	Social and Behavioral Science Research Methods
PUBH 6530	Qualitative Methods in Health Promotion
PUBH 6533	Design and Conduct of Community Health Surveys
PUBH 6534	Community-Based Participatory Research
PUBH 6572	Marketing Research for Public Health
PUBH 6599	Topics in Prevention and Community Health (in topic Economic Evaluation for Health Promotion only)

PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
PUBH 6856	Advanced SAS for Public Health Research

Electives

6 credits in graduate-level elective courses selected in consultation with the advisor.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.
8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>), within their first semester of study.

11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF PUBLIC HEALTH: MPH@GW

Program Description

This distance education track for the master of public health (MPH) degree emphasizes local, national, and global health practice. The program emphasizes interdisciplinary teaching, and focuses on core competencies/skills and uses cases/other materials from both the U.S. and abroad. The pedagogy allows students to tailor their education to community level, national, or global interests in the U.S. and countries around the world, emphasizing interdisciplinary public health competencies, including biostatistics and epidemiology; cultural competency; health communication; leadership; professionalism; planning, implementation and evaluation methods; public health biology; and systems thinking.

The MPH@GW track is taught in 10-week quarters across the calendar year (4 quarters per year).

Mission

Provide a practice-oriented MPH curriculum that enables graduates to be leaders in the design of population and community health programs in the US and globally.

Visit the program website (<http://publichealthonline.gwu.edu>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 17 credits in core courses, 10 credits in program-specific courses, 16 credits in elective courses, and a 2-credit culminating experience.

Code	Title	Credits
Required		
Core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	

PUBH 6012	Fundamentals of Health Policy
PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
Program-specific	
PUBH 6052	Practical Data Management and Analysis for Public Health
PUBH 6442	Comparative Global Health Systems
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6503	Introduction to Public Health Communication and Marketing
Culminating experience	
PUBH 6060	MPH@GW Culminating Experience I
PUBH 6061	MPH@GW Culminating Experience II
Electives	

16 credits in any graduate-level SPH courses.

Visit the MPH@GW website (<https://publichealthonline.gwu.edu/academics/one-year-mph-program/>) for an updated list of elective options.

Graduation Requirements

1. Graduate credit requirement: 45 graduate credits.
2. Course requirements: Successful completion of core and program-specific courses.
3. Practicum Requirement: Students are required to fulfill all requirements of the Applied Practice Experience (Practicum) to receive credit for PUBH 6022.
4. Interprofessional Education Experience (IPE): Students are required to enroll and participate in an authorized IPE activity (PUBH 6023).
5. Minimum grade-point requirement: minimum 3.0 (B average) cumulative grade-point average.
6. Time limit requirement: The degree must be completed within five years.
7. Transfer credit policy: With approval, up to 12 graduate credits that have not been applied to any previous graduate degree may be transferred to the master of public health program. External credits must have been earned from an accredited institution in the last three years with a minimum grade of 3.0 (B) in each course. Students in SPH graduate certificate programs can transfer as many credits earned

toward the certificate to the MPH degree as meet MPH degree requirements, to a maximum of 18 credits.

8. Graduate certificate students wishing to transfer to a degree program may apply to do so after completion of three or more courses with a cumulative GPA of 3.0 via the online change of concentration petition (<https://publichealth.gwu.edu/academics/forms/>). A grade of B or above is required for a specific course to be eligible for transfer.
9. CITI Training requirement: All students are required to complete training regarding human subject protection regulation and the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
10. Integrity Quiz and Plagiarism requirement: All students are required to review the George Washington University Code of Academic Integrity (<https://studentconduct.gwu.edu/code-academic-integrity/>) and take the SPH Academic Integrity Quiz at GWSPH Source (<https://source.publichealth.gwu.edu/user/login/?destination=node/193>). within their first semester of study.
11. Professional Enhancement requirement: Students must participate in eight hours of public health-related lectures, seminars, and symposia, related to their field of study.

MASTER OF SCIENCE IN THE FIELD OF BIOSTATISTICS

Program Director and Academic Advisor A. F. Elmi

The master of science (MS) degree program in biostatistics is jointly administered by the Department of Statistics in the Columbian College of Arts and Sciences (CCAS) and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health (SPH) and its associated research facility, The Biostatistics Center. This degree program is accredited by the Middle States Commission on Higher Education through the CCAS and by the Council on Education for Public Health through the SPH Regulations, and requirements for this graduate degree have been designed to be compatible with policies and scholarship requirements of both CCAS and SPH. The degree is conferred by Columbian College.

Visit the program website (<http://publichealth.gwu.edu/programs/biostatistics-ms/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 18 credits in core statistics courses, 7 credits in core public health courses, 6 credits in elective courses, and 2 credits in consulting.

Admission Considerations

The courses listed below (or equivalents) are prerequisites for admission consideration and must appear on the student's

transcript. Students may apply to the program only after they have fulfilled this requirement:

Code	Title	Credits
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	

Applicants lacking the courses listed below (or equivalents) are considered for admission; however, if admitted, the student is required to complete these courses within two semesters of matriculation in the program. Credit earned in these courses does not count toward the 33 credits required for the degree and grades earned are not reflected in the overall grade-point average.

Code	Title	Credits
MATH 2184	Linear Algebra I	
MATH 2233	Multivariable Calculus	
One of the following:		
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis *	
STAT 2183	Intermediate Statistics Lab/Packages	

*Previously PUBH 6249.

Degree Requirements

Code	Title	Credits
Required statistics courses		
PUBH 6266	Biostatistical Methods	
or PUBH 8877	Generalized Linear Models in Biostatistics	
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II	
STAT 6210	Data Analysis	
STAT 6227	Survival Analysis	
STAT 6255	Clinical Trials	
or PUBH 6866	Principles of Clinical Trials	
Public health courses		
PUBH 6003	Principles and Practices of Epidemiology	
2 credits (two courses) selected from the following:		

PUBH 6262	Introduction to Geographic Information Systems
PUBH 6263	Advanced GIS
PUBH 6850	Introduction to SAS for Public Health Research
PUBH 6851	Introduction to R for Public Health Research
PUBH 6852	Introduction to Python for Public Health Research
PUBH 6856	Advanced SAS for Public Health Research
2 additional credits in any PUBH course(s) in the 6800 range.	
Approved Electives	
6 credits in elective courses selected from the following:	
PUBH 6854	Applied Computing in Health Data Science
PUBH 6859	High Performance and Cloud Computing
PUBH 6860	Principles of Bioinformatics
PUBH 6861	Public Health Genomics
PUBH 6862	Applied Linear Regression Analysis for Public Health Research
PUBH 6863	Applied Meta-Analysis
PUBH 6865	Applied Categorical Data Analysis
PUBH 6879	Propensity Score Methods for Causal Inference in Observational Studies
PUBH 6884	Bioinformatics Algorithms and Data Structures
PUBH 6886	Statistical and Machine Learning for Public Health Research
PUBH 6887	Applied Longitudinal Data Analysis for Public Health Research
STAT 3187	Introduction to Sampling
STAT 4181	Applied Time Series Analysis
STAT 4188	Nonparametric Statistics Inference
STAT 6197	Fundamentals of SAS Programming for Data Management
STAT 6214	Applied Linear Models

STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6225	Longitudinal Data Analysis
STAT 6231	Categorical Data Analysis
STAT 6240	Statistical Data Mining
STAT 6242	Modern Regression Analysis
STAT 6252	Statistical Methods in Bioinformatics and Computational Biology
STAT 6254	Statistical Genetics
STAT 6287	Sample Surveys
STAT 6289	Topics in Statistics
STAT 8226	Advanced Biostatistical Methods
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8281	Advanced Time Series Analysis
STAT 8288	Topics in Sample Surveys

Consulting

PUBH 6883	Biostatistics Consulting Practicum
PUBH 6869	Principles of Biostatistical Consulting

Master's Comprehensive Examination

Students must successfully complete a master's comprehensive examination, a written examination in the field of biostatistics and is based on the material covered in PUBH 6266 or PUBH 8877. The examination is administered by the faculty of the Department of Biostatistics and Bioinformatics in the Milken Institute School of Public Health.

MASTER OF SCIENCE IN THE FIELD OF EPIDEMIOLOGY

Program Director S.D. Cleary

The Department of Epidemiology and Biostatistics offers the master of science (MS) in the field of epidemiology degree program. The goals of the program are to prepare students for careers in industry or academia and for continued study in a doctoral program. The program includes coursework

that focuses on theoretical and applied epidemiological and statistical methods.

Applicants must have completed 6 credits in calculus I and II and 8 credits in human biology prior to beginning the program. Prior completion of 3 credits of linear algebra and 3 credits of SAS are strongly recommended.

Visit the program website (<http://publichealth.gwu.edu/programs/epidemiology-ms/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 33 credits, including 13 credits in public health core courses, 6 credits in statistics core courses, 2 credits in program-specific courses, 9 credits in elective courses, and 3 credits consulting and thesis.

Preparatory requirements

The courses listed below (or equivalents) are prerequisites for admission consideration, and must appear on the student's transcript.

Code	Title	Credits
BISC 1115	Introductory Biology: Cells and Molecules	
BISC 1116	Introductory Biology: The Biology of Organisms	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	

Additional course requirements

Applicants who have not already completed one of the courses listed below (or equivalents to these GW courses) are considered for admission, but are eligible for conditional admission only. In such cases, students are expected to satisfactorily complete one of the courses within two semesters from matriculation in the program.

Code	Title	Credits
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis	
or STAT 2183	Intermediate Statistics Lab/Packages	

Program requirements

Code	Title	Credits
Public health core		
PUBH 6003	Principles and Practices of Epidemiology ¹	
PUBH 6247	Design of Health Studies ¹	
PUBH 6252	Advanced Epidemiology Methods ¹	
PUBH 6080	Pathways to Public Health (required of students without an MPH degree only)	
4 additional credits in any graduate-level EXNS or PUBH courses.		
Statistics core		
One of the following two-course, 6-credit sets:		
PUBH 6264 & PUBH 6260	Quantitative Methods and Advanced Data Analysis for Public Health	
or PUBH 6865	Applied Categorical Data Analysis	
STAT 4157 & STAT 4158	Introduction to Mathematical Statistics I and Introduction to Mathematical Statistics II ²	
STAT 6201 & STAT 6202	Mathematical Statistics I and Mathematical Statistics II	
Program-specific		
At least one course (2 credits) selected from the following:		
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research	
PUBH 6244	Cancer Epidemiology	
PUBH 6245	Infectious Disease Epidemiology	
PUBH 6250	Epidemiology of HIV/AIDS	
PUBH 6259	Epidemiology Surveillance in Public Health	
Electives		
9 credits in any graduate-level PUBH courses. Other courses may be substituted with prior approval of the advisor's approval. ³		
Consulting and thesis		
PUBH 6869	Principles of Biostatistical Consulting	
PUBH 6999	Master of Science in Epidemiology Thesis	

¹ Basis for master's general comprehensive examination.

² In lieu of STAT 4157 and STAT 4158, students interested in applying to the PhD program in epidemiology may take STAT 6201 Mathematical Statistics I and STAT 6202 Mathematical Statistics II with the advisor's approval.

³ Undergraduate-level courses may be approved for graduate credit provided additional work assigned.

MASTER OF SCIENCE IN THE FIELD OF EXERCISE SCIENCE WITH A CONCENTRATION IN STRENGTH AND CONDITIONING

Program Director T.A. Miller

The mission of the program is to provide formal graduate level academic instruction in the science and theory of resistance training, as well as to promote student production of research that directly relates to the neuromuscular adaptations involved with resistance training.

This program is primarily delivered online. Contact the Program Director for additional information.

Visit the program website (<https://publichealth.gwu.edu/programs/strength-and-conditioning-ms/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 36 credits, including 17 credits in core courses, 10 credits in program-specific courses, 3 credits in elective courses, and a 6-credit internship.

Code	Title	Credits
Prerequisites		
An undergraduate course in exercise physiology must be completed, with a minimum grade of B, prior to beginning the program.		
Core		
EXNS 6202	Advanced Exercise Physiology I	
EXNS 6203	Advanced Exercise Physiology II	
EXNS 6207	Psychological Aspects of Sport and Exercise	
EXNS 6208	Physical Activity: Physiology and Epidemiology	
PUBH 6002	Biostatistical Applications for Public Health	

PUBH 6619 Fundamentals of Nutrition Science

PUBH 6080 Pathways to Public Health

Program-specific

EXNS 6220 Power Training for Sports Performance

EXNS 6221 Science and Theory of Training

EXNS 6222 Current Topics in Strength and Conditioning

EXNS 6223 Biomechanical Analysis

Electives

3 credits in course(s) approved by the program director.

Culminating experience

EXNS 6233 Graduate Internship

Comprehensive examination

Successful completion of a comprehensive examination is required.

Graduation requirements

1. Graduate credit requirement: 36 graduate credits
2. Course requirements: successful completion of core and program specific courses
3. Examination requirement: pass the American College of Sports Medicine Clinical Exercise Specialist® certification examination (clinical exercise physiology only)
4. Grade point requirement: 3.0 (*B* average) overall grade-point average
5. Time limit requirement: the degree must be completed within five years
6. Transfer credit policy: up to 12 graduate credits that have not been applied to a previous graduate degree may be transferred to the MSES Courses need to have been taken within the past three years from an accredited institution with a grade of *B* or above

MASTER OF SCIENCE IN THE FIELD OF PUBLIC HEALTH MICROBIOLOGY AND EMERGING INFECTIOUS DISEASES

Program Co-Directors M. Ghosh and I. Kuo

Mission

The mission of the master of science (MS) in the field of public health microbiology and emerging infectious diseases degree program is to provide training to a new generation of public

health professionals to expand knowledge and expertise in the areas of disease mechanisms, with an emphasis on microbial pathogens, the use and application of modern biotechnologies, and in epidemiologic skills relevant to the prevention and control of problems in the community arising from infectious diseases.

Graduates of the MS program have an in-depth understanding of the major laboratory, clinical, and public health aspects of humankind's microbial pathogens, and acquire epidemiologic skills relevant to the prevention and control of problems arising from infectious diseases and modern biotechnologies. Areas of emphasis include the design and analysis of epidemiologic data; emerging infections; tropical diseases; and applications of genomics, proteomics, and bioinformatics. MS graduates are employed in academic and industrial research laboratories, international health agencies, NGOs, and private consulting groups. In addition, they may work in federal, state, and local public health agencies or state and local public health laboratories where their technical expertise and population-based perspective are extremely useful. Students earning this degree help meet a national demand that has reached critical proportions for a trained workforce in biodefense and emerging infections, and an international demand for training in diseases that affect the developing countries.

Goals

The goals of the MS program in the field of public health microbiology and emerging infectious diseases are to ensure that graduates:

- Identify the biological complexities of microbial pathogens and the diseases they cause
- Recognize the major epidemiologic and clinical features of microbial disease
- Identify how new biotechnologies (including genomics, proteomics, and bioinformatics) can be applied to the study and control of microbial pathogens
- Develop an in-depth understanding of epidemiologic principles and practice
- Apply the principles of epidemiology, microbiology, and public health practice toward the detection, surveillance, investigation, and control of microbial diseases

Visit the program website (<https://publichealth.gwu.edu/programs/public-health-microbiology-and-emerging-infectious-diseases-ms/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits, including 10 credits in foundational core courses, 23 credits in program-specific courses, 8 credits in elective courses, and 4 credits in field/laboratory experience and final project.

Code	Title	Credits		
Required				
Foundation courses			PUBH 6238	Molecular Epidemiology
PUBH 6002	Biostatistical Applications for Public Health		PUBH 6239	Epidemiology of Foodborne and Waterborne Diseases
PUBH 6003	Principles and Practices of Epidemiology		PUBH 6240	Pediatric HIV/AIDS
PUBH 6007	Social and Behavioral Approaches to Public Health		PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research
PUBH 6275	Essential Public Health Laboratory Skills		PUBH 6243	Topics in Clinical Epidemiology and Public Health: Reading the Research
PUBH 6080	Pathways to Public Health		PUBH 6250	Epidemiology of HIV/AIDS
Program-specific courses			PUBH 6252	Advanced Epidemiology Methods
PUBH 6245	Infectious Disease Epidemiology		PUBH 6253	Issues in HIV Care and Treatment
PUBH 6247	Design of Health Studies		PUBH 6255	Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics
PUBH 6259	Epidemiology Surveillance in Public Health		PUBH 6263	Advanced GIS
PUBH 6262	Introduction to Geographic Information Systems		PUBH 6271	Disaster Epidemiology
PUBH 6276	Public Health Microbiology		PUBH 6272	Epidemiology of Infectious Agents Associated with Human Cancer
PUBH 6278	Public Health Virology		PUBH 6282	Introduction to R Programming
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis		PUBH 6299	Topics in Epidemiology (Epidemiology of Sexually Transmitted Infections) *
PUBH 6861	Public Health Genomics		PUBH 6299	Topics in Epidemiology (HIV Prevention Epi and Methods) *
MICR 8210	Infection and Immunity		PUBH 6299	Topics in Epidemiology (Cancer Immunotherapy) *
Electives			PUBH 6299	Topics in Epidemiology (Public Health Lab Response to EID) *
8 credit in courses selected from the following and/or other courses approved in advance by the advisor.			PUBH 6299	Topics in Epidemiology (Next Gen Sequencing Laboratory Skills) *
PUBH 6011	Environmental and Biological Foundations of Public Health		PUBH 6455	Global Vaccinology
PUBH 6127	Introduction to Environmental Health Microbiology		PUBH 6484	Prevention and Control of Vector Borne Diseases
PUBH 6199	Topics in Environmental and Occupational Health (Microbiomes and Microbial Ecology in Public Health) *		PUBH 6486	Global Health Programs and Approaches to the Control of Infectious Diseases
PUBH 6233	Epidemiologic Principles and Practice of Disease Eradication		MICR 6292	Tropical Infectious Diseases
PUBH 6234	Epidemiologic Methods in Neglected Tropical Disease Control		MICR 8230	Molecular and Cellular Immunology
			Field/laboratory experience and final project	
			PUBH 6016	Field/Laboratory Experience

PUBH 6280	Microbiology and Emerging Infectious Diseases Final Project
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*For PUBH 6199 and PUBH 6299, only the specified topics count toward program requirements.

MASTER OF SCIENCE IN THE FIELD OF MANAGEMENT OF HEALTH INFORMATICS AND ANALYTICS

Program Director P. MacTaggart

Rising demand in the field of health informatics can be attributed to the dramatic increase in biological and clinical data, as well as pressure to have better patient outcomes. Due to massive systematic changes and government mandates, it is critical, and often mandatory, that healthcare providers integrate new technologies to increase patient satisfaction and continuously search for new ways to leverage data that will improve public health.

The master of science in health informatics and analytics program (HealthInformatics@GW), tailored for current managers and executives in healthcare, teaches students to look at healthcare through a new lens and develop improvements that impact organizational, operational and medical needs for providers and patients alike. Graduates acquire the ability to effectively translate data that will improve health care decisions and develop an expertise in areas such as health policy, community health analytics, and health innovation and disruption. They also gain skills in project management, business intelligence, health innovation, predictive analysis and the Internet of Things.

Visit the program website (<https://publichealthonline.gwu.edu/form-mhi/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 45 credits in required courses, including 3 credits in immersion experiences.

Code	Title	Credits
Required		
HSML 6264	Health Care Management and Strategy	5
HSML 6265	Medical Informatics and Decision Management	5
HSML 6280	Health Law and Policy	5
HSML 6290	Health IT Project Management	5
HSML 6291	Population and Community Health Analytics	5

HSML 6293	The Internet of Medical Things	3
HSML 6294	Research Analytics	0,3
HSML 6295	Predictive Analytics	3
HSML 6296	Health Innovations and Entrepreneurship	5
PUBH 6080	Pathways to Public Health	0
Immersion experiences		
HSML 6255	Leadership and Ethics I	1.5
HSML 6297	Health Informatics Simulation	1.5

Other requirements

Students take a 3-credit course in business intelligence offered through the Consortium of Universities of the Washington Metropolitan Area.

DUAL MASTER OF PUBLIC HEALTH AND DOCTOR OF MEDICINE

Program Director K. Bartholomew

The goal of the School of Medicine and Health Sciences (SMHS) is to graduate clinician-citizens who are prepared to deliver excellent patient care while pursuing scholarly inquiry, serving as leaders and advocates to address population-level issues that have an impact on individual health, and engaging with communities to improve health at the local, national, and global levels. To further these goals, SMHS and the Milken Institute School of Public Health (GWSPH) provide a dual medicine-public health program (MD/MPH) degree for medical students.

The MD degree is the primary degree in the dual program. Students receive the MD degree upon successful completion of all MD program requirements. In order to receive the MPH degree as part of the dual program, all requirements for both the MD and MPH must be successfully completed. For the MPH, students in the dual degree program follow [MPH@GW curriculum requirements](#).

Students may begin MPH coursework during the summer following either Year 1, Year 3, or Year 4 of the MD program. All MD/MPH students are granted a one-year leave of absence from the MD program to complete MPH curriculum requirements.

MD/MPH students may pursue any of the following residential MPH programs:

- Community oriented primary care
- Environmental health science and policy
- Epidemiology

- Global environmental health
- Global health policy
- Global health program design, monitoring, and evaluation
- Global health epidemiology and disease control
- Health policy
- Health promotion
- Maternal and child health
- Public health communication and marketing

REQUIREMENTS

Adjusted requirements for the MPH when taken as part of the dual program

Code	Title	Credits
Adjusted MPH core curriculum requirements		
Core (11 credits)		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
Program-Specific (10 credits)		
PUBH 6052	Practical Data Management and Analysis for Public Health	
PUBH 6442	Comparative Global Health Systems	
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6503	Introduction to Public Health Communication and Marketing	
Electives (9 credits)		
9 credits taken in any graduate-level PUBH courses.		

Cross crediting

Completion of 45 credits is required for the standalone MPH program. For the dual MD/MPH, students in both programs must complete a minimum of 30 credits in MPH coursework. Up to 15 credits from the MD curriculum may be cross credited between programs.

- **MPH core courses: 11 credits in MPH core courses are required instead of the 17 credits required for the standalone MPH**

MD/MPH students take 11 credits of the regular MPH@GW core coursework. In addition, they receive a total of 6 credits from cross crediting MD program coursework. These credits fulfill the requirement for the following MPH core courses: PUBH 6011 Environmental and Biological Foundations of Public Health (3 credits), PUBH 6012 Fundamentals of Health Policy (2 credits), and PUBH 6021 Essentials of Public Health Practice and Leadership I (1 credit).

- **MPH culminating experience: 2 credits are cross credited from MD coursework**

MD/MPH students satisfy the 2-credit MPH requirements in PUBH 6015 Culminating Experience by cross crediting of coursework MD coursework.

- **MPH program-specific requirements: 10 credits of PUBH-specific coursework**

MD/MPH students complete required program-specific MPH courses PUBH 6052, PUBH 6442, PUBH 6500, and PUBH 6503 (10 credits).

- **MPH elective requirement: 9 credits in PUBH course**

Students must take a minimum of 9 elective credits in any PUBH courses. The MPH program will accept up to 7 credits from the MD program to count toward additional MPH elective requirements.

- **Cross-counting MPH credits for MD Year 4 electives**

4 credits in MPH coursework taken in PUBH 6007 (2 credits) and PUBH 6009 (2 credits) are cross-counted as four weeks of MD Year 4 electives.

DUAL MASTER OF HEALTH ADMINISTRATION AND GRADUATE CERTIFICATE IN HEALTH CARE CORPORATE COMPLIANCE

Program Director J.H. Thorpe

The Milken Institute School of Public Health and the College of Professional Studies (CPS) offer a dual master of health administration (p. 1331) and graduate certificate program in corporate compliance (<https://cps.gwu.edu/healthcare-compliance/>) program. The 12 credits earned in CPS's graduate certificate program may be applied toward the MHA program elective requirements. All requirements for both programs must be fulfilled.

Visit the MHA program (p. 1331) and CPS graduate certificate program (<http://cps.gwu.edu/healthcare-compliance/>) websites for additional information.

DUAL MASTER OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY AND GRADUATE CERTIFICATE IN HEALTH CARE CORPORATE COMPLIANCE

Program Director J. H. Thorpe

Given the dramatic changes in health care policy and regulation over the past decade, the role of compliance professionals has become increasingly important in the health care industry. No other position can have so profound an impact on your health care organization's success—or failure. Legislation such as the Health Insurance Portability and Accountability Act (HIPAA) and the federal Anti-Kickback and Stark Laws have created the need for university-based credentials for this increasingly specialized—and increasingly complicated—field.

The College of Professional Studies (CPS) offers a unique 12-credit graduate certificate program providing a comprehensive health care corporate compliance education. Drawing faculty and expertise from both the Department of Health Policy and Management in the Milken Institute School of Public Health and a leading health care law firm in Washington, DC, the program offers education in health care laws and regulations as well as tools and strategies for creating effective corporate compliance programs.

Visit the program website (<https://publichealth.gwu.edu/programs/joint-degree-healthcare-corporate-compliance-certificate/>) for additional information.

REQUIREMENTS

Program Requirements

Designed for working professionals, the 12-credit graduate certificate in health care corporate compliance (GW HCC Program or Program) provides students with a uniquely comprehensive education in health care corporate compliance. The Program is designed for current or aspiring corporate compliance officers and other working in compliance-related fields. The course of study, offered in just over seven months, is divided into three segments: five-day, in-classroom residency at the Graduate Education Center in Alexandria, VA (3 credits); six-month, online distance learning segment (6 credits); and three-day, in-classroom capstone back in Alexandria, VA (3 credits).

The graduate certificate in health care corporate compliance can be awarded in conjunction with a Master of Public Health in the field of health policy. The 12 credits earned through the

graduate certificate in health care corporate compliance may be applied toward this MPH.

All other degree requirements for the MPH program must be fulfilled as noted on the MPH in the field of health policy program page (p. 1346).

College of Professional Studies

The graduate certificate in health care corporate compliance is awarded through the College of Professional Studies.

Visit the CPS website (<http://cps.gwu.edu/healthcare-compliance/>) for more information.

JOINT MASTER OF SCIENCE IN HEALTH SCIENCES IN THE FIELD OF PHYSICIAN ASSISTANT AND MASTER OF PUBLIC HEALTH

Program Director H. Straker

Mission Statement

As the U.S. health care system continues to evolve, market forces and changing personnel requirements create new and expanding roles for health care professionals. The joint physician assistant-master of science in health sciences/master of public health PA-MSHS/MPH program strives to fill the need for a new type of health care professional: one who has both the depth of medical knowledge and the range of leadership and policy skills to meet the challenges of future practice. Based in both the Milken Institute School of Public Health (SPH) Department of Prevention and Community Health, and the School of Medicine and Health Sciences (SMHS), the PA-MSHS/MPH program presents a graduate curriculum that blends two important traditional paradigms of health care—the biomedical and the preventive. Health care professionals in the future U.S. health system must be prepared as competent and caring clinicians, as well as bring a broad view of population health and prevention to their work. Graduates of the GW PA/MPH program are leaders in clinical practice in primary care and preventive medicine and have the preparation to assume high level positions in education, research, and policy.

Goals

The PA-MSHS/MPH provides the opportunity for students to obtain the competencies necessary to succeed in the rapidly evolving American and global health systems.

The major goals of GW's PA-MSHS/MPH program are to:

- Recruit diverse and intellectually curious students and develop in them a strong clinical medical and prevention knowledge base necessary to deliver the highest quality patient-centered health care in a variety of clinical settings worldwide;

- Educate future health care professionals who are competent clinicians who can bring a population health orientation to their practice setting;
- Develop practitioners for the future who integrate concepts of prevention, community-oriented primary care, and population health;
- Graduate collaborative clinicians who serve the health care needs of a worldwide community with intelligence, compassion, and integrity;
- Foster analytic thinking skills such that graduates are able to perform a wide range of clinical tasks working with physicians, as well as assessing community health problems and addressing population health needs;
- Nurture a sensitivity and respect for the cultural and personal beliefs of all patients and an understanding of how social, economic, and other system forces can impact health and health care and how these impact patient morbidity and mortality;
- Encourage graduates to be responsive to the needs of patients and society and advocate for quality patient care regardless of patient population;
- Graduate practitioners who will have the information technology and research skills necessary to access and interpret the medical literature and support their ongoing professional development; and
- Expect graduates to practice collaboratively, professionally, legally, ethically, and with integrity.

The PA-MSHS/MPH program draws from a faculty in both the School of Medicine and Health Sciences and the Milken Institute SPH to provide instruction in a wide range of subjects in medicine, public health, and professional leadership.

The purpose of the PA-MSHS/MPH program is to provide future clinicians with a wide range of skills in leadership, policy development, and community and preventive medicine. Students in the program prepare as clinicians fulfilling all of the requirements for national certification as a physician assistant (PA) in the GW Physician Assistant program. In addition, public health coursework provides an orientation to population and community health. For example, in the Community Oriented Primary Care (COPC) track, students acquire skills in community health assessment, community based interventions, and the application of COPC principles in community based practice settings. GW's SPH coursework in health care administration, management, and health care economics prepares students to be leaders in a wide variety of clinical settings, office practices, outpatient clinics, community-based health centers, and health care institutions. Students are also exposed to the formulation of health policy.

Set in the center of the health policy in the nation, the PA-MSHS/MPH program affords students the chance to interact with individuals in both the public and private sector who are involved in policy research, practice, and legislation.

Visit the MPH program website (<http://publichealth.gwu.edu/academics/graduate/masters-programs/>) for additional information.

Visit the PA program website (<https://smhs.gwu.edu/physician-assistant/pa-program/>) for additional information.

Admissions Requirements

Prospective students interested in the joint PA/MPH program receive correspondence from both the School of Medicine and Health Sciences (for the PA-MSHS) and the Milken Institute SPH and School of Medicine and Health Services (for the MPH) regarding the completion of their application and admissions decisions. Should the applicant be accepted to one degree program and not the other, they may accept the admissions offer from the program to which they were accepted, as the decisions are made separately.

1. Submit the PA application (CASPA and PA secondary application) according to instructions. (<http://smhs.gwu.edu/pas/program/prospective-students/admissions/>)
2. Submit the PA secondary application within two weeks of submitting the CASPA.
3. October 1 is the deadline for complete applications to include GRE score receipt.

To save the applicant time and application fees, the School of Medicine and Health Services provides a copy of application materials to the Milken Institute SPH admissions office. Applicants should not complete SOPHAS application or the SPH secondary application, as this delays the processing of the application and results in increased application fees.

COMMUNITY-ORIENTED PRIMARY CARE

Community-Oriented Primary Care Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 17 credits in public health core courses, and 21 credits in department and program specific coursework as outlined.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	

PA 6104	Integration into Clinical Concepts I
PA 6105	Integration into Clinical Concepts II
PA 6106	Integration into Clinical Concepts III
PA 6109	Foundations of Medicine
PA 6111	Evidence Based Practice for PA/MPH Students
PA 6112	Clinical Medicine I
PA 6113	Clinical Medicine II
PA 6116	Clinical Skills I
PA 6117	Clinical Skills II
PA 6119	Health, Justice, and Society II
PA 6120	Human Behavior
PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Medicine Clinical Practicum
PA 6262	Primary Care Practicum
PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public health (community-oriented primary care) curriculum

Code	Title	Credits
Required		
Public health core		

PUBH 6002 Biostatistical Applications for Public Health

PUBH 6003 Principles and Practices of Epidemiology

PUBH 6007 Social and Behavioral Approaches to Public Health

PUBH 6011 Environmental and Biological Foundations of Public Health

PUBH 6012 Fundamentals of Health Policy

PUBH 6021 Essentials of Public Health Practice and Leadership I

PUBH 6022 Essentials of Public Health Practice and Leadership II

PUBH 6023 Interprofessional Education Experience

Prevention and community health

PUBH 6500 Planning and Implementing Health Promotion Programs

PUBH 6501 Program Evaluation

PUBH 6015 Culminating Experience

Community-oriented primary care track

PUBH 6504 Social and Behavioral Science Research Methods

PUBH 6510 Community-Oriented Primary Care Principles and Practice

PUBH 6512 Community-Oriented Primary Care Policy and Issues

PUBH 6513 Community Health Management

PUBH 6516 Community Health Information Resources

PUBH 6591 PA/MPH Clinical Leadership Seminar

Electives

2 credits in PUBH courses.

ENVIRONMENTAL HEALTH SCIENCE AND POLICY

Environmental Health, Science, and Policy

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 17 credits

in public health core courses, and 21 credits in department and program specific coursework as outlined.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	
PA 6263	Surgical Inpatient Clinical Practicum	
PA 6264	Women's Health Clinical Practicum	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Practicum	
PA 6267	Behavioral Medicine Clinical Practicum	
PA 6268	Elective Clinical Practicum	
PA 6300	Introduction to Professional Practice	

PHAR 6207 Basic Principles of Pharmacology

PHAR 6208 Pharmacology in Disease
Pathophysiology For Health Sciences
Students

PHYL 6211 Physiology for Health Sciences Students

Master of public health curriculum

Code	Title	Credits
Required		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
PUBH 6121	Environmental and Occupational Epidemiology	
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs	
PUBH 6123	Toxicology: Applications for Public Health Policy	
PUBH 6124	Risk Management and Communication	
PUBH 6126	Assessment and Control of Environmental Hazards	
PUBH 6137	Environmental and Occupational Health Culminating Experience I	
PUBH 6138	Environmental and Occupational Health Culminating Experience II	
PUBH 6591	PA/MPH Clinical Leadership Seminar	

PUBH 6853 Use of Statistical Packages for Data Management and Data Analysis

Elective

One 1-credit PUBH course selected with the advisor's approval.

EPIDEMIOLOGY

Epidemiology Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 17 credits in public health core courses, and 21 credits in department and program specific coursework as outlined.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	
PA 6263	Surgical Inpatient Clinical Practicum	

PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public health (epidemiology) curriculum

Code	Title	Credits
Required		
MPH core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Epidemiology track		
PUBH 6015	Culminating Experience	
PUBH 6247	Design of Health Studies	
PUBH 6252	Advanced Epidemiology Methods	
PUBH 6260	Advanced Data Analysis for Public Health	

PUBH 6591	PA/MPH Clinical Leadership Seminar
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis
Selective	
4 credits from the following:	
PUBH 6237	Chronic Disease Epidemiology
PUBH 6241	Nutritional Epidemiology
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research
PUBH 6244	Cancer Epidemiology
PUBH 6245	Infectious Disease Epidemiology
PUBH 6248	Epidemiology of Aging
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epidemiology Surveillance in Public Health
Electives	
2 credits in graduate-level Public Health courses.	

GLOBAL ENVIRONMENTAL HEALTH

Global Environmental Health Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 17 credits in public health core courses, and 21 credits in department and program specific coursework as outlined.

Code	Title	Credits
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I *	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	

PA 6112	Clinical Medicine I
PA 6113	Clinical Medicine II
PA 6116	Clinical Skills I
PA 6117	Clinical Skills II
PA 6119	Health, Justice, and Society II
PA 6120	Human Behavior
PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Medicine Clinical Practicum
PA 6262	Primary Care Practicum
PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum *
PA 6300	Introduction to Professional Practice
PHYL 6211	Physiology for Health Sciences Students
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
Public Health (MPH) Curriculum (38 credits)	
PUBH 6002	Biostatistical Applications for Public Health
PUBH 6003	Principles and Practices of Epidemiology
PUBH 6007	Social and Behavioral Approaches to Public Health
PUBH 6009	Fundamentals of Public Health Program Evaluation
PUBH 6011	Environmental and Biological Foundations of Public Health
PUBH 6012	Fundamentals of Health Policy

PUBH 6021	Essentials of Public Health Practice and Leadership I
PUBH 6022	Essentials of Public Health Practice and Leadership II
PUBH 6023	Interprofessional Education Experience
PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6128	Global Environmental and Occupational Health
PUBH 6400	Global Health Frameworks
PUBH 6435	Global Health Program Development and Implementation
PUBH 6411	Global Health Qualitative Research Methods
PUBH 6137	Environmental and Occupational Health Culminating Experience I
PUBH 6138	Environmental and Occupational Health Culminating Experience II
PUBH 6591	PA/MPH Clinical Leadership Seminar
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Electives

1 credit in PUBH courses selected with the advisor's approval.

Up to 15 credits may be taken online in the MPH@GWU program.

* PA 6104 Integration into Clinical Concepts I may be cross-credited for PA 6268 Elective Clinical Practicum with advanced approval by Practicum Director.

HEALTH POLICY

Health Policy Track

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 17 credits in public health core courses, and 21 credits in department and program specific coursework as outlined.

Physician Assistant Curriculum

Code	Title	Credits
ANAT 6215	Anatomy for Physician Assistant Students	

PA 6101	Clinical Assessment I
PA 6102	Clinical Assessment II
PA 6103	Clinical Assessment III
PA 6104	Integration into Clinical Concepts I
PA 6105	Integration into Clinical Concepts II
PA 6106	Integration into Clinical Concepts III
PA 6109	Foundations of Medicine
PA 6112	Clinical Medicine I
PA 6113	Clinical Medicine II
PA 6116	Clinical Skills I
PA 6117	Clinical Skills II
PA 6119	Health, Justice, and Society II
PA 6120	Human Behavior
PA 6121	Clinical Specialties
PA 6122	Role of PA in American Health Care
PA 6259	Introduction to Clinical Education
PA 6261	Inpatient Medicine Clinical Practicum
PA 6262	Primary Care Practicum
PA 6263	Surgical Inpatient Clinical Practicum
PA 6264	Women's Health Clinical Practicum
PA 6265	Pediatrics Clinical Practicum
PA 6266	Emergency Medicine Clinical Practicum
PA 6267	Behavioral Medicine Clinical Practicum
PA 6268	Elective Clinical Practicum
PA 6300	Introduction to Professional Practice
PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public Health (Health Policy) Curriculum

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Health policy track		
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Introduction to Health Policy Analysis	
PUBH 6320	Advanced Health Policy Analysis	
PUBH 6325	Federal Policymaking and Policy Advocacy	
PUBH 6335	Public Health and Law	
or PUBH 6330	Health Services and Law	
PUBH 6340	Health Economics and Finance	
PUBH 6350	Health Policy Capstone	
PUBH 6591	PA/MPH Clinical Leadership Seminar (I)	
Electives		
3 credits in graduate-level Public Health courses.		

MATERNAL AND CHILD HEALTH

The following requirements must be fulfilled: 138 credits, including 100 credits in physician assistant courses, 15 credits

in public health core courses, and 23 credits in department and program specific coursework as outlined.

Physician assistant curriculum

Code	Title	Credits
Required		
ANAT 6215	Anatomy for Physician Assistant Students	
PA 6101	Clinical Assessment I	
PA 6102	Clinical Assessment II	
PA 6103	Clinical Assessment III	
PA 6104	Integration into Clinical Concepts I	
PA 6105	Integration into Clinical Concepts II	
PA 6106	Integration into Clinical Concepts III	
PA 6109	Foundations of Medicine	
PA 6111	Evidence Based Practice for PA/MPH Students	
PA 6112	Clinical Medicine I	
PA 6113	Clinical Medicine II	
PA 6116	Clinical Skills I	
PA 6117	Clinical Skills II	
PA 6119	Health, Justice, and Society II	
PA 6120	Human Behavior	
PA 6121	Clinical Specialties	
PA 6122	Role of PA in American Health Care	
PA 6259	Introduction to Clinical Education	
PA 6261	Inpatient Medicine Clinical Practicum	
PA 6262	Primary Care Practicum	
PA 6263	Surgical Inpatient Clinical Practicum	
PA 6264	Women's Health Clinical Practicum	
PA 6265	Pediatrics Clinical Practicum	
PA 6266	Emergency Medicine Clinical Practicum	
PA 6267	Behavioral Medicine Clinical Practicum	
PA 6268	Elective Clinical Practicum	
PA 6300	Introduction to Professional Practice	

PHAR 6207	Basic Principles of Pharmacology
PHAR 6208	Pharmacology in Disease Pathophysiology For Health Sciences Students
PHYL 6211	Physiology for Health Sciences Students

Public health (maternal and child health curriculum)

Code	Title	Credits
Required		
Public health core		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6021	Essentials of Public Health Practice and Leadership I	
PUBH 6022	Essentials of Public Health Practice and Leadership II	
PUBH 6023	Interprofessional Education Experience	
Prevention and community health		
PUBH 6500	Planning and Implementing Health Promotion Programs	
PUBH 6501	Program Evaluation	
PUBH 6015	Culminating Experience	
PUBH 6591	PA/MPH Clinical Leadership Seminar	
Maternal and Child Health track		
PUBH 6550	Maternal and Child Health I	
PUBH 6551	Maternal and Child Health II	
Required Program-Specific Electives- choose 6 credits from below		
PUBH 6552	Women's Health	
PUBH 6553	Adolescent Health	
PUBH 6563	Global Child Health	

PUBH 6561	Maternal and Child Health Policy Analysis
EXNS 6242	Nutrition Throughout the Life Cycle
PUBH 6359	Reproductive Health Policy
PUBH 6335	Public Health and Law
PUBH 6620	Designing Healthy Communities
PUBH 6503	Introduction to Public Health Communication and Marketing
PUBH 6452	Social and Behavior Change Communication in Middle- to Low-Income Countries
PUBH 6400	Global Health Frameworks

Electives

2 credits minimum (any graduate level course in SPH)

JOINT PUBLIC HEALTH AND LAW PROGRAMS

Program Contact J. Teitelbaum

The Milken Institute of School of Public Health (SPH), through its Hirsh Health Law and Policy Program, cooperates with the Law School to offer public health and law students multiple programs that foster an interdisciplinary approach to the study of health policy, health law, public health, and health care. Available joint programs include the master of public health (p. 1183) (MPH) and juris doctor (<https://www.law.gwu.edu/juris-doctor/>) (JD); MPH and master of laws (<https://www.law.gwu.edu/master-of-laws/>) (LLM); and JD or LLM and SPH certificate in various subject areas. LLM students may be enrolled in either the general or environmental law program at the Law School.

Application of credits between programs

For the JD/MPH, 8 JD credits are applied toward the MPH and up to 12 MPH credits may be applied toward the JD. For the LLM/MPH, 8 LLM credits are applied toward the MPH and up to 6 MPH credits may be applied toward the LLM. For the JD or LLM/SPH certificate programs, each school allows 6 credits to be applied toward the other's program.

Admission

Applicants to joint programs may apply for admission to SPH at the same time they apply to the Law School or after admission to the Law School. JD candidates who do not apply to both schools simultaneously are encouraged to apply for the MPH degree or certificate program by the end of March of their first year of law school. LLM candidates are encouraged to apply

to SPH when they apply to the Law School or during their first semester of study.

Applicants to a joint program must complete the application processes for both the Law School (JD or LLM degree) and for the School of Public Health (MPH degree or certificate).

Admission to the joint degree program requires admission to both schools. However, because admission to each school is separate and distinct, applicants who are accepted by one school but not the other are free to enroll in the school to which they have been accepted.

SPH (<http://publichealth.gwu.edu/admissions/graduate-admissions/>) and Law School (<http://www.law.gwu.edu/Admissions/Pages/Default.aspx>) applicants may apply online. Applicants must complete the SOPHAS application as indicated at the SPH admissions site, whether applying simultaneously to both schools or as a current GW Law student.

Program Costs

SPH coursework taken while enrolled as a full- or part-time law student is charged at the Law School tuition rate. The SPH tuition rate and fees are charged for semesters when no Law School courses are taken, including summer sessions.

Visit the Hirsh Program website (<http://publichealth.gwu.edu/programs/joint-jdllm-mphcertificate/>) for additional information.

REQUIREMENTS

MPH requirements in the joint degree programs

The course of study for the standalone MPH degree, in one of several focus areas, (<http://publichealth.gwu.edu/node/766/>) consists of 45 credits, including a supervised practicum. In the dual degree programs with the Law School, the Milken Institute School of Public Health (GWSPH) accepts 8 Law School credits toward completion of the MPH degree. Therefore, Juris doctor (JD) and master of laws (LLM) students in the dual program complete only 37 credits of coursework through GWSPH to obtain an MPH degree.

Depending upon the focus area in which a JD student chooses to study, as a rule, the joint degree can be earned in three-and-a-half or four years of full-time study, including summer enrollment. JD candidates selecting joint degree studies in one of the more science-oriented areas, such as epidemiology or biostatistics, should anticipate a four-year course of study. Candidates selecting a less scientific area, such as health policy or health management, can expect to complete their joint degrees in three-and-a-half years. Full-time LLM/MPH candidates should anticipate completing the joint degree in approximately two years. Part-time JD and LLM candidates pursuing joint degrees will have longer courses of study.

Graduate certificate requirements in the joint program

The course of study for the standalone graduate certificate in health policy requires a total of 18 credits. In the dual program, 6 credits taken in the JD or LLM curriculum may be counted

toward graduate certificate requirements. This allows law students to complete the certificate program by taking only 12 credits in GWSPH coursework.

The graduate certificate in public health—a generalist certificate—requires 15 credits as a standalone program. In the dual program, 2 credits taken in the JD or LLM curriculum may be used to replace in the certificate curriculum. This allows law students to complete the certificate program by taking only 13 credits in GWSPH coursework.

As degrees in joint programs are awarded simultaneously, requirements for both programs must be met before either degree is awarded.

DOCTORAL PROGRAMS

Doctoral programs

- Doctor of Philosophy in the field biostatistics (p. 1375)
- Doctor of Philosophy in the field of environmental health (p. 1378)
- Doctor of Philosophy in the field of epidemiology (p. 1379)
- Doctor of Philosophy in the field of exercise physiology and applied nutrition (p. 1381)
- Doctor of Philosophy in the field of health policy (p. 1382)
- Doctor of Philosophy in the field of social and behavioral sciences in public health (p. 1383)
- Doctor of Public Health in the field of environmental and occupational health (p. 1384)
- Doctor of Public Health in the field of global health (p. 1386)
- Doctor of Public Health in the field of health behavior (p. 1387)
- Doctor of Public Health in the field of health policy (p. 1388)

DOCTOR OF PHILOSOPHY IN THE FIELD OF BIOSTATISTICS

Program Director and Academic Advisor H. Liang (CCAS)

The PhD degree program in biostatistics provides doctoral training in the theory of probability, statistics focusing on biostatistical methodology. The 72-credit degree program is jointly administered by the Department of Statistics (<https://statistics.columbian.gwu.edu/>) in the Columbian College of Arts and Sciences (CCAS) and the Department of Epidemiology and Biostatistics in the Milken Institute School of Public Health (<http://publichealth.gwu.edu/>) (SPH) and its associated research facility, The Biostatistics Center. The program is accredited by the Middle States Commission on Higher Education through CCAS and by the Council on Education for Public Health through the Milken Institute SPH. Regulations and requirements for the graduate degree are compatible with

policies and scholarship requirements of both CCAS and SPH. The degree is conferred by CCAS.

Visit the program website (<https://publichealth.gwu.edu/programs/biostatistics-phd/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled:

The general requirements stated under Columbian College of Arts and Sciences, Graduate Programs (p. 77).

The requirements for the Doctor of Philosophy Program (p. 87).

Required preparatory courses

Code	Title	Credits
Undergraduate course requirements (or equivalents to these GW courses) for admission consideration:		
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
STAT 2118	Regression Analysis	
MATH 2233	Multivariable Calculus	

Code	Title	Credits
Additional course requirements* (or equivalents to these GW courses):		
MATH 2184	Linear Algebra I	
One of the following courses:		
PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis	
STAT 2183	Intermediate Statistics Lab/Packages	

*Applicants lacking these courses (or equivalents to these GW courses) will be considered for admission, but, if admissible, will be admitted conditionally with the expectation that these courses will be satisfactorily completed within two semesters following matriculation in the program. These credits do not count as credit toward the 72-credit graduation requirement nor are grades earned in additional courses reflected in the overall grade-point average.

Doctoral program requirements

The following requirements must be fulfilled: 72 credits, including a minimum of 51 credits in required and elective courses and a minimum of 12 credits in dissertation research; successful completion of the general and final examinations; and completion of the professional enhancement requirement. See below for additional information.

Code	Title	Credits
Required		
Statistics core		
STAT 6201	Mathematical Statistics I	
STAT 6202	Mathematical Statistics II (* Comprehensive Exam)	
STAT 6210	Data Analysis	
STAT 6213	Intermediate Probability and Stochastic Processes (* Comprehensive Exam)	
PUBH 8365	Design of Medical Studies	
PUBH 8366	Biostatistical Methods (* Comprehensive Exam)	
STAT 8226	Advanced Biostatistical Methods	
STAT 6227	Survival Analysis	
STAT 8263	Advanced Statistical Theory I	
STAT 6218	Linear Models	
Public health core		
PUBH 6003	Principles and Practices of Epidemiology	
One of the following:		
PUBH 6247	Design of Health Studies	
PUBH 6299	Topics in Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
or PUBH 6006		
Electives		
9 credits in electives from the following approved lists of STAT and PUBH courses.		
Approved statistics electives (at least 3 credits must be selected from among the first three courses below):		
STAT 6231	Categorical Data Analysis	
STAT 8262	Nonparametric Inference	
STAT 6214	Applied Linear Models	
STAT 6207	Methods of Statistical Computing I	
STAT 6208	Methods of Statistical Computing II	

STAT 6215	Applied Multivariate Analysis I
STAT 6216	Applied Multivariate Analysis II
STAT 6217	Design of Experiments
STAT 6223	Bayesian Statistics: Theory and Applications
STAT 6242	Modern Regression Analysis
STAT 6287	Sample Surveys
STAT 6289	Topics in Statistics
STAT 8257	Probability
STAT 8258	Distribution Theory
STAT 8263	Advanced Statistical Theory I
STAT 8264	Advanced Statistical Theory II
STAT 8265	Multivariate Analysis
STAT 8273	Stochastic Processes I
STAT 8274	Stochastic Processes II
STAT 8281	Advanced Time Series Analysis
STAT 8288	Topics in Sample Surveys
BIOS 8998	Advanced Reading and Research (see advisor)

Approved public health electives:

PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research (recommended)
PUBH 6244	Cancer Epidemiology
PUBH 6245	Infectious Disease Epidemiology
PUBH 8419	Measurement in Public Health and Health Services

Consulting

Consulting courses may be waived by the Biostatistics Program Director, based on written documentation of prior equivalent coursework or relevant work experience. Waiver of the consulting course increases the total number of elective to be taken by the number of consulting credits waived.

PUBH 8283	Doctoral Biostatistics Consulting Practicum
PUBH 6258	Principles of Biostatistical Consulting

Dissertation research

BIOS 8999	Dissertation Research (taken for 6 to 24 credits)
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General and final examinations

The general examination is given in two parts:

- Part I is the qualifying exam, a written comprehensive examination based on the course content of STAT 6201, STAT 6202 (administered by faculty of the Department of Statistics), and PUBH 8366 (administered by the faculty of the Department of Epidemiology and Biostatistics).
- The qualifying examination is given over a two-day period in the beginning of the fall semester of every academic year and consists of one four-hour theory exam and one two-hour biostatistical methods/applications exam. Students are expected to take the comprehensive examination within 24 months from the date of enrollment in the program. A student who fails to pass the comprehensive examination may, with the approval of the faculty, repeat the examination the following year. Failure on the second attempt results in termination from the PhD program.
- All examination questions focus on material that a person seeking a PhD in biostatistics is expected to know, regardless of subsequent specialization. The examination encompasses material in core mathematical statistics –STAT 6201 and STAT 6202–and biostatistical methods courses–PUBH 8366–in the PhD program in biostatistics. Specifically,
 1. The theory portion of the exam–STAT 6201 and STAT 6202–is based on the first 10 chapters of Casella G and Berger RL (1990). *Statistical Inference*. Second Edition, Duxbury Press.
 2. The biostatistical methods portion of the exam –PUBH 8366–is based on chapters 1 to 8 of Lachin J.M. (2010) *Biostatistical Methods: The Assessment of Relative Risks*, 2nd Edition, Wiley.
- Part II, the research proposal, consists of an oral examination based on a written dissertation research proposal. As soon as feasible after successful completion of the comprehensive exam, students are encouraged to identify a dissertation advisor and a topic of research. The written dissertation proposal is then submitted to the student's Dissertation Research Committee, and the student makes an oral presentation of their proposal to the Committee. The Committee determines the student's readiness to pursue and successfully complete the proposed research, in addition to the appropriateness of the specific problem for dissertation-level research.

Upon successful completion of the required coursework and both parts of the general examination, the candidate is generally recommended to the Associate Dean for Graduate Affairs of the Columbian College of Arts and Sciences (CCAS)

for promotion to PhD candidacy—the dissertation research. A candidate must file an approved dissertation research plan with CCAS before being admitted to PhD candidacy. Prior to completion of the general examination, a student may register for at most 6 credits of BIOS 8999.

Consult with the Biostatistics Program Director or academic advisor for dissertation guidelines.

Professional enhancement requirement: 8 hours

Professional enhancement activities supplement the academic curriculum and help prepare students to participate actively in the professional community. They enhance practical knowledge and awareness of public health issues – either in general or in a student’s specific area of study.

Students can fulfill this requirement by attending workshops, seminars, or other relevant professional meetings, which are often held at the Milken Institute School of Public Health (SPH) and in the metropolitan Washington, DC, area. Examples of conference sponsors include the National Academy for State Health Policy, the Pan American Health Organization, the American Public Health Association, the American College of Healthcare Executives, the Area Health Education Center, the American College of Sports Medicine, and the National Athletic Trainer’s Association. Opportunities for professional enhancement are regularly publicized via the SPH Listserv and through the department or the biostatistics academic advisor.

Students must submit documentation of professional enhancement activities to the biostatistics academic advisor, which includes a **prior** approval, a description of the program agenda, and proof of attendance before applying for graduation.

DOCTOR OF PHILOSOPHY IN THE FIELD OF ENVIRONMENTAL HEALTH

Program Directors K. Applebaum, L. Price

The mission of the doctor of philosophy (PhD) in the field of environmental health program is to educate individuals focused on developing new knowledge in the methods or applications of environmental health sciences that translates to environmental public health policy and practice. Program scholars will advance knowledge in analysis and laboratory sciences.

Graduates can expect to be able to:

- Demonstrate skills across a wide range of epidemiologic and biostatistical theories and methods.
- Use knowledge in environmental public health risk sciences.
- Understand general and specialized concepts and methodologies for scientific research in environmental health.

- Understand and identify data that scientifically addresses environmental health disparity issues related to environmental justice, occupational exposures and global inequities in exposures and susceptibilities.
- Demonstrate ability to work in interprofessional settings, e.g., in collaboration with quantitative, environmental, physical, and social scientists.
- Understand and abide by guidelines for ethical research practice and responsible conduct of research.
- Understand how to identify and appropriately work with communities from which research subjects are drawn and/or those who are most impacted by the conduct and results of the research.
- Conduct independent research, analyze data, and communicate results.
- Disseminate research findings to scientific and lay audiences.

Visit the program website (<https://publichealth.gwu.edu/programs/environmental-health-phd/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 72 credits, including 43 credits in required courses, 15 credits in elective courses, and 14 credits in dissertation courses.

Code	Title	Credits
Required		
Foundational (25 credits)		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6131 or PUBH 6853	Quantitative Methods in Environmental and Occupational Health Use of Statistical Packages for Data Management and Data Analysis	
PUBH 6247	Design of Health Studies	
PUBH 8110	Research Rotations	
PUBH 6080	Pathways to Public Health	
PUBH 8415	Instructional Leadership	
Environmental health core (21 credits)		

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6144 & PUBH 8144	Environmental Health Data Development and Modeling and Advanced Environmental Health Data Development and Modeling
PUBH 8116	Communicating Research Results
PUBH 8411	Advanced Topics: Principles of Human Health Risk Science
PUBH 8412	Advanced Topics: Environmental and Occupational Health Research and Practice

Electives

A minimum of 12 credits in elective courses.

Dissertation

14 credits in dissertation research and preparation.

PUBH 8422	Advanced Health Care and Public Health Research Design
or PUBH 8435	Dissertation Proposal Development for Social and Behavioral Sciences
PUBH 8999	Dissertation Research

DOCTOR OF PHILOSOPHY IN THE FIELD OF EPIDEMIOLOGY

Program Director S. Cleary

Our graduate and PhD programs prepare students to conduct epidemiological research, undertake evaluation studies and monitor population health status in academic, governmental, private sector and community health settings. Opportunities exist for our students to collaborate with experts from the National Institutes of Health, National Cancer Institute, National Center for Health Statistics, Food and Drug Administration and many other federal research agencies. With courses scheduled in the late afternoons and early evenings, our programs allow students to attain valuable career experience while they earn their degrees. All applications are submitted through SOPHAS.org (<http://sophas.org/>).

Visit the program website (<https://publichealth.gwu.edu/programs/epidemiology-phd/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled:

72 credits, including 16 credits in public health core courses, and all requirements for the Doctor of Philosophy Program (p. 87); 15-18 credits in statistics core courses (depending on which option the student follows); 3 credits in program-specific epidemiology selective courses; a minimum of 14 to 17 credits in elective courses, depending on which option the student follows; 3 credits in consulting courses; and 12 to 21 credits in dissertation research; successful completion of a comprehensive exam.

Two program options are available: Option A is more quantitative and includes advanced statistical coursework in the Department of Statistics. Option B, while also quantitative, allows for courses and electives with a primary focus on public health.

Preparatory Requirements

Code	Title	Credits
Minimum prerequisite courses for admission consideration		
BISC 1111	Introductory Biology: Cells and Molecules	
BISC 1112	Introductory Biology: The Biology of Organisms	
MATH 1231	Single-Variable Calculus I	
MATH 1232	Single-Variable Calculus II	
MATH 2233	Multivariable Calculus (option A only)	

Additional course requirements for admissions consideration

The courses listed below are additional course preparatory requirements. Applicants lacking these courses (or equivalents to these GW courses) will be considered for conditional admission with the expectation that these courses will be completed within two semesters following matriculation in the program. Credit for these courses does not count toward the 72 credits required for the degree and grades earned are not reflected in the overall grade-point average.

MATH 2184	Linear Algebra I
STAT 2183	Intermediate Statistics Lab/Packages
or PUBH 6853	Use of Statistical Packages for Data Management and Data Analysis

Degree Requirements

Code	Title	Credits	
Required courses			and Doctoral Topics: Epidemiology of HIV/AIDS
Epidemiology and public health core			PUBH 6259 & PUBH 8259 Epidemiology Surveillance in Public Health and Doctoral Topics: Epidemiologic Surveillance in Public Health
PUBH 6003	Principles and Practices of Epidemiology		
PUBH 6080	Pathways to Public Health		
PUBH 6247	Design of Health Studies		
PUBH 6252	Advanced Epidemiology Methods		
PUBH 8419	Measurement in Public Health and Health Services		
4 additional credits in PUBH courses selected in consultation with the advisor.			
Statistics core			
PUBH 6865	Applied Categorical Data Analysis		
PUBH 6866	Principles of Clinical Trials		
PUBH 8877	Generalized Linear Models in Biostatistics		
STAT 6210	Data Analysis (OR)		
And completion of either Option A or Option B:			
Option A			
STAT 6201	Mathematical Statistics I		
STAT 6202	Mathematical Statistics II		
Option B			
PUBH 8364	Quantitative Methods		
Program-specific			
One of the following two-course sets for a total of 3 credits:			
PUBH 6242 & PUBH 8242	Clinical Epidemiology and Public Health: Reading the Research and Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research		
PUBH 6244 & PUBH 8244	Cancer Epidemiology and Doctoral Topics: Cancer Epidemiology		
PUBH 6245 & PUBH 8245	Infectious Disease Epidemiology and Doctoral Topics: Infectious Disease Epidemiology		
PUBH 6250 & PUBH 8250	Epidemiology of HIV/AIDS		
Electives			
15 to 18 credits* in PUBH, HSML, EXNS, or STAT courses taken at the graduate-level. Possible electives include:			
PUBH 6260	Advanced Data Analysis for Public Health		
PUBH 6262	Introduction to Geographic Information Systems		
PUBH 6263	Advanced GIS		
PUBH 6267	Time Series Applications in Public Health		
PUBH 6299	Topics in Epidemiology		
PUBH 6856	Advanced SAS for Public Health Research		
Statistics electives—for Option A only			
STAT 6213	Intermediate Probability and Stochastic Processes		
STAT 6215	Applied Multivariate Analysis I		
STAT 6216	Applied Multivariate Analysis II		
STAT 6217	Design of Experiments		
STAT 6223	Bayesian Statistics: Theory and Applications		
STAT 6227	Survival Analysis		
STAT 8226	Advanced Biostatistical Methods		
Biostatistics electives—for Option A or B			
PUBH 6862	Applied Linear Regression Analysis for Public Health Research		
PUBH 6864	Applied Survival Analysis for Public Health Research		
PUBH 6887	Applied Longitudinal Data Analysis for Public Health Research		
PUBH 6899	Topics in Biostatistics and Bioinformatics		
Consulting			

PUBH 6869 Principles of Biostatistical Consulting

PUBH 8283 Doctoral Biostatistics Consulting Practicum

The epidemiology program director may waive the consulting requirement based on written documentation of prior equivalent coursework or relevant work experience. Waiver of the consulting requirement increases the total required number of elective credits proportionally.*

Dissertation research

PUBH 8999 Dissertation Research (taken in units of 3 credits for a total of 12 to 21 credits)

*Total required elective credits vary depending on whether the student is following Option A or Option B and/or if the consulting requirement is waived.

The following requirements must be fulfilled:

72 credits, including 16 credits in public health core courses, and all requirements for the Doctor of Philosophy Program (p. 87); 12 to 15 credits in statistics core courses (depending on which option the student follows); 3 credits in program-specific epidemiology selective courses; a minimum of 14 to 17 credits in elective courses, depending on which option the student follows; 3 credits in consulting courses; and 12 to 21 credits in dissertation research; successful completion of a comprehensive exam.

Two program options are available: Option A is more quantitative and includes advanced statistical coursework in the Department of Statistics. Option B, while also quantitative, allows for courses and electives with a primary focus on public health.

DOCTOR OF PHILOSOPHY IN THE FIELD OF EXERCISE PHYSIOLOGY AND APPLIED NUTRITION

OVERVIEW

Program Director J. Sacke

The PhD in exercise physiology and applied nutrition (EPAN) incorporates a fundamental and deep core appreciation that both exercise and nutrition together are more powerful in fighting many of the most significant public health problems of our time uniquely integrating both disciplines and which often have synergistic impacts on health. This multidisciplinary program provides a rigorous educational opportunity with a curriculum grounded in science and includes the use of sound methodological approaches and innovative thinking that leads to the advancement of knowledge that can be translated into real-world health applications of physiology and nutrition.

Visit the program website (<https://publichealth.gwu.edu/programs/phd-exercise-physiology-and-applied-nutrition/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled:

Code	Title	Credits
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Required foundational courses

7 credits in required foundational courses:

EXNS 6204	Biostatistical Methods and Research Design
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EXNS 8102	Writing a Research Grant Application
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PUBH 6003	Principles and Practices of Epidemiology
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PUBH 6080	Pathways to Public Health
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Advanced research methods

At least one course (3 credits) selected from the following:

EDUC 8122	Qualitative Research Methods
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EDUC 8131	Case Study Research Methods
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EDUC 8140	Ethnographic Research Methods
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EDUC 8171	Predictive Designs and Analyses
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EDUC 8172	Multivariate Analysis
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EDUC 8173	Structural Equation Modeling
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PUBH 8364	Quantitative Methods
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PUBH 8417	Qualitative Research Methods and Analysis
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PUBH 8418	Applied Statistical Analysis
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PUBH 8419	Measurement in Public Health and Health Services
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Required core courses

16 credits in required core courses:

EXNS 6209	Advanced Concepts in Nutrition Science
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EXNS 6810	Advanced Metabolism
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EXNS 8106	Advanced Concepts in Applied Human Physiology
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EXNS 8108	Laboratory Techniques in Human Physiology and Nutrition
EXNS 8110	Seminar in Exercise Physiology and Applied Nutrition
PUBH 8116	Communicating Research Results
Electives	
At least 8 credits in elective courses.	
Dissertation research	
11 to 14 credits in dissertation research courses:	
PUBH 8435	Dissertation Proposal Development for Social and Behavioral Sciences (2 credits)
EXNS 8999	Dissertation Research (9 to 12 credits)

Successful completion of the comprehensive examination is required to continue to candidacy after required coursework has been completed.

DOCTOR OF PHILOSOPHY IN THE FIELD OF HEALTH POLICY

Program Directors A. Dor, L. Ku

Dedicated to health policy education and research, our faculty members include some of the nation's best-known health policy experts, as well as leaders from the public and private health policy sectors. Our program joins stimulating classes with hands-on experience with critical health policy issues. Our graduates can be found in congressional offices, federal health agencies, the most prominent professional health societies in Washington, D.C., trade associations and health policy consultancies. With courses scheduled in the late afternoons and early evenings, our programs allow students to attain valuable career experience while they earn their degrees.

The PhD in Health Policy program develops scholars who are skilled at critically assessing the political, economic, legal and social aspects of health policy and management and learning to apply innovative research tools to analyze processes and outcomes in the health care delivery and public health setting to inform policy decision-making.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 15 credits in public health fundamentals and advanced health policy courses; 12 credits in methods and advanced statistics; 9 credits minimum in elective courses, 12 credits in dissertation preparation and dissertation research; and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
Core fundamental courses		
PUBH 6340	Health Economics and Finance	
PUBH 8401	Foundations in Public Health Leadership	
PUBH 8620	Seminar: Foundations of U.S. Health Policy	
PUBH 8610	Statistical Methods for Health Policy	
or PUBH 8418	Applied Statistical Analysis	
PUBH 8622	Health Care Payments, Systems, and Delivery Models	
PUBH 6080	Pathways to Public Health	
Core methods courses		
PUBH 8404	Advanced Topics: Health Systems and Health Policy Research	
PUBH 8405	Advanced Topics: Health Economics Research	
PUBH 8417	Qualitative Research Methods and Analysis	
PPPA 8022	Econometrics for Policy Research II	
Electives		
9 credits in elective courses. A recommended list of electives is available in the program guide. Other doctoral-level electives may be approved by the advisor.		
Dissertation		
PUBH 8422	Advanced Health Care and Public Health Research Design	
or PUBH 8435	Dissertation Proposal Development for Social and Behavioral Sciences	
PUBH 8999	Dissertation Research	

Graduation requirements as follow:

1. Credits: Successful completion of 48 credits.
2. Comprehensive examination: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
3. Dissertation: PUBH 8422 or PUBH 8435 dissertation preparation course plus 10 credits in dissertation research are required. Once the proposal has been successfully

defended and the dissertation research credit requirements has been met, the oral defense may be scheduled.

4. Grade-point average: A minimum overall grade-point average of *B* (3.0).
5. Time limit: The degree must be completed within seven years.

DOCTOR OF PHILOSOPHY IN THE FIELD OF SOCIAL AND BEHAVIORAL SCIENCES IN PUBLIC HEALTH

Program Director M. Napolitano

Mission

The PhD in social and behavioral sciences in public health degree program is designed to develop public health scholars who are at the forefront of social and behavior change. The program trains students to conduct independent research that is theoretically sound and applicable across a variety of contexts in order to prevent diseases and promote health and well-being.

Goals

The goal of the PhD degree program is to train students to conduct rigorous and state-of-the-art independent research to advance understanding of social and behavioral sciences in public health. The program is designed to be four years in duration, with comprehensive exams at the end of the second year, and full dissertation work during the remaining two years.

Visit the program website (<https://publichealth.gwu.edu/programs/social-and-behavioral-sciences-phd/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 12 credits in foundation courses, 9 credits in statistics courses, 9 credits in methods courses, 9 credits minimum in elective courses, and 9 credits in dissertation preparation and dissertation research; successful completion of a comprehensive exam.

Code	Title	Credits
Foundational and research courses		
PUBH 8408	Advanced Topics: Health Behavior Research & Practice Applications	
PUBH 8409	Advanced Topics: Health Communication Research	
PUBH 8416	Study Design & Evaluation Methods	
PUBH 8434	Behavioral Medicine and Public Health	

PUBH 6080	Pathways to Public Health
Statistics	
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measurement in Public Health and Health Services
And at least 3 additional credits from the following:	
DNSC 6211	Programming for Analytics
DNSC 6215	Social Network Analytics
DNSC 6274	Statistical Modeling and Analysis
DNSC 6275	Advanced Statistical Modeling and Analysis
DNSC 6276	Exploratory and Multivariate Data Analysis
ECON 8375	Econometrics I
EDUC 8144	Discourse Analysis
EDUC 8171	Predictive Designs and Analyses
EDUC 8173	Structural Equation Modeling
FINA 6271	Financial Modeling and Econometrics
MBAD 6221	Judgment, Uncertainty, and Decisions
MBAD 6222	Data Analysis and Decisions
PPPA 8022	Econometrics for Policy Research II
PSYC 8257	Current Topics in Social Psychology (ONLY Structural Equation Modeling)
PUBH 6299	Topics in Epidemiology (ONLY Applied Meta-Analysis with R)
Methods	
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research
PUBH 8242	Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research
And at least 3 additional credits from the following:	
EDUC 8122	Qualitative Research Methods
EDUC 8130	Survey Research Methods

EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods
EDUC 8142	Phenomenological Research Methods
PSYC 8231	Development of Psychometric Instruments
PSYC 8256	Introduction to Survey Research
PSYC 8258	Qualitative Research and Analysis
PUBH 8364	Quantitative Methods
PUBH 8365	Design of Medical Studies

Content area electives

A minimum of 9 credits, including at least one course in each of the following two categories:

Social and Behavioral Sciences

ANTH 6501	Gender and Sexuality
ANTH 6505	Medical Anthropology
EXNS 6242	Nutrition Throughout the Life Cycle
PHIL 6253	Cognitive Science and Public Policy
PSYC 8211	Community Psychology I
PSYC 8212	Community Psychology II
PSYC 8253	Social Cognition
PSYC 8254	Social Influence
PSYC 8255	Attitudes and Attitude Change
PSYC 8275	Women and Health
PSYC 8287	Current Topics in Clinical Psychology (ONLY Structural Equation Modeling)
PUBH 6262	Introduction to Geographic Information Systems
PUBH 6555	Reproductive Health: U.S. and Global Perspectives
PUBH 6561	Maternal and Child Health Policy Analysis
PUBH 6562	Physical Activity and Obesity Interventions: From the Individual to the Environment
PUBH 6571	Social Marketing: Theory and Practice
PUBH 6573	Media Advocacy for Public Health

PUBH 6574	Public Health Branding: Theory and Practice
PUBH 6599	Topics in Prevention and Community Health (ONLY Culture and Health)
PUBH 8405	Advanced Topics: Health Economics Research
Current Issues in Public Health	
HCS 8369	Issues in Health Care
HDEV 8100	Issues and Special Topics in Human Development
PUBH 8401	Foundations in Public Health Leadership
PSYC 8220	Ethics and Professional Issues
PSYC 8236	Ethnic and Racial Diversity in Psychology

Other elective course options

Elective courses at the 8000-level not listed above do not require approval prior to enrollment. Advance approval of the advisor is required for all other courses.

Dissertation preparation and dissertation

PUBH 8435	Dissertation Proposal Development for Social and Behavioral Sciences
PUBH 8999	Dissertation Research (taken for 7 credits)

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH

Program Director G. Gray

The Environmental and Occupational Health Department is at the center of national and global conversations about the role of science in protecting workers, the public and the environment from toxic substances and dangerous conditions. Faculty and staff in the department have earned a national reputation as researchers and leaders in articulating how public health science is best used in regulatory decision making. Congressional committees, federal agencies, national scientific organizations, international public health entities and the media contact them frequently to discuss environmental hazards and the policies addressing them.

The Doctor of Public Health (DrPH) Program prepares professionals to assume national and international leadership positions in environmental and occupational health, global health, health behavior, and health policy. The field of

public health provides unique insights into the complex interrelationships between health, politics, and human development. It enables professionals to address public health issues by marshalling research and analytic skills to develop innovative approaches to understand health and to promote and advocate for improved health outcomes as well as lead a team of diverse professionals reflecting shared values and vision to achieve specific objectives. (The DrPH Program accepts student every other year on even years only.)

Visit the program website (<https://publichealth.gwu.edu/programs/environmental-occupational-health-drph/>)for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 22 credits in required courses, 6 credits in field-specific courses, 7 to 10 credits in elective courses, 2 credits in professional leadership courses, 8 to 11 credits in dissertation preparation and dissertation, and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
Foundational and research methods courses		
PUBH 6080	Pathways to Public Health	
PUBH 8401	Foundations in Public Health Leadership (doctoral seminar)	
PUBH 8402	Leadership and Decision Making: Skills Based Approach	
PUBH 8403	Leadership in Public Health Policy and Practice	
PUBH 8416	Study Design & Evaluation Methods	
PUBH 8417	Qualitative Research Methods and Analysis	
PUBH 8418	Applied Statistical Analysis	
PUBH 8419	Measurement in Public Health and Health Services	
PUBH 8420	Advanced Analysis and Dissemination	
Specialty field courses		
PUBH 8411	Advanced Topics: Principles of Human Health Risk Science (doctoral seminar)	
PUBH 8412	Advanced Topics: Environmental and Occupational Health Research and Practice	

Electives

7 to 10 credits in specialty field elective courses. Sample courses include:

PUBH 6121	Environmental and Occupational Epidemiology
PUBH 6122	Protecting Public Health and the Environment: Policies, Politics, and Programs
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6124	Risk Management and Communication
PUBH 6126	Assessment and Control of Environmental Hazards
PUBH 6127	Introduction to Environmental Health Microbiology
PUBH 6128	Global Environmental and Occupational Health
PUBH 6130	Sustainable Energy and the Environment
PUBH 6199	Topics in Environmental and Occupational Health (Microbial Risk Assessment)
PUBH 6199	Topics in Environmental and Occupational Health (Pesticide Exposures and Cancer)
PUBH 6199	Topics in Environmental and Occupational Health (Food and the Global Environment)

Professional leadership

2 credits in professional leadership courses. (Most students will take these credits in PUBH 8415.)

PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership

Dissertation

8 to 11 credits in dissertation coursework.

PUBH 8422	Advanced Health Care and Public Health Research Design
PUBH 8423	Dissertation Research

Comprehensive examination

Successful completion of a comprehensive examination.

Graduation Requirements

1. Credits: Successful completion of 48 credits.
2. Curriculum: Successful completion of the foundational, research methods, program-specific specialty field, and professional leadership courses.
3. Comprehensive examination: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6 to 9 credits in dissertation research credits are required. Once the proposal has been successfully defended and the dissertation research credit requirements has been met, the oral defense may be scheduled.
5. Grade-point average: A minimum overall grade-point average of B (3.0).
6. Time limit: The degree must be completed within seven years.

Note: no transfer credits are accepted.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF GLOBAL HEALTH

Program Director *W. Munar*

The DrPH in Global Health program trains mid-career global health professional to apply critical thinking and rigorous research methods to the complex practical problems facing practitioners and policymakers in public health practice.

Visit the program website (<https://publichealth.gwu.edu/programs/global-health-drph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 22 credits in required courses, 6 credits in field-specific courses, 7 to 10 credits in elective courses, 2 credits in professional leadership courses, 8 to 11 credits in dissertation preparation and dissertation, and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
Foundational and research methods courses		
PUBH 6080	Pathways to Public Health	

PUBH 8401	Foundations in Public Health Leadership
PUBH 8402	Leadership and Decision Making: Skills Based Approach
PUBH 8403	Leadership in Public Health Policy and Practice
PUBH 8416	Study Design & Evaluation Methods
PUBH 8418	Applied Statistical Analysis
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8419	Measurement in Public Health and Health Services
PUBH 8420	Advanced Analysis and Dissemination
Specialty field courses	
PUBH 8406	Advanced Topics: Health Research in the Global Arena
PUBH 8407	Advanced Topics: Health Leadership in International Settings
Electives	
7 to 10 credits in elective specialty field courses. Sample courses include:	
PUBH 6123	Toxicology: Applications for Public Health Policy
PUBH 6128	Global Environmental and Occupational Health
PUBH 6242	Clinical Epidemiology and Public Health: Reading the Research
PUBH 6244	Cancer Epidemiology
PUBH 6245	Infectious Disease Epidemiology
PUBH 6250	Epidemiology of HIV/AIDS
PUBH 6259	Epidemiology Surveillance in Public Health
PUBH 6262	Introduction to Geographic Information Systems
PUBH 6263	Advanced GIS
PUBH 6270	HIV/AIDS Surveillance
PUBH 6430	Theories for Global Health Communication Interventions

PUBH 6431	Global Health Communication Strategies and Skills
PUBH 6435	Global Health Program Development and Implementation
PUBH 6440	Global Health Economics and Finance
PUBH 6441	Global Health Organizations and Regulations
PUBH 6442	Comparative Global Health Systems
PUBH 6443	Global Health Agreements and Conventions
PUBH 6481	Global Mental Health
PUBH 6482	International Food and Nutrition Policy

Professional leadership

2 credits in professional leadership courses. (Most students will take these credits in PUBH 8415.)

PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership

Dissertation coursework

8 to 11 credits taken in the following courses:

PUBH 8422	Advanced Health Care and Public Health Research Design
PUBH 8423	Dissertation Research

Comprehensive examination

Successful completion of a comprehensive examination.

Graduation Requirements

1. Credits: Successful completion of 48 credits.
2. Curriculum: Successful completion of the foundational, research methods, program-specific specialty field, and professional leadership courses.
3. Comprehensive examination: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6 to 9 credits in dissertation research credits are required. Once the proposal has been successfully defended and the dissertation research credit requirements has been met, the oral defense may be scheduled.
5. Grade-point average: A minimum overall grade-point average of B (3.0).

6. Time limit: The degree must be completed within seven years.

Note: no transfer credits are accepted.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF HEALTH BEHAVIOR

Program Director M. Napolitano

The doctor of public health (DrPh) in health behavior prepares future public health leaders to apply critical thinking and rigorous research methods to the complex practical problems facing practitioners and policymakers in public health practice, especially as regarding health promotion and disease prevention. The GW School of Public Health doctoral programs provide health professionals with the research and analytical skills necessary to develop innovative approaches to understand health and to promote and to advocate for improved health outcomes.

Students apply research and analytic skills to a range of implementation, evaluation and advocacy needs of various cultural and socioeconomic groups and communities. The program helps students explore the complexities among health, politics, and human development. They are equipped to assume national and international leadership positions in health behavior.

Program graduates possess the knowledge and skills to positively affect the health of a variety of populations and cultures, with special emphasis on underserved populations.

Visit program website (<https://publichealth.gwu.edu/programs/health-behavior-drph/>) for the Doctor of Public Health Handbook and other resources.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 22 credits in required courses, 6 credits in field-specific courses, 7 to 10 credits in elective courses, 2 credits in professional leadership courses, 8 to 11 credits in dissertation preparation and dissertation, and successful completion of a comprehensive examination.

Program requirements

Code	Title	Credits
Required		
Foundational and research methods courses		
PUBH 6080	Pathways to Public Health	
PUBH 8401	Foundations in Public Health Leadership	

PUBH 8402	Leadership and Decision Making: Skills Based Approach
PUBH 8403	Leadership in Public Health Policy and Practice
PUBH 8416	Study Design & Evaluation Methods
PUBH 8417	Qualitative Research Methods and Analysis
PUBH 8418	Applied Statistical Analysis
PUBH 8419	Measurement in Public Health and Health Services
PUBH 8420	Advanced Analysis and Dissemination
Specialty field courses	
PUBH 8408	Advanced Topics: Health Behavior Research & Practice Applications
PUBH 8409	Advanced Topics: Health Communication Research
Professional leadership	
2 credits in professional leadership courses. (Most students will take these credits in PUBH 8415.)	
PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership
Electives	
7 to 10 credits in elective specialty field elective. Sample courses include:	
PUBH 6500	Planning and Implementing Health Promotion Programs
PUBH 6531	Health Promotion in Health Care Settings
PUBH 6532	Community Organization, Development, and Advocacy
PUBH 6533	Design and Conduct of Community Health Surveys
PUBH 6534	Community-Based Participatory Research
PUBH 6570	Advanced Public Health Communication: Theory and Practice
PUBH 6571	Social Marketing: Theory and Practice
EDUC 8131	Case Study Research Methods
EDUC 8140	Ethnographic Research Methods

EDUC 8172	Multivariate Analysis
PSYC 8204	Experimental Foundations of Psychology: Biological Basis of Behavior
PSYC 8231	Development of Psychometric Instruments
PSYC 8277	Health Psychology
PSYC 8287	Current Topics in Clinical Psychology
Dissertation coursework	
8 to 11 credits taken in the following courses:	
PUBH 8422	Advanced Health Care and Public Health Research Design
PUBH 8423	Dissertation Research
Comprehensive examination	
Successful completion of a comprehensive examination.	

Graduation Requirements

1. Credits: Successful completion of 48 credits.
2. Curriculum: Successful completion of the foundational, research methods, program-specific specialty field, and professional leadership courses.
3. Comprehensive examination: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6 to 9 credits in dissertation research credits are required. Once the proposal has been successfully defended and the dissertation research credit requirements has been met, the oral defense may be scheduled.
5. Grade-point average: A minimum overall grade-point average of B (3.0).
6. Time limit: The degree must be completed within seven years.

Note: no transfer credits are accepted.

DOCTOR OF PUBLIC HEALTH IN THE FIELD OF HEALTH POLICY

Program Director J. Heinrich; **Co Program Director** A. Markus

Dedicated to health policy education and research, our faculty members include some of the nation's best-known health policy experts, as well as leaders from the public and private health policy sectors. Our program joins stimulating classes with hands-on experience with critical health policy issues. Our graduates can be found in congressional offices, federal health

agencies, the most prominent professional health societies in Washington, D.C., trade associations and health policy consultancies. With courses scheduled in the late afternoons and early evenings, our programs allow students to attain valuable career experience while they earn their degrees.

The DrPH develops skilled public health professionals uniquely equipped to provide real-world leadership at the national and state levels in all phases of public health, health care and health policy development, implementation and evaluation.

Visit the program website (<https://publichealth.gwu.edu/programs/health-policy-drph/>) for additional program information.

REQUIREMENTS

The following requirements must be fulfilled: 48 credits, including 22 credits in foundational courses, 6 credits in required field-specific courses, 7 to 10 credits in elective field-specific courses, 2 credits in professional leadership courses, 8 to 11 credits in dissertation preparation and dissertation, and successful completion of a comprehensive examination.

Code	Title	Credits
Required		
Foundational and research methods courses		
PUBH 6080	Pathways to Public Health	
PUBH 8401	Foundations in Public Health Leadership	
PUBH 8402	Leadership and Decision Making: Skills Based Approach	
PUBH 8403	Leadership in Public Health Policy and Practice	
PUBH 8416	Study Design & Evaluation Methods	
PUBH 8417	Qualitative Research Methods and Analysis	
PUBH 8418	Applied Statistical Analysis	
PUBH 8419	Measurement in Public Health and Health Services	
PUBH 8420	Advanced Analysis and Dissemination	
Specialty field courses		
PUBH 8404	Advanced Topics: Health Systems and Health Policy Research	
PUBH 8405	Advanced Topics: Health Economics Research	

Electives

7 to 10 credits in elective specialty field courses. Suggested electives include:	
PUBH 6330	Health Services and Law
PUBH 6325	Federal Policymaking and Policy Advocacy
PUBH 6335	Public Health and Law
PUBH 6360	Advanced Maternal and Child Health Policy
PUBH 6376	Primary Health Care Policy

Professional leadership	
2 credits in professional leadership courses. (Most students will take these credits in PUBH 8415.)	
PUBH 8413	Research Leadership
PUBH 8415	Instructional Leadership

Dissertation	
8 to 11 credits taken in the following courses:	
PUBH 8422	Advanced Health Care and Public Health Research Design
PUBH 8423	Dissertation Research

Comprehensive examination	
Successful completion of a comprehensive examination.	

Graduation Requirements

1. Credits: Successful completion of 48 credits.
2. Curriculum: Successful completion of the foundational, research methods, program-specific specialty field, and professional leadership courses.
3. Comprehensive examination: Once the course of study is completed, students are required to pass the comprehensive exam to be officially admitted to the candidacy phase.
4. Dissertation: PUBH 8422 Advanced Health Care and Public Health Research Design plus 6 to 9 credits in dissertation research credits are required. Once the proposal has been successfully defended and the dissertation research credit requirements has been met, the oral defense may be scheduled.
5. Grade-point average: A minimum overall grade-point average of B (3.0).
6. Time limit: The degree must be completed within seven years.

Note: no transfer credits are accepted.

CERTIFICATE PROGRAMS

Certificate Programs

- Graduate certificate in health administration generalist (p. 1390)
- Graduate certificate in health policy (p. 1391)
- Graduate certificate in public health (p. 1392)

Combined Programs

- Dual Doctor of Medicine and graduate certificate in public health (p. 1393)
- Joint Master of Public Health or SPH graduate certificate and Juris Doctor or Master of Laws (p. 1374)

GRADUATE CERTIFICATE IN HEALTH ADMINISTRATION GENERALIST

Program Director R. Bonar

The objective of the health administration generalist certificate is to meet the needs of the professional public health provider. Graduates with this certificate become health sector leaders, innovators, and managers who are dedicated to advancing the health of our local, national, and global communities. All current Milken Institute School of Public Health (SPH) graduate students and SPH alumni have a unique opportunity to add the health administration generalist graduate certificate to their degree.

Visit the program website (<https://publichealth.gwu.edu/programs/health-administration-generalist-certificate/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits in required courses; substitutions may be allowed with the advisor's approval.

Code	Title	Credits
Required		
18 credits from the following (with advisor approval)		
HSML 6202	Introduction to Health Services Delivery	
HSML 6203	Introduction to Health Management	
HSML 6204	Quality and Performance Improvement	
HSML 6206	Quant Methods & Epid/Health Services	
HSML 6207	Health Services Information Applications	
HSML 6208	Medical Informatics	

HSML 6209	Health Services Finance
HSML 6210	Health Services Financial Applications
HSML 6211	Health Economics
HSML 6212	Community Health Management and Advocacy
HSML 6213	Health Services, Marketing, and Planning
HSML 6215	Health Law for Managers
HSML 6216	Human Resources Management and Organizational Behavior
HSML 6218	Seminar: Health Services Management and Leadership

Other courses may be used to fulfill the requirement with advisor approval.

Graduation Requirements

1. The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
2. Course Requirements: Since most graduate certificate students are currently enrolled in an MPH program or have previously earned a graduate degree, most course credits are selected from the program-specific course list. Under no circumstances may a certificate student enroll in fewer than 9 credits of program-specific courses.
3. Grade Point Requirement: A 3.0 (B average) overall grade-point average or above is required for the award of the certificate.
4. Time Limit Requirement: The certificate must be completed within two years.
5. Transfer Credit Policy: The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last three years with a grade of 3.0 or above.
6. Transfer to Degree Program Policy: Students can transfer as many credits as meet program requirements to a Master of Health Administration (MHA) degree program from the Health Administration Generalist Graduate Certificate. Students wishing to transfer to the MHA may apply to do so via the online change of concentration petition after completion of three or more courses and a cumulative GPA of 3.0 or above. A grade of B or above is required for a course to be eligible for transfer. Students interested in

applying to the MHA degree program should meet with the program director regarding program-specific admission requirements. Transfer credits must have been completed within the past three years.

GRADUATE CERTIFICATE IN HEALTH POLICY

Program Director L. Cartwright-Smith

The mission of the health policy certificate is to train public health, health services, law, medical, public policy and other students and professionals seeking careers in health policy. Graduates with this certificate understand the substance of health policy. Our students develop in-depth policy analysis skills to us in various practice settings, including both federal and state levels of government, private-sector health policy consulting, and not-for-profit advocacy.

The health policy certificate is a chance for those students seeking a solid foundation in the substance of health policy and the skills of health policy analysis but who do not wish to undertake the full MPH. The health policy graduate certificate also includes elective course offerings to fit the student's personal and professional goals. When deciding to undertake the certificate, the student will meet often with an advisor to craft a personalized course of study.

It is not just students who are already enrolled in the Milken School of Public Health (SPH) who choose to pursue a certificate in health policy. The certificate program is also available to GW law students (the JD/MPH and LLM/MPH programs), lawyers seeking to develop expertise in all facets of health policy and practice, and to GW medical students (the MD/MPH and PA/MPH programs) who wish to enhance their clinical training with a thorough understanding of health policy.

Graduates of this Health Policy certificate program will gain:

- a core understanding of the wide-ranging issues that dominate the modern health policy debate at all levels of government.
- basic skills in health policy analysis, and the ability to conduct original policy analysis and research.
- familiarity with the policy-making processes that control the development and implementation of health policy.
- strong data management skills including creating Stata datasets, reading various types of raw data, creating variables, and processing data.
- the ability to synthesize complex information for policymakers.
- the ability to apply the skills of health policy analysis in a workplace setting.

Visit the program webpage (<http://publichealth.gwu.edu/programs/health-policy-certificate/>) for additional information.

REQUIREMENTS

The following requirements must be fulfilled: 18 credits, including 13 credits in required courses and 5 credits in elective courses.

Code	Title	Credits
Required		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6012	Fundamentals of Health Policy	
PUBH 6310	Statistical Analysis in Health Policy	
PUBH 6315	Introduction to Health Policy Analysis	
PUBH 6320	Advanced Health Policy Analysis	
Electives		
5 credits in health policy elective courses.		

Graduation Requirements

- Graduate credit requirement: 18 graduate credits are required.
- The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
- Successful completion of the required online CITI human subject research training modules.
- Successful completion of 8 Professional Enhancement hours.
- Grade point requirement: A 3.0 (B average) overall grade-point average or above is required.
- Time limit requirement: The certificate must be completed within two years.
- Transfer credit policy: The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last three years with a grade of 3.0 or above.
- Transfer to Degree Program Policy: Students can transfer as many credits as meet program requirements to a Master of Public Health (MPH) degree program from the Public Health Graduate Certificate. Students wishing to transfer to a degree program may apply to do so via the online change of concentration petition after completion of three or more courses and a cumulative GPA of 3.0 or above. A grade of B or above is required for a course to be eligible for

transfer. Students interested in applying to an MPH degree program should meet with departmental advisors regarding program-specific admission requirements. Transfer credits must have been completed within the past three years.

GRADUATE CERTIFICATE IN LONG-TERM CARE

Program Director R. Burke

The graduate certificate in long-term care program is designed to prepare students to best meet the needs of a rapidly aging population in the United States by providing the academic course requirements necessary for licensure of post-acute and senior services programs and facilities. The objectives of the certificate are to master the requirements and strengthen understanding of facility management, provider services and programs, and federal policies to achieve the highest levels of quality of care in senior and long-term care services.

Visit the program website (<https://publichealth.gwu.edu/sites/default/files/Cert%20Long%20Term%20Care%202016.pdf>) for additional information.

REQUIREMENTS

Course Requirements

1. Graduate credit requirement. 18 graduate credits are required.
2. The program director/advisor must pre-approve all course selections and course sequencing by developing a "program of study" prior to the student's initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the program director/advisor.
3. Course requirements. Since most graduate certificate students are currently enrolled in an MPH program or have previously earned a graduate degree, most course credits are selected from the program-specific course list. Under no circumstances may a certificate student enroll in fewer than 9 credits of program-specific courses.
4. Grade point requirement. A 3.0 (B average) overall grade-point average or above is required.
5. Time limit requirement. The certificate must be completed within two years.
6. Transfer credit policy. The program director/advisor may approve up to 4 graduate credits that have not been applied to a previous graduate degree to be transferred to the graduate certificate. The course(s) must be relevant to the graduate certificate. Credits must have been earned in the last three years from an accredited institution with a grade point of 3.0 or above.

Program Requirements

Code	Title	Credits
Required courses credits semester offered		
HSML 6203	Introduction to Health Management	
HSML 6207	Health Services Information Applications	
HSML 6216	Human Resources Management and Organizational Behavior	
HSML 6236	Post-Acute Care Management and Leadership	
HSML 6237	Managing the Skilled Nursing Facility	
Electives (6 credits)		
The following is a sample list. Topics vary from semester to semester.		
HSML 6299	Topics in HSML	
HSML 6299	Topics in HSML	
HSML 6299	Topics in HSML	
HSML 6204	Quality and Performance Improvement	
PUBH 6537	Health Promotion and Aging	
PUBH 6099	Topics in Public Health	
PUBH 6099	Topics in Public Health	

GRADUATE CERTIFICATE IN PUBLIC HEALTH

OVERVIEW

Program Director G. Gray

The mission of the graduate certificate in public health is to give students a basic, yet robust, understanding of all of the aspects of public health. The program consists of the core curriculum for the master of public health degree and is intended for individuals who are interested in learning more about the field of public health without committing to a full degree; are current professionals in the field and wish to be eligible to take the certifying examination in public health; or, who are interested in a degree in public health but are not sure what specific area of expertise they wish to pursue.

The 15 credits completed for the certificate can be applied toward an MPH degree should a student decide to further their studies. The certificate can be completed on-campus or online to allow students maximum flexibility while maintaining personal and professional commitments. Online courses are

taught in 10-week modules across the calendar year (four modules per year); face-to-face courses are taught on campus in 14-week modules. The certificate must be completed within two years of matriculation.

REQUIREMENTS

The following requirements must be fulfilled: 15 credits in required courses.

Code	Title	Credits
Required		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health	
PUBH 6009	Fundamentals of Public Health Program Evaluation	
PUBH 6011	Environmental and Biological Foundations of Public Health	
PUBH 6012	Fundamentals of Health Policy	

Course work may be completed through residential or distance modalities. Additional certificate information is available on the SPH website (<http://sphhs.gwu.edu/programs/public-health-generalist-certificate/>).

Requirements for the graduate certificate

1. Graduate credit requirement: 15 graduate credits
2. The Program Director/Advisor must pre-approve all course selections and course sequencing by developing a program of study prior to the student’s initial registration. Graduate certificate students meet with their advisor each semester before registration. All changes in this program of study must be pre-approved by the Program Director/Advisor.
3. Grade point requirement: A 3.0 (B) overall grade point average or better.
4. Time limit requirement: The certificate must be completed within 2 years.
5. Transfer to Degree Program Policy: Students can transfer as many credits as meet program requirements to a Master of Public Health (MPH) degree program from the Public Health Graduate Certificate. Students wishing to transfer to a degree program may apply to do so via the online change of concentration petition after completion of 3 or more courses and a cumulative GPA of 3.0 or better. A grade of B or better is required for a course to be eligible

for transfer. Students interested in applying to an MPH degree program should meet with Departmental Advisors regarding program-specific admission requirements. Transfer credits must have been completed within the past 3 years.

Visit the program website (<https://publichealth.gwu.edu/programs/public-health-certificate/>) for additional program information.

DUAL DOCTOR OF MEDICINE AND GRADUATE CERTIFICATE IN PUBLIC HEALTH

Program Director K. Bartholomew

The School of Medicine and Health Sciences (SMHS) and Milken Institute School of Public Health (GWSPH) offer a dual doctor of medicine (<https://smhs.gwu.edu/academics/md-program/>) (MD) and graduate certificate in public health (p. 1392) program. Medical students can complete the 15-credit graduate certificate within the four-year MD program structure. Students take 10 credits from the required public health certificate curriculum at GWSPH; the remaining 5 credits are satisfied through coursework cross counted from the MD program curriculum to replace PUBH 6011 Environmental and Biological Foundations of Public Health and PUBH 6012 Fundamentals of Health Policy .

In addition, 4 credits taken at GWSPH, PUBH 6007 Social and Behavioral Approaches to Public Health and PUBH 6009 Fundamentals of Public Health Program Evaluation as part of the certificate program are cross counted as four weeks of MD Year 4 electives.

Students receive the certificate only upon completion of all certificate and MD program requirements.

If a student wishes to pursue the MD/MPH program (p. 1364), all credits successfully completed for the MD/graduate certificate may be applied toward the MD/MPH degree.

Code	Title	Credits
Required public health courses (10 credits)		
PUBH 6002	Biostatistical Applications for Public Health	
PUBH 6003	Principles and Practices of Epidemiology	
PUBH 6007	Social and Behavioral Approaches to Public Health *	
PUBH 6009	Fundamentals of Public Health Program Evaluation	

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ACADEMY FOR CLASSICAL ACTING (ACA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACA 5099. Variable Topics. 1-99 Credits.

ACA 6201. Acting I. 3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6202. Acting II. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6203. Acting: Classical Comedy. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6204. Acting: Master Class. 2,3 Credits.

The focus of the acting sequence shifts with each session, providing a studio structure to explore and meet the demands of the classical canon. Portions of the sequence focus on the history plays and tragedies, classic comedy, high comedy, the Jacobean, and master classes.

ACA 6205. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6206. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6207. Topics in Classical Drama and Culture. 2 Credits.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6208. Topics in Classical Drama and Culture. 1 Credit.

Plays and other writings from the Elizabethan, Jacobean, and Restoration eras and the eighteenth century. The historical world in which the plays were written as well as the imaginary worlds created in the plays themselves.

ACA 6209. Text I. 2 Credits.

Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6210. Text II. 2 Credits.

Textual analysis emphasizing development of aesthetic expression. The forms and rules of verse: its meter, scansion, and overall structure in the early, middle, and late Shakespeare plays, as well as the intricacies of the prose.

ACA 6211. Voice and Speech I. 3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6212. Voice and Speech II. 2,3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6213. Voice and Speech III. 3 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6214. Voice and Speech IV. 2 Credits.

The development of clear, supported speech and sound that can meet the demands and challenges of classical texts. Resonators, articulators, breathing, and placement; phonetics and ear training; defining the character through the voice.

ACA 6215. Movement I. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6216. Movement II. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6217. Movement III. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6218. Movement IV. 1,2 Credit.

The development of an awareness of the body and its expressive abilities through an integrated approach that includes ballet, modern dance, Hatha Yoga, and Feldenkrais for coordination, focus, and expression.

ACA 6219. Alexander Technique I. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6220. Alexander Technique II. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6221. Alexander Technique III. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6222. Alexander Technique IV. 1,2 Credit.

Through group work and individual sessions, students develop a further awareness of the body toward expression of imagination and the creative process, enabling powerful characterization without stress or personal physical distortion.

ACA 6223. Stage Combat I. 2 Credits.

Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6224. Stage Combat II. 2 Credits.

Skills in stage combat techniques, including unarmed combat and broadsword, buckler, rapier, dagger, and other lighter weapons, toward development of greater physical strength and an awareness of safety issues. The course is designed to lead to certification as an actor/combatant through the Society of American Fight Directors.

ACA 6225. Practicum I. 2 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6226. Practicum II. 1-6 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6227. Practicum III. 1-6 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6228. Practicum IV. 1-6 Credits.

This sequence of courses includes scene preparation, rehearsal/production, clown class, and other performance skills.

ACA 6229. Audition Techniques. 3 Credits.

A set of workshops to help students develop strong audition skills. Business aspects of acting, such as selection of agents, Equity status, and taxation issues. The workshop concludes with a showcase performance for casting directors, agents, and theatre directors.

ACA 6595. Selected Topics. 1 Credit.

ACCOUNTANCY (ACCY)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ACCY 1099. Variable Topics. 1-36 Credits.

ACCY 2001. Introduction to Financial Accounting. 3 Credits.

Fundamental concepts underlying financial statements and the informed use of accounting information; analysis and recording of business transactions; preparation and understanding of financial statements; measurement of the profitability and financial position of a business.

ACCY 2002. Introductory Managerial Accounting. 3 Credits.

The use of accounting information to plan and control the activities of a business. Several widely used methods of determining the cost of business activities for use in making business decisions. Prerequisite: ACCY 2001.

ACCY 3101. Intermediate Accounting I. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements. Topics include revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Prerequisite: ACCY 2001.

ACCY 3102. Intermediate Accounting II. 3 Credits.

Financial accounting concepts underlying the preparation and interpretation of financial statements; accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, accounting changes, statements of cash flows, financial statement analysis, and disclosure. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Prerequisites: ACCY 3101 or permission of instructor.

ACCY 3106. Financial Statement Analysis. 3 Credits.

Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors. Students cannot earn credit for both this course and ACCY 4801. Prerequisite: ACCY 2002. Credit cannot be earned for this course and ACCY 4801.

ACCY 3401. Federal Income Tax: Individuals. 3 Credits.

Taxation of individuals, including tax planning strategies as well as compliance requirements. Introduction to tax principals and to tax planning for compensation, investment and business income of individuals, and major life events. Credit cannot be earned for this course and ACCY 6401.

ACCY 3403. Advanced Tax. 3 Credits.

Taxation of all major types of businesses with an emphasis on strategic planning opportunities to improve business profits as well as compliance requirements; principals of business taxation and basic tax rules for businesses from sole proprietorships to multinational corporations. Prerequisites: ACCY 2001 and ACCY 3401.

ACCY 3601. Business Law: Contracts, Torts, and Property. 3 Credits.

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code.

ACCY 4107. Advanced Accounting. 3 Credits.

Accounting for corporate combinations, foreign currency financial statements, and derivative financial instruments. Governmental and not-for-profit accounting. Prerequisites: ACCY 3101 and ACCY 3102.

ACCY 4301. Auditing. 3 Credits.

A study of generally accepted auditing standards and accepted professional auditing practices and procedures, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4501. Accounting Systems. 3 Credits.

Introduction to the design and operation of accounting systems and data management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: ACCY 3102.

ACCY 4601. Business Law: Enterprise Organization. 3 Credits.

Legal aspects of organizing, financing, and operating an enterprise, including agency, partnerships, corporations, securities regulation, insurance, and secured credit financing. Credit cannot be earned for this course and ACCY 6602.

ACCY 4801. Financial Accounting Capstone. 3 Credits.

Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Students cannot earn credit for both this course and ACCY 3106. Restricted to seniors. Credit cannot be earned for this course and ACCY 3106.

ACCY 4900. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more information.

ACCY 4995. Independent Study. 3 Credits.

Assigned topics. Admission by permission of the department chair.

ACCY 5099. Variable Topics. 1-99 Credits.**ACCY 6101. Financial Accounting. 3 Credits.**

Basic concepts and methods used in financial reporting to understand content, context, and related processes. Income statement, balance sheet, and statement of cash flows. Detailed accounting procedures, calculations, and choices. Same As: IAFF 6191, MBAD 6211.

ACCY 6104. Intermediate Accounting I. 3 Credits.

Accounting principles and concepts for financial accounting and reporting. Emphasis on the preparation of general-purpose financial statements. Restricted to GWSB graduate degree students. Prerequisites: ACCY 6101 or MBAD 6211.

ACCY 6105. Intermediate Accounting II. 3 Credits.

Revenue recognition, employee compensation and pension plans, income tax expense, and earnings per share. Prerequisites: ACCY 6101 and ACCY 6104. Same As: ACCY 3102.

ACCY 6106. Financial Statement Analysis. 3 Credits.

Analysis and interpretation of financial statements for managers, stockholders, creditors, and financial analysts. Prerequisites: ACCY 6101 or MBAD 6211. Credit cannot be earned for this course and ACCY 3106.

ACCY 6110. International Reporting and Control. 1.5 Credit.

International comparisons of forces that shape financial management, such as corporate governance mechanisms, tax policies, economic development, and privatization. Same as IBUS 6308.

ACCY 6112. International Financial Reporting Standards. 1.5 Credit.

Financial reporting standards that are used throughout most of the world other than the United States. Comparisons of these standards with those of the United States. Prerequisites: ACCY 6101 and MBAD 6211. (Same as IBUS 6310).

ACCY 6113. Financial Decision Making by Consumers and Professionals. 3 Credits.

Tools and applications necessary to evaluate the wide range of financial decisions individuals, both consumers and professionals, make throughout their lifetime. Also intended for those interested in becoming financial advisors and/or CPAs.

ACCY 6201. Accounting for Internal Decision Making. 1.5 Credit.

Effective use of internal generation, communication and interpretation of information for both operational and strategic decision-making purposes. Restricted to students in the MBA program. Prerequisites: MBAD 6211. Same As: MBAD 6213.

ACCY 6202. Advanced Strategic Cost Management. 1.5 Credit.

Advanced topics in the application of concepts of control and decision analysis to optimize the financial management of organizations. Prerequisites: ACCY 6201 or MBAD 6213.

ACCY 6203. Controls, Alignment, and the Organization. 3 Credits.

The role accounting plays in planning and control issues within organizations. High-level view of planning and control, with a focus on the need for controls to deal with the agency problems. Prerequisites: ACCY 2002 or equivalent.

ACCY 6204. Managerial Accounting for Government and Nonprofits. 1.5 Credit.

Builds on basic understanding of managerial accounting concepts and examines issues in the government and nonprofit realm; leveraging core concepts to analyze and report on real world scenarios. Prerequisite: None.

ACCY 6301. Contemporary Auditing Theory. 3 Credits.

Survey of contemporary auditing as practiced by internal and external auditors; generally accepted auditing standards and government auditing standards; planning, directing, and reporting on various audits. Corequisite: ACCY 6104. Prerequisites: ACCY 6101 or MBAD 6211. Credit cannot be earned for this course and ACCY 4301.

ACCY 6302. Fraud Examination and Forensic Accounting. 3 Credits.

Financial statement fraud, misappropriation of assets, and methods of deterrence, prevention, detection, and investigation. Prerequisites: ACCY 6101 and MBAD 6211. Recommended background: One auditing course.

ACCY 6401. Federal Income Taxation. 3 Credits.

Taxation of individuals, including tax planning strategies as well as compliance requirements; tax principals and to tax planning for compensation, investment and business income of individuals, and major life events. Credit cannot be earned for this course and ACCY 3401.

ACCY 6402. Federal Income Taxation of Partnerships. 3 Credits.

Tax planning for business income from partnerships, including formation and operation, distribution to partners, liquidation, transfer of partnership interests, and financial accounting for partnership transactions. S corporations also considered. Prerequisite: ACCY 6401.

ACCY 6403. Federal Income Taxation of Corporations. 3 Credits.

Federal income taxation of C corporations, covering formation, capital structure, nonliquidating distributions, complete liquidations, corporate accumulations, and the alternative minimum tax. Credit cannot be earned for this course and ACCY 3403.

ACCY 6404. Taxation of Financial Instruments. 3 Credits.

Overview of the economics and taxation of financial instruments; transactions in stock, debt instruments, commodities, options, short sales, wash sales, straddles, futures, foreign currency transactions, swaps, hedging, mark to market tax accounting, and time value of money. An equivalent course may be substituted for prerequisite ACCY 6101. Prerequisites: ACCY 6101 and ACCY 6401.

ACCY 6500. Technology and Analytics Applications. 1 Credit.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to business administration students.

ACCY 6501. Accounting Information Systems and Electronic Data Processing. 3 Credits.

Development and application of accounting system theory, including analysis, design, control concepts, and implementation; integration of electronic data processing, accounting systems, and management information systems. Prerequisites: ACCY 6101 or MBAD 6211. Credit cannot be earned for this course and ACCY 4501.

ACCY 6601. Business Law: Contracts, Torts, and Property. 3 Credits.

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code. Credit cannot be earned for this course and ACCY 3601.

ACCY 6602. Business Law: Enterprise Organization. 3 Credits.

Legal aspects of organizing, financing, and operating an enterprise, including agency, partnerships, corporations, securities regulation, insurance, and secured credit financing. Credit cannot be earned for this course and ACCY 4601.

ACCY 6701. Government Accounting. 3 Credits.

Budgeting, accounting, financial reporting, and auditing required of local, state, and federal governments; financial practices and requirements applicable to organizations receiving government financial assistance and those subject to government audits. Prerequisites: ACCY 6101 or MBAD 6211.

ACCY 6705. Nonprofit Accounting. 1.5 Credit.

Development and use of financial information as it relates to not-for-profit entities. Identifying and applying appropriate accounting and reporting standards, preparing financial statements, use of non-financial performance measures, auditing. Prerequisites: ACCY 3101.

ACCY 6801. Corporate Governance and Ethics. 3 Credits.

The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as SMPP 6215.

ACCY 6900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Same As: SMPP 6290.

ACCY 6998. Directed Readings and Research. 1-3 Credits.

ACCY 8001. Doctoral Seminar. 1-12 Credits.

Reasoning and research in technical areas of accounting; theoretical issues and their application to practice; conceptual themes in professional literature; comparative accounting research analyses.

ACCY 8009. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

ACCY 8999. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

AFRICANA STUDIES (AFST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AFST 1001. Introduction to Africana Studies. 3 Credits.

An interdisciplinary introduction to the study of people of Africa and the African diaspora in historical context. Links in the cultural, political, and intellectual experiences of people of African descent in the Americas, Caribbean, Europe, and Africa.

AFST 1099. Variable Topics. 36 Credits.

AFST 3001. Documenting Black Lives. 3 Credits.

Students complete and present an original research project pertaining to black history and culture; research strategies, including the use of digital material, historical archives, and public history sites. Recommended background: completion of a prior course in any Africana-related topic and an interest in research.

AFST 3099. Variable Topics. 1-12 Credits.

AFST 5099. Variable Topics. 1-99 Credits.

AMERICAN STUDIES (AMST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AMST 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

AMST 1050. Explorations in American Culture. 3 Credits.

Exploration of different aspects of American culture depending on the topic. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AMST 1070. The American Cinema. 3 Credits.

History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. (Same as AH 1070).

AMST 1099. Variable Topics. 1-36 Credits.

AMST 1100. Politics and Film. 3 Credits.

How American films interpret and challenge political power in America.

AMST 1160. Race, Gender, and Law. 3 Credits.

Significant civil rights cases, critical race theory, feminist theory, and current public policy debates on domestic violence, mass imprisonment, sexual assault, and racial profiling.

AMST 1200. The Sixties in America. 3 Credits.

A survey of American society, culture, and politics during the decade of the 1960s. Topics include the civil rights movement, the student movement, the Vietnam War, and the counterculture.

AMST 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester; see department for more details. Permission of the instructor required prior to enrollment.

AMST 2010. Early American Cultural History. 3 Credits.

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as HIST 2010.

AMST 2011. Modern American Cultural History. 3 Credits.

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as HIST 2011.

AMST 2020. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same As: AMST 2020W, HIST 2020, HIST 2020W.

AMST 2020W. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2020, HIST 2020, HIST 2020W.

AMST 2071. Introduction to the Arts in America. 3 Credits.

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. Same as AH 2071.

AMST 2120W. Freedom in American Thought and Popular Culture. 3 Credits.

America was founded on the premise of providing freedom to its people. But what, exactly, is freedom? The question has been debated in America since its founding and continues today; this course examines varied answers provided by American political thought and popular culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and PSC 2120W.

AMST 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Same as WGSS 2125. Prerequisites: WGSS 1020 or WGSS 2120.

AMST 2144. Explorations in Historical Geography. 3 Credits.

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as GEOG 2144.

AMST 2210. The African American Experience. 3 Credits.

This course provides a survey of the historical, political, and cultural dimensions of the African American experience in the U.S. The course is organized chronologically and thematically and covers topics such as American slavery, medical experimentation, Hurricane Katrina, aesthetics, hip-hop, and Afro-futurism.

AMST 2320. U.S. Media and Cultural History. 3 Credits.

History and analysis of twentieth-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. (Same as HIST 2320).

AMST 2350. U.S. Religion and Politics. 3 Credits.

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as HIST 2350.

AMST 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as HIST 2380 and WGSS 2380.

AMST 2385. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics.

AMST 2385W. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 2410. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same As: AMST 2410W, HIST 2410, HIST 2410W.

AMST 2410W. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2410, HIST 2410, HIST 2410W.

AMST 2430. Capitalism and Culture. 3 Credits.

Cultural and political history of American capitalism from Wall Street to Whole Foods, including advertising, automation, baseball, Fordism, graffiti, housework, punk, real estate, strike-breaking, sex work, and slavery.

AMST 2440. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as HIST 2440.

AMST 2440W. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2440, HIST 2440, HIST 2440W.

AMST 2490. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. (Same as HIST 2490).

AMST 2490W. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 2490W).

AMST 2495. Special Topics in African American History. 3 Credits.

Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

AMST 2520. American Architecture I. 3 Credits.

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning. Buildings are analyzed both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600–1860. (Same as AH 2154, CAH 2154).

AMST 2521. American Architecture II. 3 Credits.

Continuation of AMST 2520. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning; analysis of buildings both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860 to present. (Same as AH 2155, CAH 2155).

AMST 2533. Material Culture in America. 3 Credits.

Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as ANTH 2533.

AMST 2600. U.S. Popular Music and Culture. 3 Credits.

Interdisciplinary approach to U.S. popular music as a means for thinking critically about identity, culture, and history from the nineteenth century to the present; popular music as a cultural reflection of society and a key means through which Americans enact and negotiate social opportunities, challenges, and struggles.

AMST 2610. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late 19th century to the present.

AMST 2610W. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late nineteenth century to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2610, HIST 2610, HIST 2610W.

AMST 2620. Human Mind and Artificial Intelligence. 3 Credits.

The history of computers, robots, and artificial intelligence; visions of the future presented in science fiction; how human perceptions of machines affect their perceptions of the human mind.

AMST 2630. Discovering the Mind. 3 Credits.

Introduction to the ways in which the mind sciences have shaped how we understand ourselves, human nature, sex and race, morals, politics, and power.

AMST 2680W. Hashtag America. 3 Credits.

Influential technoskeptic and techno-utopian writing about social media and new media; the relationship between the Internet and society from various scholarly perspectives. Includes a significant engagement with writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 2710. The United States in the World. 3 Credits.

U.S. cultural and political engagement with the rest of the world in the twentieth and twenty-first centuries. Global culture, transnational ideas and social movements, travel and tourism, and the impact of media. Same As: HIST 2710.

AMST 2730. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Same as HIST 2730.

AMST 2730W. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 2730).

AMST 2750. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same As: AMST 2750W, ANTH 2750, ANTH 2750W.

AMST 2750W. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2750, ANTH 2750, ANTH 2750W.

AMST 3099. Variable Topics. 1-12 Credits.**AMST 3151. American Art in the Age of Revolution. 3 Credits.**

Same as AH 3151.

AMST 3152. American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art, and religion. (Same as AH 3152).

AMST 3324. U.S. Urban History. 3 Credits.

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 3324.

AMST 3351. U.S. Social History. 3 Credits.

Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as HIST 3351).

AMST 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

AMST 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 3353. U.S. Women's History II. 3 Credits.

Continuation of AMST 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. Same as HIST 3353/ WGSS 3353. (Same as HIST 3353, WGSS 3353).

AMST 3360. African American History to 1865. 3 Credits.

Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as HIST 3360).

AMST 3361. African American History Since 1865. 3 Credits.

African American efforts to realize full freedom after emancipation from slavery. Gender politics, cultural expression, labor organizing, and radicalisms; dynamics of racism within major eras of African American activity from Reconstruction through the Great Migration; and the history of civil rights, Black Power, and black feminism. (Same as HIST 3361).

AMST 3362. African American Women's History. 3 Credits.

Addresses the history of African American women's labor, cultural expression, institution-building, activism and strategies to combat oppression from the antebellum period through the late twentieth century. Investigates the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement and African American women's experiences. (Same as AMST 3362W, HIST 3362, HIST 3362W, WGSS 3362, WGSS 3362W).

AMST 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AMST 3362, HIST 3362, HIST 3362W, WGSS 3362, WGSS 3362W).

AMST 3367. The American Jewish Experience. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people. (Same as HIST 3367).

AMST 3600. Popular Music and Politics. 3 Credits.

The interactions and intersections of music and politics, focusing on the twentieth-century United States; music as political expression, music in social protest movements, and music as a tool of political organizing.

AMST 3625. Ethnographic and Historical Perspectives on Data Ethics. 3 Credits.

An introduction to ethics of data sciences from two disparate perspectives: historical and ethnographic. For students in all fields interested in understanding and evaluating the ethical implications of data and algorithms. Same As: ANTH 3625.

AMST 3810. Planning Cities. 3 Credits.

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as GEOG 3810. Prerequisite: GEOG 1001.

AMST 3811. Historical Archaeology. 3 Credits.

Survey of the basic data and methods of research in the material culture of recent history. Same as ANTH 3811.

AMST 3835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 3835.

AMST 3900. Critiquing Culture. 3 Credits.

Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visuality, discourse, and affect. Restricted to American studies majors or American studies minors with permission of the instructor.

AMST 3901. Examining America. 3 Credits.

Modes of power and forms of identification within and across U.S. national borders. Social constructions of the nation; forms of diversity and identity, such as race, gender, and sexuality; and the transnational flow of people, ideas, culture, and religion. Restricted to students in the American studies program.

AMST 3950. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Topics announced in the Schedule of Classes.

AMST 3950W. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Topic announced in the Schedule of Classes. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HIST 3301W.

AMST 4400. Independent Study. 1-3 Credits.

Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required.

AMST 4450. Internship. 1-3 Credits.

Open to a limited number of American studies majors pursuing an internship directly related to the study of American culture. Students must make the case for a scholarly project that emerges from the internship and must write a significant final paper. Approval of a supervising faculty member required for registration. P/NP grading only.

AMST 4500. Proseminar in American Studies. 3 Credits.

Directed research and writing on special topics. May be repeated for credit provided the topic differs. Restricted to students in the American studies program. Prerequisites: AMST 2010, AMST 2011, AMST 3900 and AMST 3901.

AMST 4500W. Proseminar in American Studies. 3 Credits.

Directed research and writing on special topics. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Students select two of the prerequisite courses. Restricted to students in the American studies program. Prerequisites: AMST 2010, AMST 2011, AMST 3900 and AMST 3901.

AMST 4701W. Epidemics in American History. 3 Credits.

The history of epidemics in the United States from the late nineteenth to the early twentieth century. The development of medical and public health responses to epidemics, and their social, political, cultural, and economic impacts. Sources include primary documents, historical accounts, memoirs, fiction, and films. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 4702W. Race, Medicine, and Public Health. 3 Credits.

The experiences of African Americans as patients and health care providers; the history of the relationship between race, American medicine, and public health. Emphasis on the importance of understanding the historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AMST 5099. Variable Topics. 1-99 Credits.**AMST 6100. Scope and Methods in American Studies. 3 Credits.**

Consideration of American studies as an area for research and teaching; introduction to bibliography. Required of candidates for the degree of Master of Arts in the field of American studies.

AMST 6110. Cultural Theory and American Studies. 3 Credits.

Major issues in critical and cultural theory as they relate to American culture. Various interpretive approaches including discourse analysis, cultural studies, new historicism, anthropological theory, etc. Prerequisites: AMST 6100 or permission of the instructor.

AMST 6120. Theories and Practices in the Study of Media. 3 Credits.

Examination of theories and methods in the study of media and popular culture; case studies explore specific issues related to cultural products such as film, television, music, and the Internet.

AMST 6190. Topics in American Studies. 1-4 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and ANTH 6591, ENGL 6451, HIST 6001.

AMST 6195. Research Seminar in American Studies. 3 Credits.

May be repeated for credit provided the topic differs.

AMST 6210. The United States in a Global Context. 3 Credits.

Analysis of the cultural constructions of the nation and international power, comparing the context of the eighteenth and nineteenth century, European colonialism, and U.S. expansion in the twentieth century. The role of literature and mass media in furthering the logic of globalization. Readings are both theoretical and historical.

AMST 6220. Theory and Emotions. 3 Credits.

Interdisciplinary exploration of politics of emotion, with an emphasis on the emotions that attach to race, gender, and sexuality.

AMST 6230. The Politics of Freedom. 3 Credits.

This seminar examines critical interventions into the theories, rhetorics, and practices of freedom. The seminar focuses on the politics of freedom in relation to an array of themes that may include liberalism, slavery, imperialism, political economy, individualism, and neoliberalism.

AMST 6240. Borders and Boundaries. 3 Credits.

Exploration of borders (the literal edge or limit of a territory) and boundaries (intra-societal differences). Readings from cultural anthropology, political science, and social history examine classic tensions between state formation and nation building. The U.S.-Mexico border and other border zones across the globe are used to assess and challenge what is local and particular about border space.

AMST 6410. Readings in American Cultural History. 3 Credits.

Studies in the cultural history of the United States.

AMST 6420. Religion and American Culture. 3 Credits.

Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as HIST 6420.

AMST 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

AMST 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of AMST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as HIST 6431/ WGSS 6431.

AMST 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as HIST 6435/ WGSS 6435.

AMST 6450. Race in America. 3 Credits.

Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as HIST 6450.

AMST 6455. American Social Movements. 3 Credits.

The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as HIST 6455.

AMST 6460. Popular Music Studies. 3 Credits.

Readings in popular music studies; varying methodologies for American studies work on sound and popular music; cultural histories of popular music; American music transnationally. Restricted to graduate students.

AMST 6470. Cityscapes. 3 Credits.

Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as HIST 6470.

AMST 6475. U.S. Urban History. 3 Credits.

History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as HIST 6475.

AMST 6480. Theory and Practice of Public History. 3 Credits.

Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as HIST 6480.

AMST 6495. Historic Preservation: Principles and Methods. 3 Credits.

The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6495.

AMST 6496. Historic Preservation: Principles and Methods. 3 Credits.

Continuation of AMST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as HIST 6496.

AMST 6520. Economics of Preservation. 3 Credits.

Analysis of economic techniques and benefits used to encourage the retention and reuse of historic buildings and districts in the United States. Emphasis on revitalization of older commercial centers and the Mainstreet program. Permission of the instructor required prior to enrollment.

AMST 6525. The Politics of Historic Preservation. 3 Credits.

Overview of the political issues, forces, events, and players that have shaped contemporary preservation practice, with an emphasis on public policy issues that have not been resolved and continue to confront preservation objectives. Permission of the instructor required prior to enrollment.

AMST 6530. Field Methods in Architectural Documentation. 3 Credits.

In-depth thematic examination of cultural landscape, focusing on field techniques for recording, analysis, and interpretation of historic properties. Work at field sites is supplemented by lectures, discussion, and readings. Restricted to graduate students.

AMST 6550. Seminar in American Architecture. 3 Credits.

Advanced research problems addressing artistic, cultural, social, technical, and urbanistic aspects of American architecture in the 19th and 20th centuries. Topics vary. Prerequisites: AMST 2520 or AMST 2521, or permission of the instructor.

AMST 6560. Vernacular Architecture. 3 Credits.

AMST 6650. Advanced Workshop in American Studies. 1-4 Credits.

Required for first- and second-year PhD students; open to other graduate students. Provides instruction and guidance in the process of writing, revising, and submitting journal articles, conference papers, and dissertations. Faculty and peer review of written work. Students are expected to enroll for the full academic year. Restricted to American studies graduate students.

AMST 6709. Interpretation in the Historic House Museum. 3 Credits.

Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Admission by permission of instructor. Same as EDUC 6709.

AMST 6710. American Material Culture. 3 Credits.

Opportunities for research and publication based on historical objects in the collections of the Smithsonian Institution.

AMST 6720. American Decorative Arts I. 3 Credits.

Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6721. American Decorative Arts II. 3 Credits.

Continuation of AMST 6720. Recognition and evaluation of domestic artifacts from the 17th, 18th, and 19th centuries.

AMST 6730. Studies in American Art and History. 3 Credits.

Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AH 6255.

AMST 6835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as ANTH 6835.

AMST 6930. Independent Study. 3 Credits.

Permission of the instructor required prior to enrollment. Restricted to master's and doctoral candidates.

AMST 6998. Thesis Research. 3 Credits.

AMST 6999. Thesis Research. 3 Credits.

AMST 8998. Advanced Reading and Research. 1-9 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

AMST 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

ANATOMY AND CELL BIOLOGY (ANAT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANAT 1099. Variable Topics. 1-36 Credits.

ANAT 2130. Human Embryology. 3 Credits.

Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

ANAT 2150. Human Microscopic Anatomy. 3 Credits.

Normal histological structure of cells, tissues, and organs. Structural-functional correlates; the relationship between histological structure-function and the etiology of disease states.

ANAT 2160. Human Functional Neuroanatomy. 3 Credits.

Intensive introductory course on human central (CNS) and peripheral nervous systems, focusing on CNS pathways, connections, effects of lesions, and recent research findings. Restricted to juniors and seniors. Prerequisites: BISC 2202, BISC 2214, and BISC 2322 (may be waived with course director's permission).

ANAT 2181. Human Gross Anatomy. 3 Credits.

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisites: BISC 1111 and BISC 1112; except by permission of the instructor. Same As: BISC 2581.

ANAT 3099. Variable Topics. 1-12 Credits.

ANAT 5099. Variable Topics. 1-99 Credits.

ANAT 6130. Clinically Oriented Human Embryology. 3 Credits.

The mechanisms of human embryology with clinical correlations of embryological development. Developmental control mechanisms and development of basic organ systems. Molecular control of development. Assisted reproductive technologies. Congenital birth defects. Demonstration labs and online animations for clinical correlates. Restricted to students in the graduate certificate in anatomical and translational sciences program. Recommended background: Introductory course in biology. Credit cannot be earned for this course and ANAT 2130.

ANAT 6150. Clinically Oriented Human Microscopic Anatomy. 4 Credits.

The normal histological structure of cells, tissues, and organs of the human body with emphasis on clinical relevance; structural/functional correlates at both the light and electron microscopic levels; alterations in normal histology through disease or injury and the etiology of various disease states; integration of histological concepts with clinical correlates. Restricted to students in the graduate certificate in anatomical and translational sciences (GCATS) or master's in anatomical and translational sciences (M-ATS) programs. Prerequisites: BISC 1111 and BISC 2202.

ANAT 6160. Human Clinical Neuroanatomy. 3 Credits.

Anatomy and function of the human central and peripheral nervous systems. Emphasis on clinical relevance. Gross and microscopic structure, embryology, and neurophysiology of the brain, spinal cord, and nerves with descriptions of alterations in normal anatomy through disease or injury. Completion of an introductory biology course for science or non-science majors is required prior to enrollment. Restricted to students in the anatomical and translational sciences graduate certificate and Institute for Biomedical Sciences PhD programs or with the permission of the course director.

ANAT 6181. Clinically Oriented Human Gross Anatomy. 4 Credits.

Structural organization of the human body and the relationship of the organization to regional and systems-related functions; application of normal anatomical structure/function relationships to understand clinical implications of disease or injury. The laboratory is used for cadaveric dissection to learn anatomical relationships and basic knowledge of radiographic imaging. Restricted to students in the graduate certificate and master's programs in anatomical and translational sciences and other graduate students with the permission of the course director. Recommended background: Completion of higher-level science courses during the student's undergraduate degree program. Credit cannot be earned for this course and ANAT 2181.

ANAT 6182. Fundamentals of Translational Science. 4 Credits.

Fundamentals of organ development and study; how molecular defects during development can lead to disease. Restricted to students in the graduate certificate in anatomical and translational sciences program.

ANAT 6203. Human Developmental Anatomy. 1 Credit.

ANAT 6204. Neuroanatomy. 2 Credits.

ANAT 6215. Anatomy for Physician Assistant Students. 3 Credits.

Lecture and student examination of prosected cadavers. Provides foundational anatomical knowledge for future courses in the physician assistant curriculum. Restricted to students enrolled in the physician assistant program.

ANAT 6216. Cellular Anatomy and Histology. 2 Credits.

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ANAT 6219. Biomedical Ethics for Translational Sciences. 2 Credits.

Ethical issues relevant to the practice of medicine and biomedical research involving human subjects. Permission of the instructor required prior to enrollment. Restricted to graduate students. Recommended background: ANAT 6130, ANAT 6150, ANAT 6160, ANAT 6181 and ANAT 6292.

ANAT 6221. Special Topics in Stem Cell Biology. 1-3 Credits.

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ANAT 6222. Special Topics in Stem Cell Biology. 1-3 Credits.

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ANAT 6223. Special Topics in Regenerative Medicine. 2 Credits.

Students attend seminars given by invited lecturers to present their research findings and breakthroughs on topics of regenerative medicine. Seminars can be sponsored by the Department of Anatomy and Regenerative Biology, the Stem Cell Interest Group Journal and Data Club, the Molecular Medicine Graduate Program (MMED 8214), and the GW Institute for Neuroscience. Restricted to Graduate Certificate in Anatomical and Translational Sciences only. Prerequisites: Introductory Biology for Science or non-Science Majors.

ANAT 6249. Introduction to Anatomical Research. 1 Credit.

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ANAT 6252. Human Variation. 1 Credit.

ANAT 6253. Developmental Neurobiology. 3 Credits.

ANAT 6260. Developmental Genetics. 2 Credits.

ANAT 6262. Gross Anatomy of Upper and Lower Extremities. 2 Credits.

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ANAT 6264. Gross Anatomy of Head and Neck. 2 Credits.

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ANAT 6266. Gross Anatomy of Thorax and Abdomen. 2 Credits.

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ANAT 6268. Gross Anatomy of Pelvis, Perineum, and Lower Extremities. 2 Credits.

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ANAT 6275. Advanced Studies in Translational Sciences. 3 Credits.

Semester-long rotation in a research laboratory conducting translational researching, applying fundamental concepts learned in didactic courses, and developing versatility with new technologies. Permission of the program director is required. Restricted to students in the graduate certificate and master of science in anatomical and translational sciences programs. Prerequisites: Prior completion of an introductory-level course in biology for science or non-science majors.

ANAT 6276. Advanced Studies in Anatomy. 1 Credit.

Detailed study of an anatomic topic tailored to the needs of the individual student. Restricted to graduate students who are in the Graduate Certificate in Anatomical and Translational Sciences program or who have permission of the program director and medical students.

ANAT 6279. Applied Regional Anatomy. 1-5 Credits.

Regional dissection, guided readings.

ANAT 6284. Applied Surface Anatomy and Radiology. 5 Credits.

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ANAT 6291. Special Projects in Anatomy. 1-12 Credits.

Independent study on any aspect of gross anatomy.

ANAT 6292. Projects in Anatomical Sciences: Introduction to Neuroradiology. 1 Credit.

Various imaging techniques and approaches to visualize normal neuroanatomy toward development and application of skills in teamwork, presentation, discussion, and literature searches. Restricted to students in the graduate certificate in anatomical and translational sciences program.

ANAT 8120. Graduate Human Gross Anatomy. 5 Credits.

An in-depth introduction to human gross anatomy with cadaveric dissection. The structural organization of the human body, including its regional and systems-related functions. The relationship between normal human anatomical variation in structure and function and how disease and/or injury affect these relationships. Permission of the instructor is required prior to enrollment. Offered spring semester in even years. Restricted to doctoral students with permission of the instructor. Recommended background: Prior coursework in the biological sciences or anthropology.

ANAT 8501. Didactic Anatomy. 3 Credits.

Development of a didactic program to include human developmental anatomy, microscopic anatomy, gross anatomy, and/or neuroanatomy. May also include interdepartmental study.

ANAT 8802. Summer Remedial: Human Developmental Anatomy. 1 Credit.

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ANTHROPOLOGY (ANTH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ANTH 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ANTH 1001. Biological Anthropology. 4 Credits.

Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee.

ANTH 1002. Sociocultural Anthropology. 3 Credits.

Survey of the world's cultures, illustrating the principles of cultural behavior. Credit cannot be earned for this course and HONR 2047W.

ANTH 1002W. Sociocultural Anthropology. 3 Credits.

Survey of the world's cultures, illustrating the principles of cultural behavior. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ANTH 1003. Archaeology. 3 Credits.

Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises.

ANTH 1004. Language in Culture and Society. 3 Credits.

Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power.

ANTH 1005. The Biological Bases of Human Behavior. 4 Credits.

Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee.

ANTH 1099. Variable Topics. 1-36 Credits.**ANTH 2000. Sophomore Colloquium. 3 Credits.**

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

ANTH 2008. Foundations of Anthropological Thought. 3 Credits.

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: ANTH 1002.

ANTH 2008W. Foundations of Anthropology. 3 Credits.

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 2406. Human Evolutionary Genetics. 3 Credits.

Introduction to the patterns and processes of human genetic variation. Topics include human origins and migration; molecular adaptations to environment, lifestyle, and disease; ancient and forensic DNA analyses; and genealogical reconstructions.

ANTH 2501. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as WGSS 2121.

ANTH 2502. Anthropology of Science and Technology: Twenty-First Century Brave New Worlds. 3 Credits.

The relationship between science and society, with consideration of how scientific knowledge and emergent technologies affect our lives, identities, social relations, and material conditions. The sociopolitical context in which scientific knowledge is produced and the ethnographic study of biotechnology, especially genetics and its various applications.

ANTH 2505. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Prerequisites: MUS 1101 or ANTH 1002 or ANTH 1004 or permission of the instructor. (Same as MUS 2105).

ANTH 2506. Religion, Myth, and Magic. 3 Credits.

Anthropological approaches to religion from a cross-cultural perspective; ethnographic examples of religious beliefs and activity, with emphasis on non-Western societies; religious process and change.

ANTH 2533. Material Culture in America. 3 Credits.

Review and analysis of the cultural messages embedded in our material surroundings. Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as AMST 2533.

ANTH 2750. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2750, AMST 2750W, ANTH 2750W.

ANTH 2750W. Latinos in the United States. 3 Credits.

Exploration of the term Latino and its impact on discussions of race, identity, and citizenship expectations throughout U.S. history. How geographic, linguistic, aesthetic, political, and economic factors construct Latino identity and influence policymaking and international relations. Same As: AMST 2750, AMST 2750W, ANTH 2750.

ANTH 2821. Myths and Mysteries in Archaeology. 3 Credits.

How archaeological methods and techniques can falsify, or support, exotic beliefs about the past. Topics range from King Arthur to Atlantis.

ANTH 2822. Archaeology in Film and Television. 3 Credits.

The relationships between archaeology, the media, and popular culture; nationalism, descendant communities, gender, race, and colonialism.

ANTH 3099. Variable Topics. 1-12 Credits.**ANTH 3401. Human Functional Anatomy. 3 Credits.**

The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3402. Human Evolutionary Anatomy. 3 Credits.

The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominins. Prerequisite: ANTH 1001.

ANTH 3403. Forensic Anthropology Laboratory. 2 Credits.

Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations. Taught at the Smithsonian. Corequisite: ANTH 3404.

ANTH 3404. Human Variation. 1 Credit.

An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Corequisite: ANTH 3403 Prerequisite: ANTH 1001. Same As: ANAT 6252.

ANTH 3406. Advanced Human Osteology. 3 Credits.

Advanced techniques in determination of age, sex, ancestry, and pathological conditions using the skeleton. Taught at the Smithsonian. Prerequisites: ANTH 3403 and ANTH 3404.

ANTH 3407. Conservation in a Changing World: Human and Animal Behavior. 3 Credits.

How humans and animals interact in a wide variety of settings, how human and animal welfare can be ensured, and how we can create a scientifically sound, yet socially and economically acceptable, conservation of the planet's biodiversity. Prerequisites: ANTH 1001.

ANTH 3408. The Evolution of Human Families. 3 Credits.

Human parental behavior considered from an evolutionary perspective, including parental care among mammals, concepts of parental investment, and parent-offspring conflict. Focus on parenting in the human lineage from early hominins to hunter-gatherers to the modern context. Prerequisites: ANTH 1001.

ANTH 3409. Evolution of Primate Life Histories. 3 Credits.

Human and non-human primate life histories and their evolution; factors such as body size, brain size, fertility, and life span. Features of modern human life histories, proposed explanations for them, and pertinent fossil evidence. Prerequisite: ANTH 1001.

ANTH 3411. Primatology. 3 Credits.

Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: ANTH 1001.

ANTH 3412. Hominin Evolution. 3 Credits.

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3412W. Hominin Evolution. 3 Credits.

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisite: ANTH 1001.

ANTH 3413. Evolution of the Human Brain. 3 Credits.

Examination of how the human brain is unique in comparison to other animals, with an emphasis on understanding our species' distinctive neurobiology in terms of the evolution of cognitive abilities such as language, social comprehension, tool making, and abstract thinking.

ANTH 3491. Topics in Biological Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. Instructors are drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Prerequisite: ANTH 1001.

ANTH 3501. Anthropology of Development. 3 Credits.

The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3502. Cultural Ecology. 3 Credits.

Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004 or ANTH 1004W or permission of the instructor.

ANTH 3503. Psychological Anthropology. 3 Credits.

The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisites: ANTH 1002 or permission of the instructor.

ANTH 3504. Illness, Healing, and Culture. 3 Credits.

Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; and the role of medical anthropology in health care and international development. Prerequisites: ANTH 1002 or permission of the instructor.

ANTH 3506. Politics, Ethnicity, and Nationalism. 3 Credits.

Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, and political ritual. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W; or permission of the instructor.

ANTH 3507. Kinship, Family, and Community. 3 Credits.

Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms. Prerequisites: ANTH 1002 or permission of the instructor.

ANTH 3508. Art and Culture. 3 Credits.

The role of art in culture, with emphasis on small-scale societies. Influences upon the artist, and beliefs and practices associated with art production. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W; or permission of the instructor.

ANTH 3513. Anthropology of Human Rights. 3 Credits.

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W; or permission of the instructor.

ANTH 3513W. Anthropology of Human Rights. 3 Credits.

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3521. Visual Anthropology and the Social Lives of Images. 3 Credits.

Exploration of what still and moving images do in different cultural contexts, their social lives as they circulate, and how they are transformed as objects and a technology in diverse settings. Prerequisites: ANTH 1002 or ANTH 1002W.

ANTH 3531. Methods in Sociocultural Anthropology. 3 Credits.

Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students design and carry out their own field projects in the Washington area. Prerequisite: ANTH 1002.

ANTH 3601. Language, Culture, and Cognition. 3 Credits.

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Same as LING 3601. Prerequisite: ANTH 1004. Laboratory fee.

ANTH 3602. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisites: ANTH 1004. (Same as LING 3602).

ANTH 3602W. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1004.

ANTH 3603. Psycholinguistics. 3 Credits.

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as LING 3603.

ANTH 3625. Ethnographic and Historical Perspectives on Data Ethics. 3 Credits.

An introduction to ethics of data sciences from two disparate perspectives: historical and ethnographic. For students in all fields interested in understanding and evaluating the ethical implications of data and algorithms. Same As: AMST 3625.

ANTH 3691. Special Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ANTH 1004 or permission of the instructor. (Same as LING 3691).

ANTH 3701. Native Peoples - North America. 3 Credits.

Comparative study of Indian groups representative of the different culture areas of the United States and Canada. Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: ANTH 1002 or permission of instructor.

ANTH 3702. Anthropology of Latin America. 3 Credits.

Culture history and ways of life in a selected region of Central or South America. Regional focus to be announced in the Schedule of Classes. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3703. Cultures of the Pacific. 3 Credits.

Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisites: ANTH 1002 or ANTH 1004.

ANTH 3704. Cultures of Southeast Asia. 3 Credits.

Anthropological introduction to the cultures of Southeast Asia; the role of biocultural evolution, political economy, gender, colonialism, nationalism, and globalization, particularly in Vietnam, Myanmar, Thailand, Malaysia, Indonesia, and the Philippines.

ANTH 3705. Anthropology of East Asia. 3 Credits.

Intensive study of the culture and history of selected peoples of East or Central Asia. Specific area to be announced in the Schedule of Classes. May be repeated for credit. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3707. Anthropology of the Middle East. 3 Credits.

Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Middle East; emphasis on the Arab world. Prerequisites: ANTH 1002 or ANTH 1004.

ANTH 3708. Anthropology of Africa. 3 Credits.

Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisites: ANTH 1002 or ANTH 1004.

ANTH 3709. Japanese Culture Through Film. 3 Credits.

Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. Same as JAPN 3162.

ANTH 3710. Latin America Cinema, Indigenous Media, and Social Movements. 3 Credits.

Major topics in Latin American film and media studies. Political, economic, social, and cultural forces that have shaped Latin American cinema. The role indigenous artists, activists, and social organizations play in shaping Latin American cinema. Same As: ANTH 6710.

ANTH 3791. Topics in Regional Anthropology. 3-4 Credits.

Culture, history, and ways of life in a selected region of the world. Topics vary. Consult the Schedule of Classes for more details. Prerequisites: ANTH 1002 or ANTH 1002W or ANTH 1004.

ANTH 3801. African Roots from Australopithecus to Zimbabwe. 3 Credits.

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisites: ANTH 1003 or permission of the instructor.

ANTH 3801W. African Roots from Australopithecus to Zimbabwe. 3 Credits.

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3802. Human Cultural Beginnings. 3 Credits.

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: ANTH 1003.

ANTH 3802W. Human Cultural Beginnings. 3 Credits.

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3803. Old World Prehistory: First Farmers to First Cities. 3 Credits.

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisites: ANTH 1003.

ANTH 3803W. Old World Prehistory: First Farmers to First Cities. 3 Credits.

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3804. Origins of the State and Urban Society. 3 Credits.

Emergence of urbanism and the state in the prehistory of various world regions. Regions covered might include India, China, Mexico, and the Pacific, among others. Prerequisites: ANTH 1003.

ANTH 3805. Archaeology of Israel and Neighboring Lands. 3 Credits.

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 3106.

ANTH 3806. Art and Archaeology of the Aegean Bronze Age. 3 Credits.

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700-1200 B.C.) Same as AH 3104.

ANTH 3808. Archaeology and the Celts. 3 Credits.

The archaeology and history of the Celtic peoples, particularly how ethnicities and identities are defined and how these can be recovered from material culture; how archaeological ideas of the Celts have informed modern group identities. Prerequisites: ANTH 1003.

ANTH 3811. Historical Archaeology. 3 Credits.

Survey of the basic data and methods of research in the material culture of recent history. Same as AmSt 3811.

ANTH 3812. The Aztec Empire. 3 Credits.

Using archaeology, art, and ethnohistoric documents, this course focuses on the importance of power in Aztec society and how the normalization of violence created a form of social cohesion central to the state. Prerequisite: ANTH 1003. (Same as AH 3116, CAH 3116).

ANTH 3813. Archaeology of North America. 3 Credits.

History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: ANTH 1003.

ANTH 3814. Ancient Mexican Civilizations. 3 Credits.

Cultural history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter-gatherers and first farmers to the Aztec Empire. Prerequisite: ANTH 1003. (Same as AH 3107, CAH 3107).

ANTH 3823. Archaeology of Ritual and Religion. 3 Credits.

Archaeological and ethnographic examples from around the world are used to critically evaluate how archaeologists make inferences about ritual practices and the religious lives of past peoples. Issues include the origins of symbolic behavior, sacred landscapes, shamanism, ancestor veneration, and sorcery/witchcraft.

ANTH 3831. Paleoanthropological Field Program. 0 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Departmental approval required. Restricted to fellowship students. Credit cannot be earned for this course and ANTH 3832.

ANTH 3832. Paleoanthropological Field Program. 4 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 3833. Field Research: New World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at localities in North or South America. See Schedule of Classes for details.

ANTH 3834. Field Research: Old World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at Neolithic or later localities in Eurasia, Africa, or Oceania. See Schedule of Classes for details.

ANTH 3835. Historical Archaeology Field Program. 3 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 3835.

ANTH 3836. Koobi Fora Field School (Fellowship). 0 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Visits to comparative sites and collections in the region. Instructor approval required. Restricted to fellowship students.

ANTH 3838. Theory and Practice in Archaeology. 3 Credits.

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: ANTH 1003.

ANTH 3838W. Theory and Practice in Archaeology. 3 Credits.

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ANTH 1003.

ANTH 3839. Lab Research Methods in Archaeology. 3 Credits.

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Prerequisite: ANTH 1003.

ANTH 3891. Special Topics in Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ANTH 1003 or permission of the instructor.

ANTH 3991. Special Topics. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 3991W. Special Topics. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AMST 2490W.

ANTH 3995. Undergraduate Research. 1-12 Credits.

Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Permission of the instructor required prior to enrollment.

ANTH 4008. Seminar: Contemporary Anthropological Theory. 3 Credits.

The development of major trends in anthropological theory. How anthropologists from the four fields—sociocultural, linguistic, biological, and archaeology—have deployed and developed the ideas of theorists in their own empirical research and theorizing about specific processes. Prerequisite: ANTH 2008.

ANTH 4008W. Seminar: Contemporary Anthropological Theory. 3 Credits.

The development of major trends in anthropological theory. How anthropologists from the four fields -- sociocultural, linguistic, biological, and archaeology -- have deployed and developed the ideas of theorists in their own empirical research and theorizing about specific processes. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ANTH 2008 or ANTH 2008W.

ANTH 5099. Variable Topics. 1-99 Credits.

ANTH 6101. Proseminar in Biological Anthropology. 3 Credits.

Comprehensive overview of theory and practice in biological anthropology.

ANTH 6102. Proseminar in Sociocultural Anthropology. 3 Credits.

Comprehensive overview of theory and practice in sociocultural anthropology.

ANTH 6103. Proseminar in Archaeology. 3 Credits.

Survey of the most recent archaeological techniques and theoretical approaches to reconstructing and interpreting the cultures of the past.

ANTH 6104. Proseminar in Linguistic Anthropology. 3 Credits.

Contemporary anthropological studies of language in biological, social, and historical perspectives.

ANTH 6200. Museum Anthropology. 3 Credits.

How anthropological collections take shape in the past and carry meaning in the present. Critical examination of artifacts and forms of documentation. Application of material culture theory to museum records, collected objects, the changing meaning given to objects, and the context of collecting.

ANTH 6201. Methods in Museum Anthropology. 3 Credits.

How anthropological collections take shape in the past and carry meaning in the present. Research and analysis of existing collections; issues in museum anthropology.

ANTH 6203. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as MSTD 6203/ AH 6286.

ANTH 6204. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as MSTD 6204/ AH 6287.

ANTH 6205. Problems in Conservation. 3 Credits.

Individual conservation projects to determine composition, construction, decomposition of materials, and possible stabilization techniques. Conservation laboratory experience. AH 6286 or ANTH 6203 may be taken as a corequisite. Prerequisites: AH 6286 or ANTH 6203.

ANTH 6230. Internship in Museum Anthropology. 1-6 Credits.

Supervised individual research and/or field work at the Smithsonian Institution or other area museums, arranged in consultation with the museum and the Anthropology Department. Admission by arrangement with the department chair or museum training advisor. May be repeated for credit up to a maximum of 6 credits.

ANTH 6291. Special Topics in Museum Anthropology. 3 Credits.

The social context and changing meaning of selected cultural processes or aspects of material culture that are represented in museums or public monuments. Topics vary by semester. See department for more details.

ANTH 6301. The Anthropology of Development. 3 Credits.

Theoretical perspectives that distinguish the contribution of anthropology to understanding processes of change in the Third World. Focus on health, population, environment, gender, and tourism issues. The role of anthropology in planning and implementing projects and policy.

ANTH 6302. Issues in Development. 3 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6330. Internship in Development Anthropology. 3 Credits.

Supervised participation in a selected development agency or other relevant organization. Opportunity to observe agency procedures and gain practical experience. Admission by permission of instructor or department chair.

ANTH 6331. Research Methods in Development Anthropology. 3 Credits.

Anthropologists' roles in research-related activities, such as feasibility studies, social soundness analysis, and evaluations. Innovative research techniques, such as interactive data gathering, team survey methods, and rapid rural appraisal. Admission by permission of instructor.

ANTH 6391. Anthropology and Contemporary Problems. 3 Credits.

Exploration of anthropological perspectives on a current issue, such as refugees, ethnic violence, national mythologies, and women's health in developing countries. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6401. Human Functional Anatomy. 3 Credits.

Growth and function of the musculoskeletal system, including the development, anatomy, and histology of bone, biomechanics of muscle and skeletal tissue, craniofacial and dental growth and morphology, and locomotion. No prior knowledge of anatomy required. Laboratory fee.

ANTH 6403. Primate Behavior. 3 Credits.

Behavioral diversity and trends found in primates, both within and between primate species. How ecology relates to behavior, biology, and individual fitness. Presents pertinent theoretical models and draws from non-primate examples as appropriate. Restricted to Students in the MS and PhD in human paleobiology and MA and PhD in anthropology programs (other graduate students and undergraduates with the permission of the instructor).

ANTH 6404. The Evolution of Primate Life Histories. 3 Credits.

Recent developments in the study of human and non-human life histories. Life history theory. Life history traits compared among primate groups in order to determine how selective pressures have shaped extant primate life history patterns. Laboratory fee.

ANTH 6406. Human Genetic Variation. 3 Credits.

The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as FORS 6246.

ANTH 6407. Anthropological Genetics. 3 Credits.

Molecular approaches to understanding human evolution and diversity; current research findings and new methodologies; social and ethical issues, including commercial DNA testing and ownership of biological samples.

ANTH 6412. Paleoanthropology. 1-3 Credits.

Survey of current research in hominid and hominoid evolution, focusing on the integrated nature of the field. Contributions from the geological and biological sciences are stressed, together with innovative geochemical techniques for establishing chronological sequences. Prerequisites: ANTH 3412 or BISC 2450.

ANTH 6413. Analytical Methods in Human Evolutionary Studies. 3 Credits.

A survey of methods and approaches for data collection and analysis in human evolutionary biology research. Topics include comparative methods and basic and multivariate statistics.

ANTH 6491. Topics in Biological Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. Instructors are drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Credit cannot be earned for this course and FORS 6290.

ANTH 6501. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender; postcolonialism, sexuality, and literary representations of gender. Same as WGSS 6257.

ANTH 6504. Social Study of Science and Technology. 3 Credits.

Concepts, theories, and cases in contemporary science and technology studies with an emphasis on the public and policy relevance of theory. Ethnographic material includes studies of laboratories, technomedicine, and environmental controversies.

ANTH 6505. Medical Anthropology. 3 Credits.

Concepts and theories in contemporary medical anthropology, including "critical" versus "conventional" medical anthropology, changes in approaches since the mid-twentieth century; structural and cultural construction of illness and suffering; ethnographic and epidemiological perspectives.

ANTH 6506. Topics in Medical Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6507. Nationalism and Ethnicity. 3 Credits.

Major theoretical and ethnographic issues in the study of nationalism worldwide. Explores how ethnic groups emerge in colonial and contemporary plural societies and how states attempt to integrate ethnic groups into nations.

ANTH 6508. Ethics and Cultural Property. 3 Credits.

Survey of ethical issues in anthropology, focusing on cultural property and repatriation; the epistemological, ethical, and political dilemmas of excavating, collecting, and owning cultural artifacts.

ANTH 6510. War and Memory. 3 Credits.

The lived experiences of violent conflict through an anthropological lens. Focus on war's toll and theories of memory; witnessing and reckoning with genocide; diasporic memory; memorials, monuments, and the missing. Restricted to graduate students.

ANTH 6531. Methods in Sociocultural Anthropology. 3 Credits.

Epistemology; the definition of research problems; selection of research subjects and sites; techniques of data collection (e.g., surveys, interviews); data management and organization; ethical protocols; issues of safety; grant writing and funding.

ANTH 6561. American Folklife. 3 Credits.

The materials of American folk culture, concentrating on folk architecture, crafts, and art. Major organizing themes are regionalism and the use of objects as indicators of cultural intention. Same as AMST 6561.

ANTH 6562. Folklore Theory. 3 Credits.

An intellectual history of American folklore research; analysis of particular theories and methods. Same as AMST 6562.

ANTH 6591. Topics in Sociocultural Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies. Credit cannot be earned for this course and AMST 6190.

ANTH 6691. Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic varies.

ANTH 6702. Issues in Latin American Anthropology. 3 Credits.

Intensive study of a selected topic in the anthropology of Central and/or South America. Topic to be announced.

ANTH 6707. Issues in Middle East Anthropology. 3 Credits.

Selected topics in the anthropology of the Middle East. Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ANTH 6710. Latin America Cinema, Indigenous Media, and Social Movements. 3 Credits.

Major topics in Latin American film and media studies. Political, economic, social, and cultural forces that have shaped Latin American cinema. The role indigenous artists, activists, and social organizations play in shaping Latin American cinema. Same As: ANTH 3710.

ANTH 6801. Paleolithic Archaeology. 3 Credits.

Current problems relating to materials from the Old World.

ANTH 6802. Problems in Eurasian and African Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. Topics may include Bronze Age conflict, the Celts, etc. May be repeated for credit.

ANTH 6803. Problems in New World Archaeology. 3 Credits.

Current archaeological problems relating to the origin and development of aboriginal cultures. Specific topic to be announced in the Schedule of Classes. May be repeated for credit.

ANTH 6804. Problems in Mesoamerican Archaeology. 3 Credits.

Topics range from specific civilizations, such as the Olmec, to pan-Mesoamerican topics, such as religion and exchange. May be repeated for credit.

ANTH 6806. Technology. 3 Credits.

Cross-cultural examination of the form, function, meaning, and use of material culture (such as ceramics or stone tools) and the behavior patterns involved in its production. Topic vary by semester. Consult the Schedule of Classes for more details.

ANTH 6807. Public Archaeology. 3 Credits.

The use and creation of the past and the relationship between archaeologists and different publics.

ANTH 6832. Paleoanthropological Field Program. 4 Credits.

Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region.

ANTH 6833. Field Research: New World. 1-6 Credits.

Survey, excavation, and/or laboratory analysis at localities in North or South America. Consult the Schedule of Classes for more details.

ANTH 6835. Historical Archaeology Field Program. 3-6 Credits.

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes. Same as AMST 6835.

ANTH 6836. Koobi Fora Field School (Fellowship). 0 Credits.

Field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Visits to comparative sites and collections in the region. Instructor approval required. Restricted to fellowship students.

ANTH 6838. Archaeological Theory. 3 Credits.

Overview of major theories and positions in American archaeology; examination of new issues and directions in which the field appears to be moving.

ANTH 6839. Lab Research Methods in Archaeology. 3,4 Credits.

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Laboratory fee.

ANTH 6891. Topics in Archaeology. 3 Credits.

Major issues related to the theory and practice of archaeology. Topic announced in the Schedule of Classes.

ANTH 6995. Research. 1-12 Credits.

May be repeated for credit.

ANTH 6998. Thesis Research. 3 Credits.**ANTH 6999. Thesis Research. 3-9 Credits.**

Development of a thesis project and accompanying research.

ANTH 8695. Linguistic Field Methods. 3 Credits.

The relationship between language and thought in dialogue with the study of a particular foreign language. Ethnographic study of language and cognition and the application of linguistic theory and method to anthropological research. Methods of elicitation and textual analysis, and technologies used for storing and analyzing linguistic data. Restricted to graduate students.

ANTH 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ANTH 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

APPLIED SCIENCE (APSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SEAS and its departments manage APSC courses as follows:

- SEAS Dean's Office—1001, 3098, 6215, 6216
- Civil and Environmental Engineering—2057, 2113, 6211, 6214
- Mechanical and Aerospace Engineering—2058, 6212, 6213
- Electrical and Computer Engineering—2114

APSC 1001. Introduction to Engineering for Undeclared Majors. 1 Credit.

As an introduction to disciplines within SEAS, potential solutions to problems are presented by practitioners of civil and environmental engineering; computer science; electrical, computer, and biomedical engineering; mechanical and aerospace engineering; and systems engineering.

APSC 1099. Continuous Research. 1 Credit.**APSC 2057. Analytical Mechanics I. 3 Credits.**

First half of a one-year sequence. Concepts of statics: force systems, conditions of force and moment equilibrium, simple structures, distributed forces, centroids, internal forces, friction, moments of inertia. Prerequisites: PHYS 1021. (Fall and spring).

APSC 2058. Analytical Mechanics II. 3 Credits.

Second half of a one-year sequence. Concepts of dynamics: kinematics of particles, velocity and acceleration, translating and rotating reference frames, particle dynamics, motion under central and electromagnetic force, effect of Earth's rotation, vibrations, work, kinetic and potential energy, dynamics of systems of particles. Prerequisite: APSC 2057. (Fall and spring, Every Year).

APSC 2113. Engineering Analysis I. 3 Credits.

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: applications of ordinary differential equations, matrices and determinants, eigenvalues and eigenvectors, systems of ordinary linear differential equations, Bessel and Legendre functions. Prerequisite or concurrent registration: MATH 2233.

APSC 2114. Engineering Analysis II. 3 Credits.

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: complex variables, Fourier series and integral, frequency filters, Laplace transforms, inversion and Duhamel integrals; partial differential equations. Prerequisite: MATH 2233.

APSC 3098. Variable Topics. 1-36 Credits.**APSC 3115. Engineering Analysis III. 3 Credits.**

Analytical methods for the solution of problems in engineering using concepts from probability and statistics: probability modeling, random variables and their distributions, mathematical expectation, sampling, point and confidence interval estimation, hypothesis testing, correlation, regression, and engineering applications. (Fall, spring, and summer).

APSC 3116. Engineering Analysis IV. 3 Credits.

Analytical methods using advanced concepts from probability and statistics: multivariate distributions, expectation, generating functions, parametric families of distributions, sampling and sufficient statistics, estimation, hypothesis testing, and engineering applications. May be taken for graduate credit. Prerequisites: APSC 3115 and MATH 2233. (Fall, Every Year).

APSC 5099. Variable Topics. 1-99 Credits.**APSC 6211. Analytical Methods in Engineering I. 3 Credits.**

Engineering applications of the theory of complex variables: contour integration, conformal mapping, inversion integral, and boundary-value problems. Prerequisite: approval of department.

APSC 6212. Analytical Methods in Engineering II. 3 Credits.

Algebraic methods appropriate to the solution of engineering computational problems: linear vector spaces, matrices, systems of linear equations, eigenvalues and eigenvectors, quadratic forms. Permission of the department required prior to enrollment. (Spring, Every Year).

APSC 6213. Analytical Methods in Engineering III. 3 Credits.

Analytical techniques for solution of boundary-initial-value problems in engineering: wave propagation, diffusion processes, and potential distributions. Permission of the department required prior to enrollment. (Spring, Every Year).

APSC 6214. Analytical Methods in Engineering IV. 3 Credits.

Introduction to variational methods in engineering: Ritz and Galerkin approximation methods of boundary-value problems, aspects of linear integral equations arising from engineering analysis. Permission of the department required prior to enrollment. (Spring, Every Year).

APSC 6215. Analytical Methods in Engineering V. 3 Credits.

Advanced methods of solution of boundary-initial-value problems in engineering: characteristics, wave propagation, and Green's functions. Prerequisite: APSC 6213.

APSC 6216. Special Topics in Engineering Analysis. 3 Credits.

Selected topics, such as perturbation techniques applied to approximate solution of nonlinear boundary and initial-value problems in engineering; application of singular integral equations in problems of mechanics. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

ARABIC (ARAB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ARAB 1001. Beginning Arabic I. 4 Credits.

Fundamentals of grammar and pronunciation and development of speaking, listening, reading, and writing skills in culturally appropriate contexts.

ARAB 1002. Beginning Arabic II. 4 Credits.

Continuation of ARAB 1001. Fundamentals of speaking, listening, reading, and writing in culturally appropriate and proficiency-oriented contexts. Prerequisite: ARAB 1001.

ARAB 1099. Variable Topics. 16 Credits.**ARAB 1201. Intensive Elementary Arabic I. 6 Credits.**

Accelerated learning of fundamentals of speaking, listening, reading, and writing Arabic in culturally appropriate contexts for proficiency.

ARAB 1202. Intensive Elementary Arabic II. 6 Credits.

Continuation of ARAB 1201. Fundamentals of speaking, listening, reading, and writing of Arabic in culturally and linguistically appropriate contexts. Prerequisites: ARAB 1201.

ARAB 2001. Intermediate Arabic I. 4 Credits.

Continuation of ARAB 1002. Further development of speaking, listening, reading, and writing skills of Arabic in culturally appropriate, proficiency-oriented contexts. Prerequisites: ARAB 1002.

ARAB 2002. Intermediate Arabic II. 4 Credits.

Continuation of ARAB 2001. Further development of speaking, listening, reading, and writing skills of Arabic in culturally appropriate and proficiency-oriented contexts. Prerequisites: ARAB 2001 or ARAB 1202.

ARAB 2105. Topics in Arabic Studies. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

ARAB 2201. Intensive Intermediate Arabic I. 6 Credits.

Continuation of ARAB 1202. Prerequisite: ARAB 1202. Laboratory fee.

ARAB 3001. Advanced Arabic. 4 Credits.

Emphasis on development of speaking, listening, reading, and writing skills at the advanced level of proficiency in culturally appropriate contexts. Discussion of cultural and social issues based on a selection of contemporary written and audiovisual materials from Arab literary and media sources. Prerequisites: ARAB 2002.

ARAB 3099. Variable Topics. 1-12 Credits.**ARAB 3105. Special Topics. 3 Credits.**

Topic announced in the Schedule of Classes may be repeated for credit provided the topic differs.

ARAB 3201. Intensive Advanced Arabic: Mass Media. 6 Credits.

Continuation of ARAB 2201. Accelerated learning of Arabic skills in speaking, listening, reading, and writing at the intermediate/advanced level of proficiency in culturally appropriate contexts. Prerequisites: ARAB 2201.

ARAB 3301. Modern Arabic Literature. 3 Credits.

Short stories, short plays, poems, literary essays in Modern Standard Arabic, with attention to linguistic and literary stylistic aspects. Prerequisites: ARAB 3001 or ARAB 3201.

ARAB 3302. Media Arabic. 3 Credits.

Authentic scripted and audiovisual materials from various contemporary Arab media outlets including television and radio newscast and cultural programs, newspaper and magazine articles, and the Internet. Prerequisites: ARAB 3001 or ARAB 3301; or permission of the instructor.

ARAB 3311. Business Arabic. 3 Credits.

General and specific business language skills used in a variety of business operations and settings, such as making presentations, researching opportunities, conducting interviews, and negotiating. Prerequisite: ARAB 3001.

ARAB 3501. Arabic and Arab Identity. 3 Credits.

History of the Arabic language from pre-Islamic times and its subsequent spread into contiguous regions. The role of the Arabic language in formulating the ideology of Arab nationalism and identity. Course is conducted in English.

ARAB 3502. Arab Film and Culture in English. 3 Credits.

Historical and thematic survey of Arab cinema and its expression of Arab culture. Course is conducted in English.

ARAB 3503. Fundamentals of Arabic Linguistics. 3 Credits.

Introduction to the structures, functions, and varieties of Arabic from a descriptive linguistics perspective. The history of the language, including contributions of major medieval Arabic grammarians. Analysis of standard and dialectal varieties of Arabic. Course is conducted in English.

ARAB 3901. Directed Projects. 1-3 Credits.

Individual advanced reading or research, to be arranged with a member of the faculty. Permission of the instructor and department required prior to enrollment. May be repeated for credit.

ARAB 4001. Genres in Modern Arabic Literature. 3 Credits.

Historical development of modern short Arabic stories or short Arabic plays throughout the twentieth and twenty-first centuries. Prerequisites: ARAB 3301 or permission of the instructor.

ARAB 4002. Arabic Narratives Through the Ages. 3 Credits.

Reading and discussion of diachronic narratives in texts, such as those found in stories of The Thousand and One Nights, or travel adventures, such as those of Ibn Battuta and his successors. Prerequisites: ARAB 3301 or permission of the instructor.

ARAB 4501. Arabic-English Translation. 3 Credits.

Theoretical background and practical applications of translation strategies from Arabic to English that are necessary for professional translation tasks. Prerequisite: ARAB 3301 or ARAB 3302.

ARAB 4502. Arabic-English Advanced Translation and Editing. 1-3 Credits.

The professional translation and editing of various types of material. Prerequisite: ARAB 4501.

ARAB 5099. Variable Topics. 1-99 Credits.

ART HISTORY (AH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

AH 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

AH 1031. Survey of Art and Architecture I. 3 Credits.

Selective survey of painting, sculpture, architecture, and material culture in Europe, Asia and the Mediterranean before 1300 CE; theoretical, analytical and critical approach to works of art in relation to their greater historical, cultural, political, economic, and religious contexts. Includes visits to area museums. Credit cannot be earned for this course and CAH 1031.

AH 1032. Survey of Art and Architecture II. 3 Credits.

Continuation of AH 1031. An introduction to the history of art through the study of major monuments, movements, and concepts. From the early Renaissance through the Baroque and modern eras.

AH 1070. The American Cinema. 3 Credits.

History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. (Same as AMST 1070).

AH 1099. Variable Topics. 1-36 Credits.

AH 1135. Spanish Art: Prado/Thyssen Museums. 3 Credits.

AH 1136. Spanish Art: From Goya to Picasso. 3 Credits.

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AH 2001. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See the department for more details.

AH 2001W. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AH 2071. Introduction to the Arts in America. 3 Credits.

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender. (Same as AMST 2071).

AH 2113. Survey of Early Islamic Art and Architecture from the Seventh to Fourteenth Centuries. 3 Credits.

Introductory survey of the visual arts and architecture in the Muslim lands from the seventh to the fourteenth centuries. Analysis of arts ranging from Spain in the west to Central Asia, Iran, and India in the east within their historical, religious, and cultural contexts.

AH 2114. Survey of Islamic Art and Architecture from the Fourteenth Century to the Present. 3 Credits.

Introductory survey of the visual arts and architecture in the Muslim lands from the fourteenth century to the present. Analysis of arts ranging from Spain in the west to Central Asia, Iran, and India in the east within their historical, religious, and cultural contexts.

AH 2145. History of Decorative Arts: European Heritage. 3 Credits.

Changing styles of European furniture, textiles, ceramics, and glass in the context of general trends in art history and changing patterns in economic, technological, social, and cultural history. From antiquity to the modern age.

AH 2154. American Architecture I. 3 Credits.

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns as a means of interpreting historic meaning; analysis of buildings both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600 to 1860. (Same as AMST 2520, CAH 2154).

AH 2155. American Architecture II. 3 Credits.

Continuation of AH 2154. Stylistic properties, form, and type characteristics, technological developments, and urbanistic patterns as a means of interpreting historic meaning; analysis of buildings both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860 to present. (Same as AMST 2521, CAH 2155).

AH 2161. History of Decorative Arts: American Heritage. 3 Credits.

The decorative arts in America from the seventeenth century to the modern period. Consideration of changing visual characteristics in relation to the changing American experience.

AH 2162. History of Photography. 3 Credits.

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

AH 2162W. History of Photography. 3 Credits.

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AH 2190. East Asian Art. 3 Credits.

Introduction to the visual and material cultures of East Asia from the prehistoric to modern periods, covering the areas of contemporary China, Japan, and Korea. (Same as CAH 2190).

AH 2191. South Asian Art. 3 Credits.

Visual and material cultures of South Asia from the prehistoric to contemporary periods, covering modern Afghanistan, Bangladesh, India, Nepal, Pakistan, and Sri Lanka. No previous knowledge of South Asian history or art history is required. (Same as CAH 2191).

AH 2192. Art of Southeast Asia. 3 Credits.

The arts of Southeast Asia, covering areas of Vietnam, Laos, Cambodia, Myanmar, Thailand, and Indonesia, especially Java and Bali. The fusion of Indian and Chinese concepts with indigenous cultural traits. (Same as CAH 2192).

AH 3099. Variable Topics. 12 Credits.**AH 3101. Ancient Art of the Bronze Age and Greece. 3 Credits.**

A survey of Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Thera volcanic eruption, the "Dorian Invasion," the portrayal of women, "heroic nudity," and the assumption of a stylistic chronology.

AH 3102. Ancient Art of the Roman Empire. 3 Credits.

A survey of Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

AH 3103. Art and Archaeology of Egypt and the Near East. 3 Credits.

The great artistic tradition of the Nile Valley and the contemporary civilizations (c. 3000 B.C. to after 1000 B.C.) between the rivers Tigris and Euphrates (present day Iraq). The Pyramid Age, the temples at Karnak and Luxor, the tombs of the Valley of the Kings, and the artistic traditions of the Sumerians, Akkadians, Babylonians, Assyrians, and Persians.

AH 3104. Art and Archaeology of the Aegean Bronze Age. 3 Credits.

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700-1200 B.C.). Same as ANTH 3806.

AH 3105. Topics in Ancient Art and Archaeology. 3 Credits.

May be repeated for credit provided the topic differs. Same as CLAS 3115.

AH 3106. Art and Archaeology of Israel and Neighboring Lands. 3 Credits.

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as ANTH 3805.

AH 3107. Ancient Mexican Civilizations. 3 Credits.

Cultural history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter-gatherers and first farmers to the Aztec Empire. Prerequisite: ANTH 1003. (Same as ANTH 3814, CAH 3107).

AH 3111. Early Christian and Byzantine Art and Architecture. 3 Credits.

Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

AH 3112. Proseminar in Romanesque and Gothic Art and Architecture. 3 Credits.

The origin of Western art in the Hiberno-Saxon and Carolingian worlds, their relationship to the Ancient heritage and to the contemporary Byzantine art. Romanesque and Gothic architecture and its sculptural decoration as art historical and social phenomena. Same As: CAH 3112, CAH 6212. Credit cannot be earned for this course and AH 6212.

AH 3113. Islamic Art and Architecture. 3 Credits.

Introduction to the visual culture of the Muslim world, from Spain to India, from the seventh century to the present. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as CAH 3113).

AH 3114. Art of the Book in the Medieval Muslim World. 3 Credits.

Painting and book illumination in the Islamic world, beginning with the rise of Islam in the seventh century and ending with the seventeenth century. Uses written sources and works of art and material culture to better understand the unity and diversity of the Islamic world and its complex attitude toward images. (Same as CAH 3114).

AH 3114W. Art of the Book in the Medieval Muslim World. 3 Credits.

Introduction to the history of illustrated manuscripts, painting, and book illumination in the Muslim world, from the rise of Islam in the seventh century through the seventeenth century. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AH 3116. The Aztec Empire. 3 Credits.

Using archaeology, art, and ethnohistoric documents, this course focuses on the importance of power in Aztec society and how the normalization of violence created a form of social cohesion central to the state. Prerequisite: ANTH 1003. (Same as ANTH 3812, CAH 3116).

AH 3117. Special Topics in Precolumbian Art and Archaeology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3120. Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

AH 3121. Italian Art and Architecture of the Sixteenth Century. 3 Credits.

The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

AH 3122. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

AH 3122W. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

AH 3123. Topics in Northern Renaissance Art and Architecture. 3 Credits.

Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3123W. Topics in Northern Renaissance Art and Architecture. 3 Credits.

AH 3131. Italian Art and Architecture of the Seventeenth Century. 3 Credits.

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

AH 3132. Topics in Northern European Art and Architecture of the Seventeenth Century. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. (Same as CAH 3132).

AH 3134. Topics in Spanish and Portuguese Art through the Sixteenth Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3134W. Topics in Spanish and Portuguese Art through the Sixteenth Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AH 3134).

AH 3135. Topics in Seventeenth/Eighteenth Century Spanish and Portuguese Art. 3 Credits.

Secular and sacred art of the Baroque Golden Century or the Rococo Enlightenment. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 3140. European Art of the Eighteenth Century. 3 Credits.

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo. Painting, sculpture, and architecture in France, Great Britain, and Italy.

AH 3141. European Art of the Early Nineteenth Century. 3 Credits.

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich. Credit cannot be earned for this course and CAH 3141.

AH 3141W. European Art of the Early Nineteenth Century. 3 Credits.

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

AH 3142. European Art of the Late Nineteenth Century. 3 Credits.

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments; representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin. Same As: AH 3142W, CAH 3142, CAH 3142W.

AH 3142W. European Art of the Late Nineteenth Century. 3 Credits.

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments; representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AH 3142, CAH 3142, CAH 3142W.

AH 3143. Early Twentieth-Century Art. 3 Credits.

History and theory of early twentieth-century modernism in the visual arts, from origins in the late nineteenth century through Surrealism. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Same As: AH 3143W. Credit cannot be earned for this course and CAH 3143, CAH 3143W.

AH 3143W. Early Twentieth-Century Art. 3 Credits.

History and theory of early twentieth-century modernism in the visual arts, from origins in the late nineteenth century through Surrealism. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AH 3143. Credit cannot be earned for this course and CAH 3143, CAH 3143W.

AH 3146. Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the twentieth century.

AH 3146W. Modern Architecture in Europe and America. 3 Credits.**AH 3151. American Art in the Age of Revolution. 3 Credits.**

American art during the eighteenth century "consumer revolution," the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity. (Same as AMST 3151).

AH 3152. American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art, and religion.

AH 3153. American Art of the Twentieth Century. 3 Credits.

Twentieth-century American painting and sculpture from the turn of the century to the beginnings of postmodernism, with focus on the avant garde. Artists of the Stieglitz circle and later modernist movements such as Abstract Expressionism, Pop, Op, Minimal, and Conceptual art. Theory and criticism.

AH 3160. Latin American Art and Architecture. 3 Credits.**AH 3165. Later Twentieth-Century Art. 3 Credits.**

Artists, art, and critical concepts from the later twentieth century, focusing on key movements and issues, including abstract expressionism, minimalism, conceptual art, feminism, identity politics, and the rise of globalization. (Same as AH 3165W).

AH 3165W. Later Twentieth-Century Art. 3 Credits.

Artists, art, and critical concepts from the later twentieth century, focusing on key movements and issues, including abstract expressionism, minimalism, conceptual art, feminism, identity politics, and the rise of globalization. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AH 3165).

AH 3170. Materials, Methods, and Techniques in Art History. 3 Credits.

Working hands-on in a workshop studio, students create panels, canvases, vehicles, mediums, pigments, drawings, and paintings from raw materials and are introduced to the materials, methods, and techniques of the fine arts through traditional practices and processes of manufacture in western cultures.

AH 3181. Special Topics in Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

AH 3182. Special Topics in South Asian Art. 3 Credits.

Introduction to the art, architecture, and visual culture of the Indian subcontinent from ancient to contemporary periods. Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

AH 3182W. Special Topics in South Asian Art. 3 Credits.

Introduction to the art, architecture, and visual culture of the Indian subcontinent from ancient to contemporary periods. Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AH 3182.

AH 4109. Topics in Ancient Art and Archaeology. 3 Credits.

May be repeated for credit provided the topic differs. (Same as CLAS 3115).

AH 4119. Seminar in Medieval Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4129. Seminar in Renaissance Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4139. Seminar in Baroque Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4149. Seminar in Modern European Art and Architecture. 3 Credits.

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

AH 4150. Seminar in Modern Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Restricted to juniors and seniors.

AH 4150W. Seminar in Modern Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors.

AH 4157. Seminar in Photography. 3 Credits.

Advanced undergraduate study of photography and lens-based media. Topics vary by semester. May be repeated for credit provided topic differs. Consult department for more details. Restricted to juniors and seniors.

AH 4159. Seminar in American Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult department for more details. Restricted to art history majors or with permission of the instructor. Credit cannot be earned for this course and AH 4159W.

AH 4159W. Seminar in American Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to students in the art history program or with the permission of the instructor. Credit cannot be earned for this course and AH 4159.

AH 4165. Topics in Islamic Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

AH 4169. Seminar in Contemporary Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit if topic differs. Restricted to juniors and seniors.

AH 4181. Topics in Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Restricted to art history majors or with the permission of the instructor. Same As: CAH 4181.

AH 4182. Topics in South Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Restricted to art history majors or with permission of the instructor. Credit cannot be earned for this course and CAH 4182.

AH 4189. Seminar: Topics in Art History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Restricted to art history majors or with permission of the instructor.

AH 4197. Senior Thesis. 1-4 Credits.

Students should consult the Director of Undergraduate Studies by the end of their junior year regarding eligibility, selection of an area of research, and the appropriate faculty members to supervise the project. May be repeated for credit. Same As: CAH 4197.

AH 4198. Independent Study. 1-3 Credits.

Directed research and study in a specific area of art history to be approved by a faculty member. May be repeated for credit.

AH 4199. Internship in Art History. 1-3 Credits.

Students gain practical experience working in an arts institution such as a museum or gallery. Advisor approval required prior to registration. May not be repeated for credit toward the degree. Restricted to art history majors.

AH 5099. Variable Topics. 1-99 Credits.

AH 6201. Proseminar in Ancient Art of the Bronze Age and Greece. 3 Credits.

Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Thera volcanic eruption, the "Dorian Invasion," the portrayal of women, "heroic nudity," and the assumption of a stylistic chronology.

AH 6202. Proseminar in Ancient Art of the Roman Empire. 3 Credits.

Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

AH 6205. Topics in Ancient Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

AH 6211. Proseminar in Early Christian and Byzantine Art and Architecture. 3 Credits.

Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453. Credit cannot be earned for this course and CAH 6211.

AH 6212. Proseminar in Romanesque and Gothic Art and Architecture. 3 Credits.

The origin of Western art from the Hiberno-Saxon and Carolingian worlds and their relationship to the Ancient heritage. Romanesque and Gothic architecture and its sculptural decoration as social phenomena.

AH 6213. Islamic Art and Architecture. 3 Credits.

Introduction to the visual culture of the Muslim world, from Spain to India, from the seventh century to the present. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 3113).

AH 6214. The Art of the Book in the Medieval Muslim World. 3 Credits.

An advanced-level introduction to the visual culture of the Muslim world, from Spain to India, from the seventh century to the seventeenth century. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 3114).

AH 6215. Seminar in Medieval Art and Architecture. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6220. Proseminar in Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

AH 6221. Proseminar: Italian Art and Architecture of the 16th Century. 3 Credits.

The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

AH 6222. Proseminar in Early Northern Renaissance Art and Architecture. 3 Credits.

Royal and ducal patronage and the Flemish and French masters of the fifteenth century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6223. Proseminar in Northern Renaissance Art and Architecture. 3 Credits.

Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others.

AH 6225. Seminar in Renaissance Art. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6231. Proseminar in Italian Art and Architecture of the Seventeenth Century. 3 Credits.

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

AH 6232. Proseminar in Northern European Art and Architecture of the Seventeenth Century. 3 Credits.

Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning diverse secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from "Golden Age" artists such as Rembrandt, Vermeer, and Hals. Specific topic announced in the Schedule of Classes.

AH 6234. Proseminar in Spanish and Portuguese Art through the Sixteenth Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Specific topic announced in the Schedule of Classes.

AH 6235. Seminar in Baroque Art. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6240. Proseminar in European Art of the Eighteenth Century. 3 Credits.

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo.

AH 6245. Seminar in European Art of the Nineteenth Century. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6246. Proseminar in Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the twentieth century.

AH 6250. Seminar: Modern Art. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6251. Proseminar in American Art in the Age of Revolution. 3 Credits.

American art during the eighteenth-century "consumer revolution," the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity.

AH 6252. Proseminar in American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion.

AH 6254. Seminar in American Art before 1900. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6255. Seminar: Studies in American Art and History. 3 Credits.

Selected problems and themes in American cultural history involving the use of artistic materials in different media; emphasis on methodology and analytic techniques. May be repeated for credit. Same as AMST 6730.

AH 6256. Seminar in American Art of the Twentieth Century. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6257. Seminar in Photography. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6258. Art Historiography. 3 Credits.

The development of art history as a discipline from the eighteenth century to the present. An investigation of different art historical methodologies, including formal analysis, iconological, feminist, Marxist, semiotic and deconstructivist approaches.

AH 6260. Seminar in African Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

AH 6261. Seminar in Asian Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

AH 6262. Seminar in South Asian Art. 3 Credits.

Topics in the visual cultures of South Asia from a range of time periods; artworks in their historical, religious, and cultural contexts; key points in the field's historiography. May be repeated for credit provided the topic differs. See department for more details.

AH 6265. Seminar in Islamic Art and Architecture. 3 Credits.

Topic announced in Schedule of Classes. May be repeated for credit provided the topic differs.

AH 6269. Seminar in Contemporary Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

AH 6270. Special Topics in Art History. 3 Credits.

Topics vary by semester. May be repeated provided the topic differs. Consult the Schedule of Classes for more information.

AH 6286. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Same as ANTH 6203/ MSTD 6203.

AH 6287. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Same as ANTH 6204/ MSTD 6204.

AH 6298. Independent Research in Art History. 3 Credits.

AH 6299. Museum Internship. 3-12 Credits.

ART THERAPY (ARTH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ARTH 5099. Variable Topics. 1-99 Credits.

ARTH 6201. Survey of Art Therapy. 3 Credits.

The use of the visual arts to enhance personal development and growth; illustrated lectures, readings, discussion, and studio work presented by experts in the field. Instruction is delivered online via Blackboard. No previous art experience is necessary.

ARTH 6205. History and Theory of Art Therapy. 2 Credits.

Art therapy history and theory, milestones and practitioners. The development of art therapy as a distinct therapeutic practice. Overview of psychotherapy theories relevant to art therapy. Open only to art therapy students.

ARTH 6206. Human Development and Art Therapy. 3 Credits.

Psychological and artistic development across the life span; theories of personality development; cultural and environmental influences; and human behavior, including developmental crises, disability, exceptional behavior, and addictive behavior. Restricted to students in the art therapy program.

ARTH 6207. Human Development and Art Therapy I: Child and Adolescent. 2 Credits.

Practical and developmental considerations when working with adults and senior adults in art therapy; psychological, cultural, environmental, and artistic influences and expectations; life span impacts of human behavior, developmental crises, disability, and exceptional behavior. Restricted to students in the art therapy program.

ARTH 6208. Human Development and Art Therapy II: Adults and Senior Adults. 2 Credits.

Practical and developmental considerations when working with adults and senior adults in art therapy; psychological, cultural, environmental, and artistic influences and expectations; life span impacts of human behavior, developmental crises, disability, and exceptional behavior. Restricted to students in the art therapy program. Prerequisite: ARTH 6207.

ARTH 6210. Counseling/Art Therapy Process. 3 Credits.

Theoretical and clinical dimensions of counseling and art therapy explored through study of current research concerning the diverse elements affecting the therapeutic process. The goals of each phase of treatment; development of the therapeutic alliance; assessment of client readiness; therapeutic techniques and interventions as practiced in short- and long-term treatment.

ARTH 6211. Process of Counseling and Art Therapy: Theory. 3 Credits.

Major theories in counseling and art psychotherapy through the lens of the creative process and other aspects of clinical practice; the influence of multicultural issues, contemporary and evidence-based practices, and various settings on art-making and the therapeutic encounter. Restricted to students in the art therapy program. Prerequisite: ARTH 6210.

ARTH 6212. Creativity, Symbolism, and Metaphor. 2 Credits.

Theories of creative development, aesthetics, and art interpretive strategies for engaging metaphor, symbolism, and personal association to client artwork; integrating personal, familial, cultural, and social meanings for insight and revelation. Restricted to students in the art therapy program.

ARTH 6221. Studio/Technique of Art Therapy. 3 Credits.

Direct experience of the therapeutic utility and psychological influence of art processes and materials. Identifying the effect of art-making leading to assessment and intervention strategies. Open only to art therapy students.

ARTH 6231. Child Art Therapy. 2 Credits.

Practical, theoretical, and ethical considerations involved in treating children in clinical, community, and educational settings; application of art therapy and counseling principles and practices for diverse child populations; development of interventions for varied DSM diagnoses. Restricted to graduate students in the art therapy program.

ARTH 6232. Art Therapy with Adolescents. 2 Credits.

Practical, theoretical, and ethical considerations in treating adolescents in clinical, community and educational settings. Assessment and treatment issues in art therapy. Application of art therapy and counseling principles and practices for diverse adolescent populations. Development of interventions for varied DSM diagnoses. Restricted to art therapy students. Restricted to students in the art therapy program.

ARTH 6233. Marital and Family Art Therapy/Counseling. 3 Credits.

Principles of working with families and couples, including an overview of systems theories and stages of family life cycle development; art techniques for evaluating of family dynamics; intervention strategies and cultural and ethical considerations. Restricted to art therapy students. Restricted to students in the art therapy program.

ARTH 6234. Group Process. 3 Credits.

Theoretical and experiential understanding of group art therapy and counseling methods and skills. Principles of group dynamics, therapeutic factors, member roles and behaviors, leadership styles and approaches, selection criteria, and short- and long-term group process.

ARTH 6235. Social and Cultural Diversity. 3 Credits.

Exploration of the therapist's heritage, expectations, worldview and values; racial/cultural identity development; skills for multicultural counseling. Stereotypes and biases that interfere with effective treatment of culturally different clients. The role of the art therapist or counselor in conflict resolution, advocacy, and social justice. May be repeated for credit if taken through the study abroad course option. Restricted to art therapy students.

ARTH 6241. Assessment Procedures. 3 Credits.

Instruments and procedures used in assessment of psychological health and psychopathology; diagnostic and developmental criteria as manifested in artwork and art-making; statistical concepts, including reliability and validity; selection and administration of assessment tools; treatment planning; report writing. Restricted to students in the art therapy program.

ARTH 6242. Psychopathology: Art and Diagnosis. 3 Credits.

Criteria of psychiatric diagnoses, such as the Diagnostic and Statistical Manual multiaxial system, theories of psychopathology, and relevant literature evaluation of potential indicators of functional and organic disorders in behavior and artwork of clients; ethical issues; cultural and environmental influences on diagnostic categorization; basic introduction to psychopharmacology. Restricted to students in the art therapy program or with permission of the instructor.

ARTH 6243. Substance Abuse and Addictions. 3 Credits.

Overview of substance abuse and addictions for art therapy and counseling, including theory and treatment applications; screening and assessment tools; treatment models specific to the field of addictions; art therapy techniques in the treatment of substance abuse for adolescents and adults in a variety of treatment settings. Restricted to students in the art therapy program.

ARTH 6251. Research Methods. 3 Credits.

Planning, conducting, and evaluating relevant methodologies, including qualitative and quantitative approaches and basic statistics; the importance of research in the psychotherapy professions; ethical and legal considerations; and the use of research to assess effectiveness of mental health and art therapy services. Restricted to graduate students in the art therapy program.

ARTH 6261. Ethics and Professionalism. 3 Credits.

Professional identity and the role of the therapist; the ethical practice of counseling and art therapy, including familiarity with ethical standards of various professional organizations; credentialing and licensure; public policy and advocacy for patients and for the profession. Restricted to graduate students in the art therapy program.

ARTH 6262. Career Counseling and Art Therapy. 3 Credits.

Theoretical foundation and practical experience necessary to understand and support career development needs for diverse individual clients and groups; career development over the lifespan; assessments, tools, and resources; occupational and labor market trends and resources; specific art therapy techniques applicable to career counseling in educational and work settings. Restricted to students in the art therapy program.

ARTH 6263. Ethics and Professionalism I: Principles. 1 Credit.

The ethical standards of art therapy, counseling and related mental health professions. Restricted to students in the art therapy program.

ARTH 6264. Ethics and Professionalism II: Applications. 2 Credits.

Applying ethical principles and values for professional identity and the role of the therapist; credentialing and licensure; public policy and advocacy for patients and for the profession. Restricted to students in the art therapy program. Prerequisite: ARTH 6263.

ARTH 6265. Advanced Issues in Psychotherapy and Art Therapy. 1-3 Credits.

Overview and application of one or more treatment models or theories to various mental and emotional disorders. Connections between the practice of art therapy and the techniques of other disciplines.

ARTH 6271. Art Psychotherapy and Trauma I: Theory and Approaches to Treatment. 3 Credits.

Introduction and overview of theory, practice, and treatment related to complex, trauma-related problems; psychobiology of traumatic stress, impact of traumatic stress on individuals, and specific treatment modalities in clinical setting; somatic (body-based) and nonverbal (art and image-based) treatment modalities. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to art therapy students. Restricted to students in the art therapy program.

ARTH 6272. Art Psychotherapy and Trauma II: Loss, Countertransference, and Resiliency. 3 Credits.

Multi-modal treatment of acute, serial, or complex trauma; theoretical, practical, moral, cross cultural, and personal aspects as seen through an art therapy and counseling lens. Supervised treatment or observation of treatment of clients with trauma histories. Restricted to students in the art therapy program. Prerequisite: ARTH 6271.

ARTH 6281. Practicum in Art Therapy. 1-2 Credits.

Supervised clinical experience with clients or patients in psychiatric, rehabilitation, and education settings with children, adolescents, and adults. On-site individual supervision by clinical instructors; on-campus group supervision by faculty. A total of six semesters of practicum are required while completing 900 internship hours, 400 of which must be direct client contact. Restricted to graduate students in the art therapy program.

ARTH 6292. Special Projects in Art Therapy. 1-12 Credits.

Individual work based on research. Empirical, clinical, and library research may be undertaken, as well as the development of new procedures. Details to be worked out with each student. May be repeated for credit with advisor's approval. Open only to art therapy students.

ARTH 6998. Thesis Research. 3 Credits.**ARTH 6999. Thesis Research. 3 Credits.**

ASTRONOMY (ASTR)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ASTR 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

ASTR 1001. Stars, Planets, and Life in the Universe. 4 Credits.

Primarily for non-science majors. An introduction to how our Universe is structured, including the basic principles underlying astronomical systems and observations. Topics include the known laws of nature, stars, and planetary systems and the conditions for extraterrestrial life and exploration. Prerequisite: high school algebra. Laboratory fee.

ASTR 1002. Origins of the Cosmos. 4 Credits.

Primarily for non-science majors. A description of the Universe, its origins and its evolution, based on known physical principles. Topics include galactic and stellar structure, black holes, origin of the elements, and big bang cosmology. Prerequisite: high school algebra. Laboratory fee.

ASTR 1099. Variable Topics. 1-36 Credits.**ASTR 2121. Introduction to Modern Astrophysics. 3 Credits.**

Introduction to the concepts and methods of modern astrophysics. Physical processes behind the origin, structure and evolution of stars and galaxies, based on physical principles and modern astronomical observations. Topics include the energy source of the Sun, the stellar life cycle, galaxies, and the structure and fate of the Universe. Prerequisites: PHYS 1012 or PHYS 1022.

ASTR 2131. Astrophysics Seminar. 3 Credits.

Course led each week by a different expert in the research on various astrophysical sources and phenomena. Topics may include the life and death of stars; most violent explosions in the universe; evolution of galaxies; and evolution of the universe on the largest scales. Prerequisite: PHYS 1012 or PHYS 1022.

ASTR 3141. Data Analysis in Astrophysics. 3 Credits.

Principles of data analysis in astrophysics and basic analysis of astronomical data from NASA satellites and ground-based telescopes. Prerequisites: PHYS 1012 or PHYS 1022. Recommended background: Prior study in physics or astrophysics.

ASTR 3161. Space Astrophysics. 3 Credits.

Physical processes of celestial phenomena as determined from space-based instrumentation. While the entire electromagnetic spectrum is covered, the high-energy (X-ray and gamma ray) region is emphasized. Results from ground-based instrumentation (e.g., radio and optical) may be introduced. Prerequisites: PHYS 2023.

ASTR 3183. General Relativity. 3 Credits.

Einstein's general theory of relativity; special theory of relativity, the nature of space and time, the equivalence principle, Riemannian geometry, Einstein's proposal, tests of the theory, Schwarzschild and Kerr solutions, Hawking radiation, and cosmological models. Prerequisites: MATH 3342 and PHYS 2023.

ASTR 4195. Undergraduate Research in Astrophysics. 3 Credits.

Research on problems in astrophysics approved by the faculty. May be repeated once for credit.

BIOCHEMISTRY (BIOC)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOC 1099. Variable Topics. 1-36 Credits.**BIOC 3099. Variable Topics. 1-12 Credits.****BIOC 3261. Introductory Medical Biochemistry. 4 Credits.**

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. (Same as BISC 3261, CHEM 3165).

BIOC 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BISC 3262 and CHEM 3262. Laboratory fee. Prerequisites: BIOC 3261 or BISC 3261.

BIOC 3263. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation and nutrition. Prerequisites: BIOC 3261 or BISC 3261. (Same as BISC 3263).

BIOC 3263W. Special Topics in Biochemistry. 2 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BIOC 3560. Diet, Health, and Longevity. 3 Credits.

Biochemical and molecular explanations of how calorie intake affects health; scientific principles of dieting. Prerequisites: BISC 1005 or BIOC 3261.

BIOC 3564. Lipid Biotechnology. 2 Credits.

Same as BISC 3564 and CHEM 3564. Laboratory fee. Prerequisites: BIOC 3261 or BISC 3261.

BIOC 3820. Bioinformatics and Computational Biochemistry. 2 Credits.

How biomedical researchers integrate information from molecular biology resources for analysis and testing of hypotheses. Prerequisites: BISC 1111 and STAT 1127.

BIOC 3821. Projects in Biomedical Informatics. 1-2 Credits.

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BIOC 4195. Undergraduate Research. 1 Credit.

Research conducted under a mentor who is a member of the department. May be repeated for credit (only 1 credit may count toward the minor). Permission of the instructor required prior to enrollment.

BIOC 4701. Science and Medicine. 4 Credits.

A broad overview of several biomedical discoveries made in the twentieth century and the often profound influence they have had on medical technology and on new directions in science and medicine, science administration, politics, ethics, and philosophy.

BIOC 5099. Variable Topics. 1-99 Credits.**BIOC 6201. Medical Biochemistry. 7 Credits.**

Required for medical students. Lecture and laboratory; emphasis on basic principles and their relation to medicine.

BIOC 6209. Research Elective in Medical Biochemistry. 1-12 Credits.**BIOC 6211. Biochemistry-Health Science Students. 3,4 Credits.**

Basic concepts of biochemistry and their relation to health sciences.

BIOC 6221. Proteins, Pathways, and Human Health. 4 Credits.

A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisites: CHEM 2152 and CHEM 2154.

BIOC 6222. Biochemical Genetics and Medicine. 3 Credits.

Continuation of BIOC 6221. A comprehensive course in general biochemistry for graduate students in biomedical sciences. Prerequisites: CHEM 2152 and CHEM 2154.

BIOC 6223. Bioinformatics. 2 Credits.

The application of bioinformatics concepts and methods through the use of molecular biology databases and tools, covering molecular evolution, and protein sequence, structural, functional analysis. Recommended background: Prior completion of an undergraduate course in biochemistry.

BIOC 6224. Molecular Biology and Protein Methods. 3 Credits.

Common laboratory techniques used in life science laboratories to separate and characterize proteins, including chromatography, gel electrophoresis, immunoassays, spectroscopy, and centrifugation. Corequisite: BIOC 6221. Laboratory fee.

BIOC 6227. Biochemistry Seminar. 1 Credit.

Current literature in biochemistry. May be repeated for credit. Restricted to graduate students in the biochemistry and molecular medicine program.

BIOC 6230. New Technologies in Scientific Research. 2 Credits.

New technologies for conducting meaningful scientific inquiry and research. How such technologies have evolved and become essential to investigative research. Prerequisites: BIOC 6221. Corequisites: BIOC 6222.

BIOC 6234. Biochemical and Bioinformatic Approaches to Protein Structure and Function. 3 Credits.

Molecular biological, biophysical, chemical, and bioinformatic approaches to understanding protein structure and function. Protein folding, interactions, and ligand binding.

BIOC 6235. Seminar in Genomics, Proteomics, and Bioinformatics. 1 Credit.**BIOC 6236. Medical Genomics. 2 Credits.**

The structure and function of genes and genomes; genomic theories, methods, and data analysis including bioinformatics and database mining. BIOC 6221 and BIOC 6222 may be taken as corequisites. Prerequisites: BIOC 6221 and BIOC 6222.

BIOC 6237. Proteomics and Biomarkers. 2 Credits.

Experimental proteomics, protein/proteome analysis, bioinformatics of proteomics, systems biology and structural genomics. Prerequisite: BIOC 6236.

BIOC 6238. Experimental Genomics Lab. 3 Credits.

Research applications of knowledge in genomics and proteomics. Prerequisite: BIOC 6236. Laboratory fee.

BIOC 6240. Next Generation Sequencing. 2 Credits.**BIOC 6242. Bioscience Big Data Statistics. 2 Credits.**

Modern bioscience big data from generation to analysis and interpretation; data structures and data types and objects; and challenges in big data storage, access, and computation.

BIOC 6250. Molecular Biology. 3 Credits.

Content includes the organization and replication of genetic material, transcriptional and translational machinery, regulation of eukaryotic gene expression, and other special topics. BIOC 6221 and BIOC 6222 may be taken as corequisites. Prerequisites: BIOC 6221 and BIOC 6222.

BIOC 6252. Current Laboratory Methods in Molecular Biology. 3 Credits.

Corequisite: BIOC 6221. Laboratory fee.

BIOC 6254. Fundamentals of Molecular Biology. 3 Credits.

An intermediate-level molecular biology survey course. Prerequisite: BIOC 6221.

BIOC 6260. Analytic Methods for Lipids and Carbohydrates. 3 Credits.

Basic techniques in the biotechnology of lipids and carbohydrates. Prerequisite: BIOC 6221.

BIOC 6262. Genes, Diets, and Aging. 3 Credits.**BIOC 6264. Membrane-Associated Complex Lipids. 1 Credit.****BIOC 6281. Topics. 1,2 Credit.**

Directed readings in biochemistry, molecular biology, and genetics. May be repeated for credit. Restricted to graduate students in the biochemistry and molecular medicine program.

BIOC 6290. Extramural Biochemistry Elective. 1-12 Credits.**BIOC 6291. Extramural Biochemistry Elective. 1-12 Credits.****BIOC 6295. Research. 1-12 Credits.**

Participation in a project under investigation or in a field suggested by the student and approved by the staff. May be repeated for credit. Laboratory fee.

BIOC 6298. Advanced Reading. 1-6 Credits.

Advanced reading in biochemistry. Restricted to students in the MS in molecular biochemistry and bioinformatics program.

BIOC 6998. Thesis Research. 3 Credits.**BIOC 6999. Thesis Research. 3 Credits.****BIOC 8225. Metabolism. 4 Credits.**

Metabolic pathways and integration of metabolic processes. Limited to PhD students in the Institute for Biomedical Sciences.

BIOC 8231. Biochemical Basis of Human Diseases. 3 Credits.

Biochemical perspectives on disorders involving metabolic alterations, immunological dysregulation, problems of environmental/toxicological etiology, genetic/epigenetic dysfunction, neglected tropical diseases. Prerequisites: BMSC 8210 and BMSC 8212.

BIOC 8232. Molecular and Cellular Signaling. 3 Credits.**BIOC 8501. Issues in Clinical Nutrition. 3 Credits.****BIOC 8502. Molecular Biology of Oncogenes. 1-12 Credits.****BIOC 8503. Readings in Immunology. 3 Credits.****BIOC 8800. Summer Remedial Biochemistry. 8 Credits.**

BIOLOGICAL SCIENCES (BISC)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BISC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

BISC 1001. Departmental Seminar. 0 Credits.**BISC 1005. The Biology of Nutrition and Health. 3 Credits.**

A study of the human body and food-related health issues through the examination of the nutritional needs of the human body, digestion, genetics, and life experiences/exposures. Laboratory fee. Credit cannot be earned for both BISC 1005 and BISC 1007. Credit cannot be earned for this course and BISC 1007.

BISC 1006. The Ecology and Evolution of Organisms. 3 Credits.

Introduction to ecology and evolution, including human being's impact on other plants and animals, and an overview of Earth's biodiversity. For non-majors. Credit may not be earned for both BISC 1006 and BISC 1008. Credit cannot be earned for this course and BISC 1008.

BISC 1007. Food, Nutrition, and Service. 3 Credits.

A study of biology and nutrition that uses service learning to reinforce course concepts. Topics include the need for humans to consume other organisms, processing of consumed nutrients, unexpected effects of nutritional consumption, and measures to improve nutrition. Credit cannot be earned for both BISC 1007 and BISC 1005. Credit cannot be earned for this course and BISC 1005.

BISC 1008. Understanding Organisms through Service Learning. 3 Credits.

The evolution of life on earth; the value of other organisms, their role in our world, and how humans can cause harm to this infrastructure. Students work with a community partner to perform activities that assist the partner while reinforcing course concepts. Credit may not be earned for both BISC 1008 and BISC 1006. Credit cannot be earned for this course and BISC 1006.

BISC 1099. Variable Topics. 1-36 Credits.**BISC 1111. Introductory Biology: Cells and Molecules. 4 Credits.**

Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals. BISC 1111 is equivalent to the combination of BISC 1115 and its lab component BISC 1125. Same As: BISC 1115. Credit cannot be earned for this course and BISC 1125.

BISC 1112. Introductory Biology: The Biology of Organisms. 4 Credits.

Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Restricted to students in the Women's Leadership Program if registering for BISC 1112W. Same As: BISC 1112W.

BISC 1112W. Introductory Biology: The Biology of Organisms. 4 Credits.

Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. BISC 1112 is equivalent to the combination of BISC 1116 and its lab component BISC 1126. Restricted to students in the Women's Leadership Program if registering for BISC 1112W. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 1112.

BISC 1115. Introductory Biology: Cells and Molecules. 3 Credits.

Structures and functional interactions of biomolecules and cells in microorganisms, animals, and plants. BISC 1115 and its lab component, BISC 1125, together are equivalent to BISC 1111.

BISC 1116. Introductory Biology: The Biology of Organisms. 3 Credits.

Concepts and methods in the study of whole organisms; evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. BISC 1116 and its lab component, BISC 1126, together are equivalent to BISC 1112.

BISC 1120. Laboratory Introduction to Biomolecular Research. 2 Credits.

Research methods in the study of proteins and DNA; focus on preparation for working with faculty members on their research. Permission of the instructor required prior to enrollment. Prerequisites: BISC 1111. Credit cannot be earned for this course and BISC 1115, BISC 1125, HONR 1120.

BISC 1125. Introduction to Cells and Molecules Laboratory. 1 Credit.

Laboratory associated with BISC 1115. Experimental methods in the study of cells and molecules, proteins, enzymes, DNA, and molecular genetics. BISC 1115 and BISC 1125 together are equivalent to BISC 1111. Prerequisite: BISC 1115.

BISC 1126. Introduction to Organisms Laboratory. 1 Credit.

Laboratory associated with BISC 1116. Experimental methods in the study of whole organisms; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. BISC 1116 and BISC 1126 together are equivalent to BISC 1112. Prerequisite: BISC 1116.

BISC 2000. The Wonder of Life: Biodiversity studies in a changing planet. 3 Credits.

Topics in biological diversity from the perspective of species and within the conceptual framework of evolutionary biology; the explanatory power, simplicity, and grandeur of evolution and its products; how questions and hypotheses are empirically addressed. Topic subject to change. Prerequisites: BISC 1111 and BISC 1112.

BISC 2010. Global Change Biology. 3 Credits.

The impacts and implications of global climate change on biological systems; affected biological processes and their basic underlying physical and chemical principles. Focus on organismal physiological adaptations in aquatic and terrestrial ecosystems and ecological consequences. Prerequisites: BISC 1111 and BISC 1112.

BISC 2194. The Hidden Life of the Chesapeake Bay. 3 Credits.

The rise and fall of populations in the bay. Physiological adaptations of organisms; ecological interactions and trophic relationships; physiogeography and anthropogeography of the bay; and environmental concerns and human impacts. Credit cannot be earned for this course and GEOG 3194.

BISC 2202. Cell Biology. 3 Credits.

Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisites: BISC 1111, BISC 1112, and CHEM 2151.

BISC 2207. Genetics. 3 Credits.

Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology. Prerequisites: BISC 1111 and BISC 1112.

BISC 2208. Genetics Laboratory. 1 Credit.

Study of genetic principles and genetic and molecular techniques in *Drosophila* and *E. coli*. Benchwork and comparative genomics using bioinformatics. Prerequisites: BISC 1111, BISC 1112, and BISC 2207. Corequisites: BISC 2207 may be taken concurrently.

BISC 2213. Biology of Cancer. 3 Credits.

Cancer is a complex category of diseases caused in large part by genetic or genomic, transcriptomic, and epigenomics alterations leading to abnormal cell proliferation. This course will provide a basic overview of cancer biology including cellular and molecular basis of cancer, cancer development and progression as well as a brief overview of cancer diagnostics and therapy. Prerequisites: BISC 2202 or BISC 2207.

BISC 2214. Developmental Biology. 3 Credits.

The molecular processes and cellular phenomena that result in the formation of organized tissues and functional organisms; formation of early body plan, cell type determination, organogenesis, morphogenesis, stem cells, cloning, and issues in human development. Prerequisites: BISC; BISC 1112; and BISC 2202 or BISC 2207 or BISC 2213.

BISC 2215. Genome Editing Laboratory. 1 Credit.

Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Students undertake individual research projects involving CRISPR. In addition to the stated prerequisites, prior or concurrent enrollment in BISC 2214 required. Laboratory fee. Prerequisites: BISC 1111; BISC 1112.

BISC 2216. Scanning Electron Microscopy Laboratory. 1 Credit.

Practical training in scanning electron microscopy (SEM), from specimen preparation and mounting to SEM imaging and interpretation and presentation of data. Each student is assigned an independent research project and after receiving SEM training. Prerequisites: BISC 1111 and BISC 1112.

BISC 2220. Developmental Neurobiology. 3 Credits.

The molecular mechanisms that guide neural development: events surrounding the birth of neurons, how specific neurons are determined, how neurons find the correct targets, how cell death guides proper neural development, and how synapses are formed and maintained. Prerequisites: BISC 1115 and 1125; and BISC 1116 and BISC 1126.

BISC 2305. Plant Biology. 3 Credits.

Plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisites: BISC 1111; and BISC 1112; CHEM 1111 and CHEM 1112; or permission of the instructor.

BISC 2320. Neural Circuits and Behavior. 3 Credits.

The cellular and molecular properties of neural circuits that form the basis of behavior. Circuit properties and behaviors across a variety of invertebrate and vertebrate taxa. Individual neuronal units, the organizational principles and emergent properties of neural circuits, and how these neuronal ensembles influence behavior. Instructor's permission may be substituted for prerequisites. Prerequisites: BISC 1111; and BISC 1112.

BISC 2322. Human Physiology. 3 Credits.

Introduction to the function of organ systems of the human body. Prerequisites: CHEM 1111 and CHEM 1112; and BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126.

BISC 2331. Insect Biology. 3 Credits.

Overview of the class Insecta, focusing on insect external and internal morphology, classification, ecology/behavior, collection, and specimen preparation. Prerequisites: BISC 1111 and BISC 1112.

BISC 2332. Comparative Vertebrate Anatomy. 4 Credits.

BISC 2332 provides a thorough introduction into the study of functional vertebrate anatomy. Lectures combined with intensive laboratory assignments will introduce students to the structure and function of most vertebrate organ systems. Prerequisites: BISC 1111; and BISC 1112; or permission of the instructor.

BISC 2333. Evolution and Extinction of Dinosaurs. 3 Credits.

The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125, and BISC 1112 or BISC 1116 and BISC 1126; or GEOL 1001 and GEOL 1002; or GEOL 1002 and GEOL 1005. Credit cannot be earned for this course and GEOL 2333.

BISC 2334W. Integrative Biology of Fishes. 3 Credits.

Concepts in anatomy, biomechanics, physiology, developmental biology, biomechanics and hydrodynamics, adaptive radiation, evolutionary biology, and ecology using fish as model organisms. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1111 or BISC 1115 and 1125; and BISC 1112 or BISC 1116 and BISC 1126.

BISC 2335. Insect Biology Lab. 1 Credit.

An overview of insects, with an emphasis on ecology, behavior, economic importance, and the key adaptations that characterize the evolution of this diverse group. This lab teaches basic internal and external anatomy, field collection methods, insect identification, and discussion of the primary literature. BISC 2331 Insect Biology must be taken either prior or concurrently with BISC 2335 Insect Biology Lab. Laboratory fee. Prerequisite: BISC 2331.

BISC 2336. Introductory Microbiology. 3 Credits.

Lecture. Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, evolution, pathogenesis, and biotechnology. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; BISC 1112 or BISC 1116 and BISC 1126; and CHEM 1111 and CHEM 1112. Same As: BISC 2337W.

BISC 2337. Introductory Microbiology Laboratory. 1 Credit.

Laboratory associated with BISC 2336. Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, evolution, pathogenesis, and biotechnology. Prerequisites: BISC 1111; BISC 1112; CHEM 1111 and CHEM 1112; and BISC 2336. Credit cannot be earned for this course and BISC 2337W.

BISC 2337W. Introductory Microbiology. 4 Credits.

Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology. Antibiotic resistance and emerging diseases. Laboratory fee. Prerequisites: BISC 1111; and BISC 1112; and CHEM 1111 and CHEM 1112. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and BISC 2337.

BISC 2339. Parasitology. 4 Credits.

Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Prerequisites: BISC 1111; and BISC 1112.

BISC 2401. Biodiversity in A Changing World. 3 Credits.

Topics on biological diversity from the perspective of species and within the conceptual framework of evolutionary biology. The explanatory power, simplicity, and grandeur of evolution and its products. Consideration of how questions and hypotheses are empirically addressed. Prerequisites: BISC 1111 and BISC 1112. Credit cannot be earned for this course and BISC 2000.

BISC 2450. Organic Evolution. 3 Credits.

Synthetic theory of organic evolution, including population biology, speciation, adaptation, macroevolution, systematics, biogeography, and the geologic record. Prerequisites: BISC 1111; and BISC 1112.

BISC 2451. History of Life. 3 Credits.

Overview of life through time; the origin of life, evolution of major groups of organisms, and important methodologies used in paleontology. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126; or permission of the instructor. (Same as GEOL 2151).

BISC 2452. Animal Behavior. 3 Credits.

An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. Prerequisites: BISC 1111 and BISC 1112; or permission of the instructor.

BISC 2453. Animal Behavior Lab. 1 Credit.

Methods used in the study of animal behavior; observation, basic statistical analysis, and experimental design; review and evaluation research materials. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior or concurrent enrollment in BISC 2452.

BISC 2454. General Ecology. 3 Credits.

The core concepts of the field of ecology across different hierarchical scales of ecological systems. Prerequisites: BISC 1111 and BISC 1112; or permission of the instructor.

BISC 2456. General Ecology Laboratory. 1 Credit.

Practical exercises and field-trips are used to explore the core concepts of the field of ecology across different hierarchical scales of ecological systems. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112; and BISC 2454 taken previously or concurrently.

BISC 2581. Human Gross Anatomy. 3 Credits.

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Prerequisites: BISC 1111 and BISC 1112; except by permission of the instructor. Same As: ANAT 2181.

BISC 2583. Biology of Proteins. 3 Credits.

About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Laboratory fee. Prerequisite: AP or IB Biology or Chemistry.

BISC 2584. Introduction to Bioinformatics. 3 Credits.

The use of computational techniques in molecular biology, genetics, and evolution; techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126. (Same as CSCI 3571).

BISC 2585. Biometry. 3 Credits.

The application of statistics to problems in biology, including experimental and field work and environmental science and biometry. Designed for program majors. Prerequisites: MATH 1220. Recommended background: Familiarity with basic command-line applications and introductory calculus.

BISC 3099. Variable Topics. 1-12 Credits.**BISC 3122. Human Physiology. 3 Credits.**

Introduction to the function of organ systems of the body. Prerequisites: CHEM 1111 and CHEM 1112; and BISC 2202 or BISC 2207.

BISC 3123. Human Physiology Lab. 1 Credit.

Basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112.

BISC 3165. Biochemistry I. 3 Credits.

Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126, CHEM 2151 and CHEM 2152; course equivalents may be substituted for BISC 1115 and 1125; and BISC 1116 and BISC 1126 at the discretion of the instructor. (Same as CHEM 3165).

BISC 3166. Biochemistry II. 3 Credits.**BISC 3208. Molecular Biology Laboratory. 1 Credit.**

Techniques in molecular biology; traditional and modern methods in recombinant DNA technology, gene and protein characterization methods. Prerequisites: BISC 1111; BISC 1112; and CHEM 1111 and CHEM 1112.

BISC 3209. Molecular Biology. 3 Credits.

Theories and concepts in molecular biology; biosynthesis and structure of DNA, RNA, and proteins, relationships among gene function and expression; transcription and translation; regulation of gene expression in prokaryotes and eukaryotes; theory of traditional and modern methods in recombinant DNA technology, gene and protein characterization methods. Prerequisites: BISC 1111; BISC 1112; and CHEM 1111 and CHEM 1112.

BISC 3210. Nanobiotechnology. 3 Credits.

Theory and application of nanotechnologies in biology and medicine. Strategies for studying the organization, function, and complexity of biological systems at nanometer scale. Several areas of research are covered, including high-resolution cellular and molecular imaging, spectroscopy, and optical tweezers. Prerequisites: BISC 2202 or BISC 3261.

BISC 3211. Nanobiotechnology Laboratory. 1 Credit.

Modern instrumental techniques for analyzing biological structures and processes at the nanometer level; combining nano- and conventional techniques to answer scientific questions. Students formulate, design, and implement a research project. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126.

BISC 3212. Immunology. 3 Credits.

Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Prerequisites: BISC 1111; BISC 1112; BISC 2202 or BISC 2207; and CHEM 1111 and CHEM 1112. Recommended background: prior completion of CHEM 2151 and CHEM 2153.

BISC 3214. Developmental Biology. 3 Credits.

The molecular processes and cellular phenomena that result in the formation of organized tissues and functional organisms; formation of early body plan, cell type determination, organogenesis, morphogenesis, stem cells, cloning, and issues in human development. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; BISC 1112 or BISC 1116 and BISC 1126; and BISC 2202 or BISC 2207 or BISC 2213. Same As: BISC 2214.

BISC 3215. Genome Editing Laboratory. 1 Credit.

Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Students undertake individual research projects involving CRISPR. Prerequisites: BISC 1111 and BISC 1112; and BISC 2202 or BISC 2207. Same As: BISC 3215W. Credit cannot be earned for this course and BISC 2215.

BISC 3215W. Genome Editing Laboratory. 1 Credit.

Practical training in genome editing in, from sequence design to molecular biology, generation of edited animals, and phenotypic analysis. Students undertake individual research projects involving CRISPR. Prerequisites: BISC 1111 and BISC 1112; and BISC 2202 or BISC 2207. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 3215. Credit cannot be earned for this course and BISC 2215.

BISC 3261. Introductory Medical Biochemistry. 4 Credits.

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Prerequisites: CHEM 2151 and CHEM 2152. (Same as BIOC 3261, CHEM 3165).

BISC 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: BISC 1115 and BISC 1125; BISC 1116 and BISC 1126; and BISC 3261. Same As: BIOC 3262, CHEM 3262.

BISC 3263. Special Topics in Biochemistry. 2 Credits.

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone regulation, and nutrition. Topics vary by semester. May be repeated for credits provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: BISC 1111; BISC 1112; and BISC 3261. Credit cannot be earned for this course and BIOC 3263.

BISC 3270. Developmental Neurobiology. 3 Credits.

Fundamental principles of neural development organized by ontogeny, from early neural development to patterning, axonal targeting, and synapse formation. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126. Same As: BISC 2220.

BISC 3320. Human Neurobiology. 3 Credits.

Introduction to the function of the human nervous system, gross and microscopic structure, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. Prerequisites: BISC 2202 or BISC 3261.

BISC 3450. Evolutionary Medicine. 3 Credits.

The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450. Same As: BISC 3450W.

BISC 3450W. Evolutionary Medicine. 3 Credits.

The application of evolutionary principles, including natural selection, adaptation, phylogenetics, and evolutionary constraints, to understanding health, disease, and the biology of disease-causing organisms (viruses, bacteria, and parasites). How natural selection and phylogeny influence pathogen-host interactions, human genetics, immunology, development, cancer, and diseases of senescence. Prerequisites: BISC 1111 and BISC 1112. Recommended background: BISC 2207 and BISC 2450. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 3450.

BISC 3453. Plant Comparative Structure and Function Lab. 2 Credits.

Core concepts and techniques in comparative plant structure and function. Prerequisites: BISC 2454. Recommended background: Concurrent enrollment in BISC 3458.

BISC 3454. Marine Ecology. 3 Credits.

Abiotic and biotic factors in marine environments in general and ecological theory behind how they shape communities, biomes, and patterns in marine biodiversity; major marine habitats and the important organisms, physical environment, and major interactions in each; threats to marine environments and effective conservation strategies.

BISC 3455. Marine Ecology Laboratory. 1 Credit.

Study of marine ecology through experiential learning and an introduction to ecological research in the marine environment and using large datasets collected by marine scientists. By visiting marine ecosystems, students learn about marine resource use and conservation strategies in the coastal zone.

BISC 3458. Plant Comparative Structure and Function. 3 Credits.

Fundamental principles of how organisms are built, investigating trade-offs and coordination in design, how variation in structure influences physiological function in different ecological settings, and how relations among plants shape structure and function and responses to ecological gradients. Prerequisites: BISC 1111; BISC 1112; or permission of instructor. Recommended background: BISC 2454 General Ecology.

BISC 3459. Field Biology. 4 Credits.

Overview of the approaches and techniques used by contemporary field biologists for cataloging, quantifying, and comparing patterns of biodiversity across plants, animals, and fungi at multiple spatial and temporal scales. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior completion of BISC 2454.

BISC 3460. Conservation Biology. 3 Credits.

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisites: BISC 1111; BISC 1112.

BISC 3460W. Conservation Biology. 3 Credits.

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126. Same As: BISC 3460.

BISC 3461. Plant-Animal Interactions. 3 Credits.

Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. Prerequisites: BISC 1111; BISC 1112; or permission of the instructor. Recommended background: BISC 2450 or BISC 2454.

BISC 3462. Plant-Animal Interactions Laboratory. 1 Credit.

Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. The stated prerequisites may be taken as corequisites; consult the instructor. Laboratory fee. Prerequisites: BISC 1111; BISC 1112; and BISC 3461.

BISC 3463. Ecological and Evolutionary Genetics. 3 Credits.

An analysis of the ecological and genetic basis of evolutionary change. Topics include the organization and maintenance of genetic variation within and among natural populations, the genetic basis of complex traits, molecular ecology analyses, and genotype by environment interactions. Prerequisites: BISC 2450 or permission of instructor; BISC 1111; BISC 1112; except by permission of the instructor.

BISC 3464. Ecology and Evolution of Societies. 3 Credits.

Study of broadly important ecological and evolutionary patterns and processes exemplified by organisms that have undergone the major evolutionary transition to living in societies. Prerequisites: BISC 1111; BISC 1112. Recommended background: Prior completion of BISC 2454.

BISC 3565. Plant Ecology and Evolution. 3 Credits.

How plants are built; how this construction shapes their physiological function in different ecological settings; how plants are related revolutionarily, and how these relations shape their structure, function, and responses to their environment. Prior completion of BISC 2454 is recommended. Prerequisites: BISC 1111; BISC 1112; or permission of the instructor.

BISC 3584. Introduction to Bioinformatics. 3 Credits.

The use of computational techniques in molecular biology, genetics, and evolution; techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Prerequisites: BISC 1115 and 1125; and BISC 1116 and BISC 1126. Same As: CSCI 3571.

BISC 4132. Advanced Cellular-Molecular Biology. 3 Credits.

Advanced cell biology with emphasis on biochemistry and molecular biology; illustrations are drawn from different organisms and human biology. For upper-level undergraduates and beginning graduate students. Permission of the instructor required prior to enrollment. Prerequisite: BISC 3209. Recommended background: Six credits in the Cellular and Molecular category.

BISC 4171. Undergraduate Research. 1-12 Credits.

Admission by permission of the staff member concerned. May be repeated for credit. Laboratory fee. Prerequisites: BISC 1111 and BISC 1112 except by permission of the instructor; 16 credits in biological science courses.

BISC 4171W. Undergraduate Research. 1-12 Credits.

Admission by permission of the staff member concerned. May be repeated for credit. Laboratory fee. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BISC 1115 and BISC 1125; and BISC 1116 and BISC 1126; and CHEM 2152 except by permission of the instructor; 16 credits in biological science courses.

BISC 4172. Independent Study. 1-3 Credits.

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisites: BISC 1111; and BISC 1112; and permission of the instructor.

BISC 4180. Undergraduate Research Seminar. 1 Credit.

Preparation for writing in diverse areas of modern biology; development of the skills needed to effectively communicate findings, publish research, and successfully obtain research funding. Same As: BISC 4180W.

BISC 4180W. Undergraduate Research Seminar. 1 Credit.

Preparation for writing in diverse areas of modern biology; development of the skills needed to effectively communicate findings, publish research, and successfully obtain research funding. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BISC 4180.

BISC 4212. Virology and Antiviral Immunity. 3 Credits.

Comprehensive overview of the infection, replication, and immune evasion strategies of distinct classes of viruses; hands-on survey into the molecular techniques in virology. Prerequisites: BISC 2202 or BISC 2207 or BISC 3209 or BISC 3212. Credit cannot be earned for this course and BISC 6212.

BISC 4213. Virology and Antiviral Immunity Lab. 1 Credit.

Lab component designed to familiarize students with the current experimental approaches in molecular biology used to study host immune interactions with viral pathogens. Course equivalents to stated prerequisite may be permitted by the instructor. Prerequisites: BISC 2202 or BISC 2207; and BISC 3209 and BISC 3212.

BISC 4219. Host-Microbe Interactions. 3 Credits.

Overview of the molecular, genetic, cellular and physiological basis of symbiotic and pathogenic interactions between plants, invertebrate and vertebrate animals with various microbial organisms including bacteria, fungi, viruses as well prokaryotic and eukaryotic parasites. Prerequisites: BISC 2202 and BISC 2337. Credit cannot be earned for this course and BISC 6219.

BISC 4234. Microbial Genomics Laboratory. 3 Credits.

Development of computational skills needed to analyze microbial genomes and metagenomes. In addition to the prerequisite course, either basic understanding of Unix/Linux commands or permission of the instructor is prior to enrollment. Prerequisites: BISC 2336. Same As: BISC 6234.

BISC 5099. Variable Topics. 1-99 Credits.**BISC 6101. Responsible Research. 1 Credit.**

This course provides an introduction to the ethical, social, and legal foundations of scientific practice. It is intended to provide a forum for graduate students and postdocs to discuss almost every aspect of the academic life of a scientist, except specific disciplinary topics that are treated in regular courses. Ensuring ethical conduct is an essential part of basic, applied, and clinical research, especially in the context of competitive, collaborative, and international settings so common nowadays. Students are exposed to case studies typifying complex social, ethical, and legal dilemmas that may arise in the conduct of research.

BISC 6102. Scientific Presentation. 1 Credit.

This course allows students to perfect their Scientific Presentation skills. In this course, students present, in front of peers and faculty, their current research projects and plans for future work leading towards a complete thesis or dissertation. Student presentations are designed to address a general audience of biologists, containing sufficient background information to provide perspective insights into the fundamental questions being asked, and at the same time providing enough detail on technical issues and analytical procedures to allow evaluation of potential outcomes. The class provides a friendly forum for students to collect feedback and comments, to discuss project design, content, and general significance of their research.

BISC 6132. Advanced Cellular-Molecular Biology. 3 Credits.

Advanced cellular biology for upper-level undergraduates and beginning graduate students; emphasis on biochemistry and molecular biology; organisms and human biology with emphasis on oral and written analysis of research literature. Permission of the instructor required prior to enrollment. Restricted to students who have completed 16 credits of 2000-4000 level biology courses, including 6 credits in the cell and molecular category. Prerequisites: Graduate standing or undergraduates with 16 credits of 2000-4000 level biology courses, including 6 credits in the Cell and Molecular category and permission of instructor. Recommended background: 4 to 6 upper level biology courses, including 2 cell and molecular courses. Credit cannot be earned for this course and BISC 4132.

BISC 6205. Current Topics in Cell Smith, Donaldson, Eleftherianos, Jeremic. 1-2 Credits.

May be repeated for credit. Prerequisite: BISC 2202 or BISC 3209.

BISC 6206. Current Topics in Evolutionary Ecology. 1-2 Credits.

May be repeated for credit.

BISC 6207. Seminar: Current Topics in Systematic Biology. 1-2 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Prerequisite: BISC 6210.

BISC 6210. Methods of Study of Evolution. 4 Credits.

A rigorous and up-to-date treatment of the theory and methods of systematics, including phylogenetic inference and its applications in evolutionary biology. Laboratory fee. Prerequisite: BISC 2450 .

BISC 6211. Biogeography and Speciation. 3 Credits.

Survey of methods, techniques, and theory in biogeography. Geological and paleontological aspects of biogeography; large-scale biogeographic patterns; speciation and phylogeography. Prerequisites: BISC 2451 or BISC 2452.

BISC 6212. Virology and Antiviral Immunity. 3 Credits.

Overview of the infection, replication, and immune evasion strategies of distinct classes of viruses, as well the host antiviral immune responses to these pathogens. Credit cannot be earned for this course and BISC 4212.

BISC 6213. Descriptive Systematics: Documenting Biodiversity. 3 Credits.

Study of those aspects of systematic biology concerned with description and inventory of biodiversity. Prerequisite: BISC 6210.

BISC 6214. The Phylogenetic Basis of Comparative Biology. 3 Credits.

The use of phylogenetic hypotheses to study questions in evolutionary biology and ecology. Prerequisites: BISC 6210 and STAT 1127.

BISC 6215. Vertebrate Phylogeny. 4 Credits.

A survey of vertebrate diversity, emphasizing evolutionary relationships and adaptations of the major groups. Prerequisite: BISC 2450. Recommended background: BISC 2332.

BISC 6216. Morphological Systematics. 3 Credits.

Methods of studying organismal morphology as a means of inferring phylogeny, emphasizing the concept of homology. Prerequisite: BISC 6210.

BISC 6218. Innate Immunity. 3 Credits.

Discussion of innate immune systems in a wide variety of organisms; from sponges to vertebrates plus higher plants. Prerequisite: BISC 3212. Recommended background: BISC 2202, BISC 2207, BISC 3209 and BISC 2330.

BISC 6219. Host-Microbe Interactions. 3 Credits.

Overview of the molecular, genetic, cellular, and physiological basis of symbiotic and pathogenic interactions between plants, invertebrate, and vertebrate animals with various microbial organisms including bacteria, fungi, viruses as well prokaryotic and eukaryotic parasites. Prerequisites: BISC 2202 and BISC 2337.

BISC 6224. Molecular Evolution. 3 Credits.**BISC 6225. Molecular Phylogenetics. 4 Credits.**

Review of molecular phylogenetic methods including data recovery, alignment, weighting, character optimization, and phylogenetic inference methods. Prerequisites: BISC 2207, BISC 2450 and BISC 6210.

BISC 6227. Seminar: Genetics. 3 Credits.

Review of selected topics in genetics, with emphasis on current literature; topics of special interest to participants encouraged. May be repeated for credit. Prerequisite: BISC 2207.

BISC 6228. Population Genetics. 3 Credits.

Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as FORS 6247. Prerequisite: BISC 2207.

BISC 6230. Human Genetics. 3 Credits.

Genetic mechanisms of transmission and expression of human traits, with emphasis on biochemical and cytogenetic aspects. Prerequisite: BISC 2207. Recommended background: Previous coursework in cell biology or cell biochemistry.

BISC 6234. Microbial Genomics Laboratory. 3 Credits.

Development of computational skills needed to analyze microbial genomes and metagenomes. In addition to the prerequisite course, either basic understanding of Unix/Linux commands or permission of the instructor is prior to enrollment. Prerequisites: BISC 2336. Same As: BISC 4234.

BISC 6243. Seminar: Ecology. 3 Credits.

In-depth study of selected topics, including reports on original publications. May be repeated for credit. Prerequisite: BISC 2454.

BISC 6249. Seminar: Developmental Biology. 3 Credits.

Discussion and reports on recent research on the endocrinological, genetic, and biochemical aspects of animal development. Prerequisite: a course in developmental biology or cell biology.

BISC 6251. Evolutionary Developmental Biology. 3 Credits.

Developmental mechanisms involved in the morphological changes that occur during the course of evolution.

BISC 6252. Seminar: Neurobiology. 3 Credits.

Study of current publications in functional neurobiology. May be repeated for credit with instructor's permission.

BISC 6274. Gene Regulation and Genetic Engineering. 3 Credits.

The control of gene expression as illustrated by several prokaryotic and eukaryotic model systems: discussions of recombinant DNA techniques. Prerequisite: BISC 2207.

BISC 6275. Introduction to Recombinant DNA Techniques. 3 Credits.

Lecture, 1 hour; laboratory, 4 hours. Basic techniques of genetic manipulation: cloning of genes, transformation of bacteria, PCR procedures, DNA sequencing, and other techniques. Prerequisite: BISC 2202 or BISC 2207 or BISC 2337 and permission of instructor. Laboratory fee.

BISC 6276. Foundations in Evolution. 3 Credits.

Rigorous introduction to the major conceptual area within micro- and macroevolution. Prerequisites: BISC 2450 for undergraduate students only.

BISC 6295. Research. 1-12 Credits.

Investigation of special problems. May be repeated for credit.

BISC 6998. Thesis Research. 3 Credits.**BISC 6999. Thesis Research. 3 Credits.****BISC 8998. Advanced Reading and Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BISC 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

BIOMEDICAL ENGINEERING (BME)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BME 1010. Introduction to Biomedical Engineering. 1 Credit.

Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. (Fall, Every Year).

BME 1020. Introduction to Biomedical Engineering. 2 Credits.

Continuation of BME 1010. Basic and emerging concepts in electrical, computer, and biomedical engineering; practical experiments and projects; introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. Prerequisite: BME 1010. (Spring, Every Year).

BME 2810. Biomedical Engineering Seminar I. 1 Credit.

BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. Prerequisite: BME 1020. (Fall).

BME 2815. Biomedical Engineering Seminar II. 1 Credit.

BME 2810 and BME 2815 are taken in sequence by students in the biomedical engineering major. Overview of the field of biomedical engineering, including biomechanics, bioinformatics, telemedicine, instrumentation, and medical imaging. (Fall and spring).

BME 2820. Biomedical Engineering Programming I. 3 Credits.

Introduction to Matlab Programming and fundamentals of programming in general with a focus on biomedical engineering problems. Functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques are covered; manipulation of vectors and matrices and the use of vectorized code. (Fall, Every Year).

BME 2825. Biomedical Engineering Programming II. 3 Credits.

Introduction to C Programming and fundamentals of data structures with a focus on biomedical engineering problems; the use of data structures, pointers, and linked lists and discuss concepts such as binary trees and sorting algorithms. Students are expected to understand the basics of programming concepts such as the use of functions, input/output, selection statements, loop statements, string manipulation, and debugging techniques are understood, but no prior knowledge of C is required. Prerequisites: BME 2820 or permission of the instructor. (Fall, Every Year).

BME 3820. Principles and Practice of Biomedical Engineering. 4 Credits.

Introduction to engineering principles applicable to medicine; medical measurements for clinical use and research; anatomy and physiology of the human body from system and cellular approaches. Principles of biomedical engineering are reinforced by determining and analyzing physiological measurements in laboratory exercises. Prerequisites: ECE 2110 and APSC 2113. (Fall).

BME 3907. Special Topics in Biomedical Engineering. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. (Fall, spring, and summer, Every Year).

BME 3910. Capstone Design Preparation. 1 Credit.

Elements of project design; formulation of project ideas. Prerequisites: BME 2810 and BME 2815. (Fall, Every Year).

BME 3915W. Biomedical Engineering Capstone Project Lab I. 1 Credit.

BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BME 3910. (Same as ECE 3915W) (Spring, Every Year).

BME 4480. Bioelectricity. 3 Credits.

Origin and applications of bioelectric phenomena; engineering tools for excitable cells, tissues and organs; biophysical and equivalent electrical engineering analysis; heart and brain abnormalities from a quantitative perspective. (Spring, Every Year) Same As: BME 6480.

BME 4488. Cell and Molecular Imaging. 3 Credits.

Basics of optics, microscopy, spectroscopy, and fluorescence in the context of imaging at the cellular and molecular level; advanced techniques for probing protein interactions and live cell functions; image processing algorithms and principles of scientific visualization. Restricted to juniors and seniors. Prerequisites: BME 2825 and ECE 3220. (Same as BME 6488) (Fall, Every Year).

BME 4489. Socially Assistive Robotics and Interactive Learning. 3 Credits.

Application of advanced robotic solutions to promoting human lives through social, emotional, and interactive therapies in areas such as social and behavioral therapies for children with autism spectrum disorder (ASD) and emotional and rehabilitation assistance in elder care. Prerequisite: BME 2825. Recommended background: Experience with computer programming. (Fall, Every Year) Same As: BME 6489.

BME 4820. Anatomy and Physiology for Engineers. 3 Credits.

Human anatomy and physiology from an engineering viewpoint. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 6820) (Fall).

BME 4825. Biomedical Properties Laboratory. 1 Credit.

Introduction to biophysical concepts in a laboratory setting; emphasis on biomedical engineering. (Spring).

BME 4830. Introduction to Medical Imaging Methods. 3 Credits.

Application of linear systems analysis methods to medical imaging techniques; basic properties of imaging systems; physics and instrumentation behind modalities; advantages, disadvantages, and primary applications of modalities. Prerequisites: BME 3820 and ECE 3220. (Spring, Every Year).

BME 4835. Introduction to Assistive Robotics. 3 Credits.

Application of advanced robotic solutions to promoting human lives through social, emotional, and interactive therapies in areas such as social and behavioral therapies for children with autism spectrum disorder (ASD) and emotional and rehabilitation assistance in elder care. Prerequisites: BME 2825 and ECE 3220. (Spring, Every Year).

BME 4920W. Biomedical Engineering Capstone Project Lab II. 3 Credits.

BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BME 3915W. (Same as ECE 4920W) (Fall, Every Year).

BME 4925W. Biomedical Engineering Capstone Project Lab III. 3 Credits.

BME 3915, BME 4920, and BME 4925 are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Spring, Every Year).

BME 4990. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Restricted to juniors and seniors. (Fall and spring, Every Year).

BME 6045. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. (Fall and spring).

BME 6050. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit. (Spring, Every Year).

BME 6065. Colloquium. 3 Credits.

Seminars and meetings featuring visiting scholars in biomedical engineering. Topics vary. See department for details. Restricted to graduate students in biomedical engineering. (Fall and spring, Every Year).

BME 6480. Bioelectricity. 3 Credits.

Origin and applications of bioelectric phenomena; engineering tools for excitable cells, tissues and organs; biophysical and equivalent electrical engineering analysis; heart and brain abnormalities from a quantitative perspective. Restricted to graduate students. (Spring, Every Year) Same As: BME 4480.

BME 6481. Regulatory Law for Medical Devices. 3 Credits.

An introduction to legal issues pertinent to medical device regulation; device classification, general and special controls, quality system regulation, 510(k) submissions, premarket approval applications (PMAs), clinical trials, investigational device exemptions (IDEs) and medical device reporting (MDR), recalls, labeling and advertising, enforcement, and emerging legal issues. Pharmaceutical regulation. (Fall).

BME 6482. Medical Measurements. 3 Credits.

Theory of measurements in biological areas and techniques for electronic measurements on biological specimens. Experiments in acquisition, processing, and measurement of physiological signals, ECG, EEG, and EMG. (Fall).

BME 6483. Medical Instrumentation Design. 3 Credits.

The medical device design process and many of its key aspects, including needs assessment, regulatory processes and concerns, intellectual property, patient safety, and market analysis. Prerequisites: BME 6482. (Spring).

BME 6484. Biomedical Signal Analysis. 3 Credits.

Origin, acquisition, and analysis of physiological signals. Deterministic and probabilistic modeling; fitting models; sequences and time series. Feature extraction from EEG and ECG; Fourier analysis and filtering; modeling. Noise and artifact removal and signal compensation. Prerequisites: BME 6482. (Spring).

BME 6485. Medical Imaging I. 3 Credits.

Principles of projection radiography, fluoroscopy, tomography, ultrasound and nuclear sources; biomagnetic imaging. Source and object; recorder resolution and noise; scatter and attenuation. Ultrasound techniques and instrumentation, including physics of ultrasound, transducers, ultrasound imaging, hemodynamics, Doppler techniques. Prerequisite: BME 4830. (Fall).

BME 6486. Clinical Medicine for Engineers. 3 Credits.

Overview of clinical medicine with emphasis on those areas most affected by engineering and technology. (Spring, Every Year).

BME 6487. Rehabilitation Medicine Engineering. 3 Credits.

Cross-sectional view of those areas of medicine most involved with the treatment of handicapped individuals; application of engineering theory and techniques to the rehabilitation of handicapped individuals; solutions to major problem areas and specific problems. Prerequisite: BME 6482. (Spring, Every Year).

BME 6488. Cell and Molecular Imaging. 3 Credits.

Basics of optics, microscopy, spectroscopy, and fluorescence in the context of imaging at the cellular and molecular level; advanced techniques for probing protein interactions and live cell functions; image processing algorithms and principles of scientific visualization. Students taking this course for graduate credit complete additional work. Restricted to graduate students. Recommended background: Computer Programming. (Fall, Every Year) Same As: BME 4488.

BME 6489. Socially Assistive Robotics and Interactive Learning. 3 Credits.

Application of advanced robotic solutions to promoting human lives through social, emotional, and interactive therapies in areas such as social and behavioral therapies for children with autism spectrum disorder (ASD) and emotional and rehabilitation assistance in elder care. Restricted to graduate students. Recommended background: Experience with computer programming. (Fall, Every Year) Same As: BME 4489.

BME 6820. Anatomy and Physiology for Engineers. 3 Credits.

Human anatomy and physiology from an engineering perspective. Analysis of functions of major physiological systems. Biopotentials, mechanics, gas exchange, chemical balance, electrical and chemical signaling, nervous control, voluntary and reflex factors. (Same as BME 4820) (Fall).

BME 6830. Introduction to Medical Imaging Methods. 3 Credits.

Application of linear systems analysis methods to medical imaging techniques; basic properties of imaging systems; physics and instrumentation behind modalities; advantages, disadvantages, and primary applications of modalities. Recommended background: Knowledge of signal processing. (Same as BME 4830) (Spring, Every Year).

BME 6840. Digital Image Processing. 3 Credits.

Properties of images and visual systems. Image acquisition, sampling, quantization. One- and two-dimensional image transform techniques; enhancement and restoration. Image coding and data compression. Segmentation, representation, boundary and shape, texture, matching. Image understanding. Prerequisites: ECE 6800. (Same as ECE 6840) (Spring, odd years).

BME 6842. Image Engineering. 3 Credits.

Sensor/camera design and analysis as a system. Detection and noise processes underlying the sensing of optical radiation; the engineering and physics of image formation. Topics covered include radiometry/photometry, optics and image formation, device and camera characterization, and image quality metrics and system design trades. Prerequisites: ECE 6010 and ECE 6015. (Same as ECE 6842) (Fall, Every Year).

BME 6850. Pattern Recognition. 3 Credits.

Random vectors, transformations. Hypothesis testing, error probability: bias, variance, and sample size, resampling; sequential methods. Bayes, other linear classifiers. Discriminant functions, support vector machines, maximum-likelihood and parameter estimation, dimensionality reduction. Nonparametric methods; unsupervised learning and clustering; feature selection and ordering. Applications in industry and medicine. Student projects. Learning is reinforced by homework problems and in-class and at-home computer examples. Prerequisite: ECE 6015. (Same as ECE 6850) (Fall, Spring, and Summer, Every Year).

BME 6885. Computer Vision. 3 Credits.

Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisites: BME 6840 or ECE 6840 or equivalent. (Same as ECE 6885) (Fall, Spring, and Summer, Every Year).

BME 6994. Biomedical Engineering Regulatory Practicum I. 3 Credits.

First part of the BME 6994 and BME 6995 practicum sequence. Students work with a practicum mentor to develop either an application for federal funding using the Small Business Innovation Research (SBIR) or Small Business Technology Transfer (STTR) mechanism or a 510(k) submission for U.S. Food and Drug Administration (FDA) medical device review. Independent research combined with the synthesis of technical and regulatory topics covered in the program. Restricted to students who have completed a minimum of 9 credits in the Master of Engineering in Regulatory Biomedical Engineering program. (Fall, spring, and summer, Every Year).

BME 6995. Biomedical Engineering Regulatory Practicum II. 3 Credits.

Second part of the BME 6994 and BME 6995 practicum sequence. Prerequisite: BME 6994. (Fall, spring, and summer, Every Year).

BME 6998. Thesis Research. 3 Credits.

Thesis research. (Fall and spring).

BME 6999. Thesis Research. 3 Credits.

Thesis research. (Fall and spring).

BME 8484. Medical Imaging II: Image Analysis. 3 Credits.

Review of medical imaging modalities; review of image formation and characteristics, both static and dynamic; methods for and evaluation of: medical image reconstruction, enhancement, segmentation, registration, and description; feature extraction and classification; error analysis and the receiver operating characteristic; imaging applications in diagnosis and treatment, including surgery; metrics of truth and quality, with implications for image compression. Prerequisites: BME 6484. (Fall).

BME 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall, spring, and summer, Every Year).

BIOMEDICAL SCIENCES (BMSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BMSC 5099. Variable Topics. 1-99 Credits.**BMSC 6218. Ethics for Translational Sciences. 2 Credits.**

Ethical issues relevant to the practice of medicine and biomedical research involving human subjects. Permission of the instructor required prior to enrollment. Recommended background: ANAT 6130, ANAT 6150, ANAT 6160, ANAT 6181 and ANAT 6292.

BMSC 8210. Genes to Cells. 3 Credits.

Molecular aspects of cellular composition, gene expression, and processes; replication and regulation of gene expression, protein and cell structure, and functions.

BMSC 8212. Systems Physiology. 3 Credits.

The physiological bases of organ systems and origins of disease; key concepts and hypotheses in mammalian organ systems essential for pursuing contemporary experimental studies. Prerequisite: BMSC 8210.

BMSC 8215. Lab Rotations. 2 Credits.

For PhD students enrolled in the Institute for Biomedical Sciences. Laboratory training in advanced techniques in biomedical sciences research practices. May be repeated for credit.

BMSC 8216. Scientific Writing, Presentation Skills, and Seminar Planning. 1 Credit.

Instruction in the basic skills of scientific writing, integration with laboratory rotation (BMSC 8215) report writing, and genes to cells (BMSC 8210) blog writing.

BMSC 8217. Ethics and Grant Writing. 1 Credit.

Ethical issues related to the conduct of research, animal use, and human subject participation. The design of a successful grant proposal.

BMSC 8218. Career Options in the Biomedical Sciences. 1 Credit.

Professionals with PhD degrees in the biomedical sciences discuss their positions and provide doctoral students with networking opportunities and advice regarding career paths such as research in various settings, policy and program planning, grants administration, and biotechnology issues within intellectual property law.

BMSC 8219. Writing the Grant-Style Qualifier. 2 Credits.

Process of proposal development for PhD students. Research proposals in the format of an NIH F31 predoctoral fellowship, including specific aims, research plan, candidate background, biosketch, and training plan sections. Recommended for second-year students preparing for the grant-style qualifying examination. Restricted to students in the PhD programs in biomedical sciences. Prerequisites: BMSC 8210 and BMSC 8212.

BMSC 8230. Molecular Basis of Human Disease. 3 Credits.

Genetic causes of human disease, diagnostic methods of genomic medicine human molecular genetics, established and developing molecular methods, and current research topics and therapies; principles of precision medicine in the context of disease examples including intersex conditions, cancer, neuropsychiatric disorders, and inborn errors of metabolism.

BMSC 8231. Introduction to Genomics, Proteomics, and Bioinformatics. 3 Credits.

Implementation of genomics, proteomics and bioinformatics approaches to biological systems. Students are expected to have completed a prior course in biochemistry and molecular biology. Permission of the instructor is required. Prerequisite: BMSC 8230. Recommended background: Undergraduate degree in biology, chemistry, or a related field.

BMSC 8233. Integrative Bioinformatics. 3 Credits.

Bioinformatics techniques for analysis of macromolecular sequences, structures, gene expression arrays, and proteomics. Systems biology approaches to research problems. Permission of the instructor required prior to enrollment. Prerequisite: BMSC 8230. Recommended background: Undergraduate background in biology, computer sciences, biochemistry, or a related field.

BMSC 8234. Seminar in Systems Biology. 2 Credits.

. Prerequisites: permission of the instructor.

BMSC 8235. Applied Biostatistics for Basic Research. 2 Credits.

The handling and interpretation of large data sets, including biological data and genomic data. Permission of the instructor required prior to enrollment.

BMSC 8998. Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

BMSC 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

BIostatistics (BIOS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BIOS 5099. Variable Topics. 1-99 Credits.**BIOS 6295. Reading and Research. 1-12 Credits.**

May be repeated for credit.

BIOS 6998. Thesis Research. 3 Credits.**BIOS 6999. Thesis Research. 3 Credits.****BIOS 8998. Advanced Reading and Research. 1-12 Credits.**

Limited to students preparing for the Doctor of Philosophy general examination. May be repeated for credit.

BIOS 8999. Dissertation Research. 3-12 Credits.

Limited to Doctor of Philosophy candidates. May be repeated for credit.

Business Administration (BADM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

BADM 1001. First-Year Development Course I. 1 Credit.

Understanding strengths, values, and interests, and managing one's own academic and career goals. No alternative to this course will be accepted to fulfill the GWSB signature course requirement. Restricted to first-year students in the School of Business. Prerequisites: n/a.

BADM 1002. First-Year Development Course II. 1 Credit.

Students develop as leaders through networking opportunities and community engagement and perform service within the District of Columbia. No alternative to this course will be accepted to fulfill the GWSB signature course requirement. Restricted to first-year students in the School of Business.

BADM 1003. Transfer Student Development Course. 1 Credit.

Designed to help transfer students in the School of Business succeed both in and outside of the classroom. Developmental experiences designed to enhance the educational experience and assist with career preparation. Focus on understanding strengths, values, and interests, managing one's own academic and career goals, and developing leadership skills. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Restricted to transfer students in the School of Business.

BADM 1004. The Age of Globalization. 3 Credits.

A multidisciplinary foundation in the globalization of people, markets, and firms. Required for all School of Business students. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement.

BADM 1099. Variable Topics. 1-36 Credits.**BADM 1900. Special Topics. 1-3 Credits.****BADM 2001. Markets and Politics. 3 Credits.**

Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement.

BADM 2001W. Markets and Politics. 3 Credits.

Economic and political resource allocation; social and political influences on business organizations; contemporary problems and issues. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BADM 2099. Variable Topics. 1-36 Credits.**BADM 2301. Management Information Systems Technology. 3 Credits.**

An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisites: Basic knowledge of Microsoft Word, Excel, and PowerPoint.

BADM 3001. Career Management Strategy. 1 Credit.

The career development process, including job search strategies and formulation of a career management plan, with practice in producing a resume and interviewing for a position. No alternative to this course will be accepted to fulfill the GWSB signature course requirement. Restricted to juniors in the School of Business.

BADM 3099. Variable Topics. 1-36 Credits.**BADM 3101. Human Resource Management. 3 Credits.**

Global and strategic implications of human capital policies and practices, including human resource planning, recruitment, selection, training, development, compensation, and collective bargaining. Prerequisite: PSYC 1001.

BADM 3102. Business and Government Relations. 3 Credits.

Economic and legal environment of business enterprise; social and political influences; contemporary problems and issues.

BADM 3102W. Business/Government Relations. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: BADM 3102.

BADM 3103. Human Capital in Organizations. 3 Credits.

An introduction and integration of concepts drawn from human resource management and organizational behavior. Application of these concepts to individual, group/team, and organizational scenarios through experiential exercises, cases, and projects. Development of skills in analyzing and evaluating human capital problems and determining appropriate solutions.

BADM 3401. Contemporary Marketing Management. 3 Credits.

Consumer and organization buying behavior. Strategic marketing processes. Product development, brand management, valuation and pricing, channel/logistics management, integrated marketing communications, and e-commerce.

BADM 3501. Financial Management and Markets. 3 Credits.

Introduction to financial markets, investment analysis, and financial management. Financial analysis, risk management, working capital management, capital budgeting, financial structure, cost of capital, and dividend policy. Prerequisites: ECON 1012 or HONR 2044; MATH 1221 or MATH 1231 or MATH 1252; and APSC 3115 or DNSC 1001 or STAT 1051 or STAT 1053 or STAT 1111.

BADM 3601. Operations Management. 3 Credits.

Production planning concepts and analytical tools. Designing and managing production processes: facilities, equipment, process control systems. Design issues, demand forecasting, material planning, acquisition techniques. Managing the factory floor: scheduling, total quality management, continuous improvement concepts and methods. Prerequisites: STAT 1051, STAT 1053, STAT 1111 or APSC 3115 or DNSC 1001.

BADM 4001. Leadership and Career Launch. 1 Credit.

Experiential capstone that may include an approved internship, participation in GWSB's Research Experience for Undergraduates, select student leadership positions in GWSB, or approved community service. Prerequisites: BADM 3001 or permission of the instructor.

BADM 4101. Business Ethics and the Legal Environment. 3 Credits.

Introduction to practical reasoning at the intersection of business and society. Emphasis on application of ethics frameworks and key dimensions of the legal environment to problems of individual, organizational, and social responsibility in business. Restricted to juniors in the School of Business.

BADM 4101W. Business Ethics and the Legal Environment. 3 Credits.

An introduction to practical reasoning at the intersection of business and society. Emphasis on application of ethics frameworks and key dimensions of the legal environment to problems of individual, organizational, and social responsibility in business. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BADM 4801. Strategy Formulation and Implementation. 3 Credits.

An integrative capstone course to develop skills in diagnosing organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. BA, BAccy, and SEAS business concentration programs. Recommended for juniors and seniors. Prerequisites: ACCY 2001 and BADM 3501 and (BADM 3103 or BADM 3401/3401W, or BADM 4101 or IBUS 3001).

BADM 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods.

BADM 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

BADM 4950. Internship. 0 Credits.

School of Business undergraduates may register for this course when they wish to have an internship recorded on the transcript. The supervisor must verify that the internship has been completed for a minimum of six hours per week. An administrative fee is charged. May be repeated each semester if desired.

BADM 4995. Independent Study. 1-6 Credits.

Assigned topics with interdisciplinary focus. Admission by prior permission of advisor. May be repeated once for credit but in a separate semester.

BADM 5099. Variable Topics. 1-99 Credits.

CANCER BIOLOGY (CANC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CANC 8214. Cancer Biology Seminar. 1 Credit.

Current and emerging topics with presentations and discussions facilitated by leading experts from GW and outside institution; student-led journal club and oral presentation opportunities. Prerequisites: BMSC 8210 and BMSC 8212.

CANC 8221. The Basic Science of Oncology. 3 Credits.

Epidemiology, genetics, viruses, oncogenes, chemical carcinogenesis, radiation carcinogenesis, tumor growth, metastasis, biochemistry of cancer cells, tumor markers, hormones and cancer, cancer immunobiology, radiotherapy, and chemotherapy and immunotherapy. Prerequisites: BMSC 8210, BMSC 8212 and BMSC 8230.

CANC 8222. Molecular Oncology and Cancer Epigenetics. 3 Credits.

Topics in molecular oncology, including epidemiology, genetics and epigenetics, carcinogenesis, tumor growth and metastasis, biochemistry of cancer cells, tumor markers, hormones and cancer, cancer immunobiology, radiotherapy, chemotherapy, and immunotherapy. Prerequisites: BMSC 8210 and BMSC 8212.

CANC 8223. Immunology and Immunotherapy of Cancer. 3 Credits.

Tumor immunology, approaches for cancer immunotherapy, current clinical progress and limitations of cancer immunotherapies. For graduate students, translational researchers, and scientists and practicing clinicians. Prerequisites: BMSC 8210 and BMSC 8212.

CANC 8998. Advanced Reading and Research. 1-12 Credits.

Restricted to doctoral candidates preparing for the qualifying examination. May be repeated for credit.

CANC 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to IBS students.

CAPITAL MARKETS (CAMA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CAMA 6001. Capital Markets, Instruments and Institutions. 3 Credits.

Debt instruments, markets where they are traded and institutions which actively participate and maintain those markets. Theoretical foundation for interest rate theories, term structure and credit risks. Roles played by financial institutions, various instruments, the central banks and financial regulations. Basic risk management tools critically important in managing those institutions. Restricted to students enrolled in the Graduate Certificate in Capital Markets program.

CAMA 6002. Corporate Finance and Risk Management. 3 Credits.

Introduction to concepts of corporate finance and risk management. Bond valuation, stock valuation, determining cost of capital and risk management, with an emphasis on emerging markets and small and medium enterprises. Restricted to students enrolled in the Graduate Certificate in Capital Markets program.

CAMA 6003. Capital Markets, Financial Crises and the Global Economy. 3 Credits.

Open economy macro and linkages between financial markets and other markets. Causes and impacts of financial crises. Policy options. Current approaches to reduce risks associated with financial markets and concomitant regulations, nationally and globally, to deal with banking related issues. Implications of volatile capital flows. Restricted to students enrolled in the Graduate Certificate in Capital Markets program.

CAMA 6004. Quantitative Thinking for Capital Market Decision Makers. 3 Credits.

The conceptual foundations and practical computational methods needed to extract insights from financial data and inform decision making. Restricted to students enrolled in the Graduate Certificate in Capital Markets program.

CHEMISTRY (CHEM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHEM 1000. Dean's Seminar. 3 Credits.

Contemporary topics in chemistry.

CHEM 1003. Contemporary Science for Nonscience Majors. 3 Credits.

Contemporary topics in physical, biological, and medical science. CHEM 1003 is not a prerequisite to CHEM 1004. Laboratory fee.

CHEM 1004. Contemporary Science for Nonscience Majors. 3 Credits.

Continuation of CHEM 1003. Contemporary topics in physical, biological, and medical science. CHEM 1003 is not a prerequisite to CHEM 1004. Laboratory fee.

CHEM 1099. Variable Topics. 1-36 Credits.

CHEM 1110. Fundamentals of Chemistry. 2 Credits.

Central concepts of chemistry including the metric system, unit conversions, classification of matter, periodicity, atomic structure, chemical bonding, chemical reactions, stoichiometry, and chemical equilibrium. Emphasis on mathematical and analytical skills required for effective problem solving. Restricted to students who successfully completed high school algebra prior to matriculation and have completed the ALEKS chemistry preparatory course at GW without achieving at least 95 percent mastery.

CHEM 1111. General Chemistry I. 4 Credits.

Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Restricted to students who have successfully completed high school algebra prior to matriculation and have completed the ALEKS chemistry preparatory course at GW and achieved at least 95 percent mastery.

CHEM 1112. General Chemistry II. 4 Credits.

Continuation of CHEM 1111. Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Laboratory fee. Prerequisite: CHEM 1111.

CHEM 1113. General Chemistry for Engineers. 4 Credits.

Basic quantitative chemistry concepts, atomic and molecular structure, chemical kinetics, chemical equilibrium, acid-base chemistry, electrochemistry, thermodynamics and nuclear chemistry. Restricted to Students in applied science and technology, biomedical engineering, environmental engineering, or pre-med track should take CHEM 1111 and CHEM 1112 in lieu of this course. Recommended background: High-school algebra and at least 95 percent (learned and mastered) in the department's ALEKS chemistry prep course.

CHEM 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

CHEM 2010. History of Chemistry. 2,3 Credits.

CHEM 2085. Environmental Chemistry. 3 Credits.

Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations.

CHEM 2118W. Practicing Science Communications. 3 Credits.

Development of science communications methods through frequent practice with instructor and peer feedback: presentations, video, policy briefings, editorial, and short review articles. Tips for different audience types, from experts to public. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHEM 2122. Introductory Quantitative Analysis. 3 Credits.

Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. CHEM 2123 may be taken as a corequisite. Prerequisite: CHEM 1112.

CHEM 2123. Introductory Quantitative Analysis Laboratory. 1 Credit.

Laboratory complement to CHEM 2122. Laboratory fee. CHEM 2122 may be taken as a corequisite. Prerequisite: CHEM 2122.

CHEM 2123W. Introductory Quantitative Analysis Laboratory. 1 Credit.

Laboratory complement to CHEM 2122. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. CHEM 2122 may be taken as a corequisite. Prerequisite: CHEM 2122.

CHEM 2151. Organic Chemistry I. 3 Credits.

Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite: CHEM 1112.

CHEM 2152. Organic Chemistry II. 3 Credits.

Continuation of CHEM 2151. Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite: CHEM 2151.

CHEM 2153. Organic Chemistry Laboratory I. 1 Credit.

Laboratory component of CHEM 2151. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. CHEM 2151 may be taken as a corequisite. Laboratory fee. Prerequisite: CHEM 2151.

CHEM 2154. Organic Chemistry Laboratory II. 1 Credit.

Continuation of CHEM 2153. Laboratory component of CHEM 2152. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds. CHEM 2152 may be taken as a corequisite. Laboratory fee. Prerequisites: CHEM 2152 and CHEM 2153.

CHEM 3099. Variable Topics. 1-12 Credits.

CHEM 3140. Geochemistry. 3 Credits.

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Prerequisites: GEOL 1001 or GEOL 1005; and CHEM 1111 and CHEM 1112. Same As: GEOL 3140.

CHEM 3165. Biochemistry I. 3 Credits.

Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Credit toward the degree cannot be earned for both CHEM 3165 and BIOC 3261 or BISC 3261. Prerequisites: CHEM 2151 and CHEM 2152. Same As: BISC 3165. Credit cannot be earned for this course and BIOC 3261, BISC 3261.

CHEM 3166. Biochemistry II. 3 Credits.

Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Credit toward the degree cannot be earned for both CHEM 3166 and BIOC 3263/BISC 3263. Prerequisite: CHEM 3165.

CHEM 3166W. Biochemistry II. 3 Credits.

Continuation of CHEM 3165. Introduction to the chemistry of living cells; structure and function of proteins, lipids, carbohydrates, and nucleic acids; enzyme structure, mechanism, and regulation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit toward the degree cannot be earned for both CHEM 3166W and BIOC 3263/BISC 3263. Prerequisite: CHEM 3165.

CHEM 3170. Introduction to Physical Chemistry. 3 Credits.

Thermodynamics, chemical and physical equilibria, kinetics, and spectroscopy. Examples taken from biological systems. May not be taken for credit by students who have received credit for CHEM 3171 and CHEM 3172 or an equivalent course. Restricted to non-chemistry majors. Prerequisites: CHEM 1111 and CHEM 1112; and MATH 1231; and PHYS 1012 or PHYS 1022 or PHYS 1026; or permission of the instructor. Credit cannot be earned for this course and CHEM 3171, CHEM 3172.

CHEM 3171. Physical Chemistry I. 3 Credits.

Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisites: CHEM 1112, MATH 1231 and PHYS 1022; or permission of the instructor.

CHEM 3172. Physical Chemistry II. 3 Credits.

Continuation of CHEM 3171. Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite: CHEM 3171.

CHEM 3173. Physical Chemistry Laboratory. 2 Credits.

Laboratory complement to CHEM 3171 and CHEM 3172. Exploration of molecular structure and bonding as revealed through observation. CHEM 2123 and CHEM 3171 may be taken as a corequisite. Laboratory fee. Prerequisites: CHEM 2123 and CHEM 3171.

CHEM 3262. Biochemistry Laboratory. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Same as BIOC 3261/ BISC 3261. Prerequisite: CHEM 3165 or BIOC 3261/ BISC 3261. Laboratory fee.

CHEM 3263W. Special Topics in Biochemistry. 2 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHEM 3564. Lipid Biotechnology. 2 Credits.

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Laboratory fee. Prerequisites: BIOC 3261 or BISC 3261 or CHEM 3165. (Same as BIOC 3564).

CHEM 4113. Chemical Instrumentation. 3 Credits.

Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: CHEM 3172 and CHEM 4122. Laboratory fee.

CHEM 4122. Instrumental Analytical Chemistry. 3 Credits.

Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and electroanalysis. Corequisite: CHEM 4123. CHEM 3171 may be taken as a corequisite. Prerequisites: CHEM 3171 or permission of the instructor.

CHEM 4123. Instrumental Analytical Chemistry Laboratory. 2 Credits.

Laboratory complement to CHEM 4122. CHEM 3171 and CHEM 4122 may be taken as a corequisite. Laboratory fee. Prerequisites: CHEM 3171 and CHEM 4122.

CHEM 4134. Inorganic Chemistry. 3 Credits.

Periodic trends and structure and reactivity of transitional metal complexes. Prerequisite: CHEM 2122.

CHEM 4195. Undergraduate Research. 1-3 Credits.

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Laboratory fee.

CHEM 4195W. Undergraduate Research. 1-3 Credits.

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee.

CHEM 5099. Variable Topics. 1-99 Credits.**CHEM 6221. Spectrochemical Analysis. 3 Credits.**

Theory and application of recent spectrometric methods of analysis, including advances in optimization techniques, optical instrumentation, atomic spectrometry, laser-based analytical techniques, X-ray methods, and surface analysis techniques. Prerequisite: CHEM 4122.

CHEM 6222. Biomedical Mass Spectrometry. 3 Credits.

Principles, instrumentation, methods, and applications of mass spectrometry; selected state-of-the-art methods demonstrate basic principles to show how new methods of analysis are developed; typical applications highlight solutions of biomedical problems, including proteomics and metabolomics. Prerequisite: CHEM 4122.

CHEM 6233. Organometallic Chemistry and Catalysis. 3 Credits.

Transition metal organometallic chemistry, including structure and bonding, ligands, their reactivity and application to catalysis. Students design and synthesize organometallic complexes applicable to organic synthesis and industrial catalysis and evaluate improvement in efficiency and environmental impact. Prerequisites: CHEM 2151, CHEM 2152 and CHEM 4134. Recommended background: prior completion of college-level organic and inorganic chemistry.

CHEM 6235. Advanced Inorganic Chemistry I. 3 Credits.

Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisites: CHEM 3172 and CHEM 4134.

CHEM 6236. Advanced Inorganic Chemistry II. 3 Credits.

Continuation of CHEM 6235. Application of modern chemical theories to inorganic substances and reactions; detailed study, developed from the periodic table, of the chemistry of the more common elements; electronic spectra and reaction mechanisms of complexes; organometallic chemistry; homogeneous and heterogeneous catalysis; bioinorganic chemistry. Prerequisites: CHEM 3172 and CHEM 4134.

CHEM 6238. Chemistry of Inorganic Materials. 3 Credits.

Synthesis, structure, and properties of materials such as ceramics, superconductors, ionic conductors, nanomaterials, and magnetic, optical, and electronic materials. Emphasis on traditional and low-temperature routes. Prerequisites: CHEM 3171 and CHEM 3172.

CHEM 6251. Advanced Organic Chemistry I. 3 Credits.

Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 2152.

CHEM 6252. Advanced Organic Chemistry II. 3 Credits.

Continuation of CHEM 6251. Synthesis, reactions, and properties of organic compounds; fundamental theories of organic chemistry, emphasis on reaction mechanisms. Prerequisite: CHEM 6251.

CHEM 6256. Medicinal Chemistry. 3 Credits.

Introduction to topics in drug design and discovery. Fundamental mechanisms of drug action, and techniques of drug design and drug development. Prerequisites: CHEM 2151 and CHEM 2152.

CHEM 6257. Physical-Organic Chemistry. 3 Credits.

The transition state theory of chemical kinetics, applications to reaction mechanisms; kinetic isotope effects, linear-free energy relationships, concentrated and "super" acids, Woodward-Hoffman rules, free radical reactions. Prerequisites: CHEM 6251 or permission of the instructor.

CHEM 6259. Polymer Chemistry. 3 Credits.

A study of the preparation, properties, and structure of macromolecules. Prerequisites: CHEM 2152 and CHEM 3170; or CHEM 3171; or permission of the instructor.

CHEM 6273. Chemical Thermodynamics. 3 Credits.

Application of thermodynamics to chemical problems. Emphasis on statistical calculation of thermodynamic properties. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6277. Chemical Bonding. 3 Credits.

Quantum mechanics, approximate methods, electron spin, Pauli principle, atomic and molecular structure. Prerequisite: CHEM 3172 or CHEM 6372.

CHEM 6278. Molecular Spectroscopy. 3 Credits.

Applications of quantum mechanics and group theory to the interpretation of electronic, vibrational, rotational, and magnetic resonance spectroscopy. Prerequisite: CHEM 6277.

CHEM 6280. Energy and the Environment. 3 Credits.

Fundamentals of energy conversion in thermomechanical, thermochemical, electrochemical, and photoelectric processes in existing and future power and transportation systems, with emphasis on efficiency, environmental impact, and performance.

CHEM 6281. Environmental Chemistry: Air, Water, and Soil. 3 Credits.

Survey of the behavior, movement and impact of natural and man-made chemicals in all layers of the environment in the context of the atmosphere, hydrosphere, and lithosphere; the effects of acid rain, sewage treatment, ozone destruction, anthropogenic climate change, air pollution, and eutrophication.

CHEM 6282. Green Industrial Chemistry. 3 Credits.

Introduction to the basic design principles for greener chemical technologies; widely used practices, including catalysis, use of renewable starting materials, minimization of energy inputs, and use of greener solvents.

CHEM 6283. Chemical Toxicology and Rational Design of Safer Chemicals. 3 Credits.

Introduction to the basic tools and paradigms of toxicology in the context of chemical design for minimizing potential toxicity of commercial chemicals; computational methods for prediction of bioavailability, reactivity, bioaccumulation and different types of toxicity; application of in silico methods to the rational re-design of functional and safer chemicals.

CHEM 6284. Environmental Analytical Chemistry. 3 Credits.

Advanced analytical methodology for environmental assessment; analytical instrumentation, techniques for remote measurements, determination of trace atmospheric constituents of anthropogenic and natural origin, measurement uncertainty analysis, detection and identification of organic and inorganic pollutants in air, water, soil and biota, and the determination of heavy metals and radionuclides in the environment.

CHEM 6298. Capstone Seminar in Environmental and Green Chemistry. 3 Credits.

Group projects carried out with an external partner or client—such as a government agency, nonprofit group, or chemistry laboratory research project—that identify and solve real world scientific problems related to environmental and green chemistry.

CHEM 6314. Fundamental-Computational Chemistry. 3 Credits.

CHEM 6315. Computational Chem-Biomolecule. 3 Credits.

CHEM 6318. Science Communications in Practice. 3 Credits.

Communicating science beyond one's immediate peers can prove challenging. This course will provide examples and plenty of opportunities for students to develop (science) communications skills, including presenting to non-scientist audiences.

CHEM 6320. Selected Topics in Analytical Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of analytical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6330. Selected Topics in Inorganic Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of inorganic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6350. Selected Topics in Organic Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in organic chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6358. Synthesis and Structure Determination in Organic Chemistry. 3 Credits.

The design of syntheses for complex organic molecules; survey of modern synthetic methods, including asymmetric induction; spectroscopic methods of structure determination. Prerequisites: CHEM 6251 or permission of the instructor.

CHEM 6370. Selected Topics in Physical Chemistry. 1-3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field of physical chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6371. Physical Chemistry I. 1-3 Credits.

Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Students enrolled at the graduate level are expected to do additional work. Permission of the department required prior to enrollment.

CHEM 6372. Physical Chemistry II. 1-3 Credits.

Continuation of CHEM 6371. Basic concepts of quantum chemistry and molecular spectroscopy; application of modern physical chemistry theory to exploration of a wide range of physical properties for open and closed chemical systems in the gas and condensed phases. Restricted to students with permission of the department. Prerequisite: CHEM 6371. Same As: CHEM 3172.

CHEM 6390. Selected Topics in Chemistry. 3 Credits.

Advanced topics offered in a modular format to allow an in-depth examination of a self-selected field in chemistry. One to three topics may be chosen for a given semester. May be repeated for credit.

CHEM 6395. Research. 1-12 Credits.

Limited to master's degree candidates. Survey of a topic approved by departmental staff and resulting in a written report and presentation of a seminar. Open to qualified students with advanced training. May be repeated for credit.

CHEM 6998. Thesis Research. 1-9 Credits.

Limited to students in the master's degree program.

CHEM 6999. Thesis Research. 3 Credits.

Limited to students in the Master's Degree program.

CHEM 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

CHEM 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

CHINESE (CHIN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHIN 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

CHIN 1001. Beginning Chinese I. 4 Credits.

Basic functional and communicative proficiency in Chinese. Development of listening and speaking skills, reading and writing abilities, and cultural awareness.

CHIN 1002. Beginning Chinese II. 4 Credits.

Continuation of CHIN 1001. Basic functional and communicative proficiency in Chinese. Development of listening and speaking skills, reading and writing abilities, and cultural awareness. Prerequisites: CHIN 1001 or equivalent.

CHIN 1011. Intensive Beginning Chinese. 8 Credits.

Intensive beginning course equivalent to CHIN 1001 and CHIN 1002.

CHIN 1088. E-Learning Tools for Chinese. 1 Credit.

Basic training for using computer programs, software, or web tools for Chinese word processing. Prerequisites: CHIN 1001.

CHIN 1099. Variable Topics. 1-36 Credits.

CHIN 2003. Intermediate Chinese I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisites: CHIN 1002 or CHIN 1011.

CHIN 2004. Intermediate Chinese II. 4 Credits.

Continuation of CHIN 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Prerequisites: CHIN 2003.

CHIN 3099. Variable Topics. 1-12 Credits.

CHIN 3105. Intermediate Chinese III. 3 Credits.

Augmentation of vocabulary, with emphasis on communicative proficiency development. Prerequisite: CHIN 2004.

CHIN 3106. Intermediate Chinese IV. 3 Credits.

Continuation of CHIN 3105. Augmentation of vocabulary, with emphasis on communicative proficiency development. Prerequisite: CHIN 3105.

CHIN 3109. Introduction to Classical Chinese I. 3 Credits.

Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking CHIN 6109 demonstrate their problem-solving and reading abilities through a 15 to 20 annotated translation at the end of the semester. Equivalent courses may be accepted for the prerequisite. Prerequisites: CHIN 2004. Same As: CHIN 6109.

CHIN 3110. Introduction to Classical Chinese II. 3 Credits.

Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking CHIN 6109 and CHIN 6110 demonstrate their problem-solving and reading abilities through a 15 to 20 annotated translation at the end of the semester. Equivalent courses may be accepted for the prerequisite. Prerequisites: CHIN 2004. Same As: CHIN 6110.

CHIN 3111. Chinese Literature in Translation I. 3 Credits.

An introductory survey of Chinese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period. Credit cannot be earned for this course and CHIN 6111.

CHIN 3112. Chinese Literature in Translation II. 3 Credits.

Continuation of CHIN 3111. An introductory survey of Chinese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period. Same As: CHIN 6112.

CHIN 3116. Language Policy of China. 3 Credits.

Language policy and planning in China in the context of relations between the national language, Chinese dialects, and minority languages. Policy origins and their implementation from a sociolinguistic and historical perspective.

CHIN 3123. Introduction to Chinese Linguistics. 3 Credits.

Structure of the Chinese language. Sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Conducted in English.

CHIN 3124. Introduction to Chinese Linguistics. 3 Credits.

Continuation of CHIN 3123. Structure of the Chinese language. Sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Conducted in English. Prerequisites: CHIN 3123.

CHIN 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Conducted in English. (Same as WGSS 3136, WGSS 3136W).

CHIN 3151. Developing Chinese Literacy. 1-2 Credits.

Provides an overview of the history and development of Chinese characters and reinforces Chinese language learning by building on vocabulary acquired during the first two years of the Chinese language curriculum. Prerequisites: CHIN 2003 or appropriate score on the placement examination. Corequisites: CHIN 2004.

CHIN 3162. Chinese Culture Through Film. 3 Credits.

Survey of the Chinese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Course conducted in English.

CHIN 3163. Taiwanese Literature and Film. 3 Credits.

A introductory survey of modern and contemporary Taiwanese literary and cinematic works. Readings include poetry, folk lyrics, dramas, novels, and memoirs that bear distinctive marks of Taiwan's diverse literary trends. Films include those by internationally renowned directors such as Hou Hsiao-hsien, Ang Lee, Edward Yang, and Tsai Ming-liang. Same As: CHIN 6163.

CHIN 3171. Poetry of the Tang and Song Periods. 3 Credits.

Reading of works of leading poets. Discussion of content and style. Prerequisite: CHIN 3109. Credit cannot be earned for this course and CHIN 6171.

CHIN 3172. Poetry of the Tang and Song Periods. 3 Credits.

Continuation of CHIN 3171. Reading of works of leading poets. Discussion of content and style. Prerequisites: CHIN 3109.

CHIN 3173. Chinese Drama and Theatre. 3 Credits.

Chinese drama and theatrical genres. Topics include the relation between theatrical performance and ritual practice, gender identities, and cross-cultural exchange. Course conducted in English.

CHIN 3175W. Dream of the Red Chamber. 3 Credits.

The world of the Chinese masterwork of prose fiction, *Dream of the Red Chamber*. Class readings and exercises aim at fostering a deeper understanding of premodern Chinese value systems through artistic, as well as literary, representations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHIN 3188. Confucian Religion. 3 Credits.

CHIN 3841. Religion and Politics in China. 3 Credits.

The changes, destructions, and reconstructions of Chinese religions from the late nineteenth century to the present. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation state. Same As: REL 3841.

CHIN 4107. Readings in Modern Chinese I. 3 Credits.

Readings in newspapers, social science materials, and documentary materials. Prerequisite: CHIN 3106.

CHIN 4108. Readings in Modern Chinese II. 3 Credits.

Advanced study of standard (Mandarin) Chinese with a focus on reading comprehension. Students gain reading skills through work with advanced authentic texts and exercises designed to guide comprehensions and strengthen reading strategies. Prerequisites: CHIN 3106 or equivalent.

CHIN 4119W. Business Chinese. 3 Credits.

Basics of business-related communication in both oral and written form. Integrated language skills. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CHIN 4107 or CHIN 4121.

CHIN 4121W. Advanced Conversation and Composition I. 3 Credits.

Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Permission of the instructor is required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: CHIN 3106.

CHIN 4122W. Advanced Conversation and Composition II. 3 Credits.

Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Permission of the instructor is required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHIN 4179. Twentieth-Century Chinese Literature. 3 Credits.

Selected works of major twentieth-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianyong, and others. Lectures and discussion in Chinese. Prerequisites: CHIN 4107.

CHIN 4180W. Twentieth-Century Chinese Literature II. 3 Credits.

Continuation of CHIN 4179. Selected works of major twentieth-century writers, including Lu Xun, Lao She, Zhang Ailing, Bai Xianyong, and others. Lectures and discussion in Chinese. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: CHIN 4107.

CHIN 4185. Directed Reading I. 3 Credits.

Reading of material in the student's field of interest. Permission of the instructor required prior to enrollment.

CHIN 4186. Directed Reading II. 3 Credits.

Continuation of CHIN 4185. Reading of material in the student's field of interest. Permission of the instructor required prior to enrollment.

CHIN 4186W. Directed Reading II. 3 Credits.

Continuation of CHIN 4185. Reading of material in the student's field of interest. Permission of the instructor required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CHIN 4198. Proseminar: Readings for the Major in Chinese Language and Literature. 3 Credits.

Recommended for all majors. Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: CHIN 3106.

CHIN 4199. Proseminar: Readings for the Major in Chinese Language and Literature. 3 Credits.

Continuation of CHIN 4198. Recommended for all majors. Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: CHIN 4198.

CHIN 4201. Special Topics in Advanced Chinese. 3 Credits.

Development of linguistic proficiency and area content knowledge regarding China and Chinese. Topics vary by semester. May be repeated for credit provided the topic differs. See the Schedule of Classes for more information. Prerequisites: CHIN 4107 or CHIN 4119W or CHIN 4121W.

CHIN 6109. Introduction to Classical Chinese I. 3 Credits.

Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking CHIN 6109 demonstrate their problem-solving and reading abilities through a 15 to 20 annotated translation at the end of the semester. Equivalent courses may be accepted for the prerequisite. Prerequisites: CHIN 2004. Same As: CHIN 3109.

CHIN 6110. Introduction to Classical Chinese II. 3 Credits.

Students explore the basic grammar and vocabulary of literary Chinese. Selections are based on the students' interests and level of proficiency, and include such genres as prose, short stories, performance texts, ci poetry and qu. Graduate students who are taking CHIN 6109 and CHIN 6110 demonstrate their problem-solving and reading abilities through a 15 to 20 annotated translation at the end of the semester. Equivalent courses may be accepted for the prerequisite. Prerequisites: CHIN 2004. Same As: CHIN 3110.

CHIN 6111. Chinese Literature in Translation. 3 Credits.

A survey of the literatures and cultures of pre-modern China, from the origin of Chinese civilization through the last imperial dynasty including the works of representative writers as well as major literary modes, such as historical documents, philosophical writings, poetry, folktale, short story, drama, and novel. Graduate students taking CHIN 6111 demonstrate their ability in conducting independent research by writing a 15 to 20 page research paper. Credit cannot be earned for this course and CHIN 3111.

CHIN 6112. Chinese Literature in Translation. 3 Credits.

A survey of the literatures and cultures of China, from late Qing (the last imperial dynasty) to contemporary China and the Chinese-speaking world. Students are introduced to works of representative writers as well as major literary genres, including fictions, poetry, dramas, and essays. Students taking CHIN 6112 develop the ability to conduct independent research on the primary text, and to evaluate the significance of the works in cross-cultural, comparative context, by writing a 15 to 20 page term paper. (Same as CHIN 3112).

CHIN 6115. Chinese Sociolinguistics. 3 Credits.

Language use in China from a sociolinguistic perspective. Standardization of Modern Chinese, multilingualism in China, language policy and planning, linguistic variation based on geography, and social stratification.

CHIN 6123. Structure of Chinese. 3 Credits.

Introduction to the structure of Chinese from the perspective of linguistic analysis; serves to prepare students for more advanced graduate level courses in Chinese linguistics. Coursework includes introductory readings, readings from the primary linguistics research literature, and hands-on problem solving, etc.

CHIN 6125. History of the Chinese Language. 3 Credits.

The methodologies and theories in Chinese historical phonology and syntax. Students read materials in the original language, e.g. Classical Chinese, Vernacular writing, and etc. Students work towards a term research paper throughout the semester on a topic of their own choice. For graduate students, there is one extra question on all of the assignments throughout the semester including the homework problem sets, midterm exams and final exam.

CHIN 6126. Chinese Phonology. 3 Credits.

The theory and practice in Chinese phonology. Students will be provided with fundamentals of articulatory phonetics (the study of how speech sounds are produced) and phonology (the study of sound systems), which they apply to the study of phonetic and phonological properties of standard Chinese. Prerequisites: CHIN 1001 or equivalent.

CHIN 6128. Chinese Semantics. 3 Credits.

The formal approaches to semantics and interface issues between semantics and syntax and phonology, with an emphasis on aspects related to Chinese, such as quantificational isomorphism, modality, focus, question semantics, adjectival semantics and etc. Graduate students taking this course will turn in a research paper by the end of the semester to demonstrate their understanding of a certain topic and ability to do independent research.

CHIN 6163. Taiwanese Literature and Film. 3 Credits.

Taiwanese literature and film in its historical, social and cultural contexts; course materials include various genres (poetry, folk lyrics, dramas, novels and memoirs) that bear distinctive marks of Taiwan's lively and diverse cultural trends. (Same as CHIN 3163).

CHIN 6171. Poetry of the Tang and Song Periods I. 3 Credits.

Examination of exemplary works of leading Tang and Song poets, including Li Bo, Du Fu, Han Shan, Du Xunhe, and Bai Juyi. Undergraduate students must have the instructor's permission to enroll. Prerequisite: CHIN 3109. Credit cannot be earned for this course and CHIN 3171.

CHIN 6172. Poetry of the Tang and Song Periods II. 3 Credits.

Continuation of CHIN 6171. Examination of exemplary works of leading Tang and Song poets, including Li Bo, Du Fu, Han Shan, Du Xunhe, and Bai Juyi. Undergraduate students must have the instructor's permission to enroll. Prerequisites: CHIN 3109.

CHIN 6173. Traditional Chinese Theatre and Drama. 3 Credits.

Traditional Chinese Theatre and Drama is a multimedia-enhanced course, which examines dramas and theatrical genres of China of pre-modern time. Students are introduced to the history of Chinese theatre, the aesthetics of theatrical performances, as well as works of representative playwrights in major dramatic genres. Students develop the ability to conduct independent research by writing a 15 to 20-page research paper on the primary text, and to evaluate the significance of the works in cross-cultural, comparative context. Permission of the instructor required prior to enrollment of undergraduate students.

CHIN 6180. Twentieth-Century Chinese Literature II. 3 Credits.

Introduction to the literature of twentieth-century China through close reading and discussion of representative literary works from the era. All readings and class discussion are in Chinese. Graduate students taking CHIN 6179 demonstrate their ability in conducting independent research by writing a 15 to 20 page research paper. Permission of the instructor required prior to enrollment of undergraduate students. Equivalent courses may be accepted for the prerequisite. Prerequisite: CHIN 4107.

CHIN 6199. Graduate Seminar. 3 Credits.

Preparation for advanced research in Chinese sources. One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Students research a selected topic in Chinese literature or philosophy, and prepare a research paper of 25 or more pages on this topic. Restricted to individualized curriculum; admission by instructor approval.

CHIN 6201. Second Language Acquisition of Mandarin Chinese. 3 Credits.

This course is an overview of, and introduction to, the theoretical foundations of second language (L2) acquisition in general and the acquisition of Chinese as a foreign language in particular. It is designed to deepen the understanding of the Chinese language from the perspective of L2 learners. Research papers focusing on the L2 acquisition of Mandarin Chinese from various perspectives, such as psycholinguistics, cognitive linguistics, pedagogical theories, are introduced in this class.

CHIN 6210. Introduction to Teaching Chinese as a Foreign Language. 3 Credits.

Gain knowledge of TCFL essentials including Chinese pedagogical grammar, instructional design, technology application, and testing and assessment. Discuss National Standards and assessment guidelines for proficiency development, and current studies of second language acquisition (SLA). Examine key issues, studies, and practices on the teaching and acquisition of difficult areas of Chinese, such as the pronunciation and writing systems, as well as topics of general interest. Explore language-teaching methodologies and techniques, and Chinese language testing and assessment. Permission of the instructor required prior to enrollment.

CHIN 6310. Practicum in Chinese Language Instruction. 3 Credits.

Develop basic skills for teaching Chinese as a foreign language (TCFL) through classroom observation, group discussion, lesson planning, syllabus writing, test designing, and supervised field experience in Chinese instruction. Gain knowledge of classroom management. Required seminar and practice sessions. Permission of the instructor required prior to enrollment. Prerequisites: CHIN 6210 or permission of the instructor.

CHIN 6550. Independent Study for Chinese Language and Culture. 1-3 Credits.

Students explore a topic of interest under the supervision of a faculty member and develop research and, in some cases, applied skills. Permission of the instructor and program director is required prior to registration.

CHIN 6841. Religion and Politics in China. 3 Credits.

Changes, destructions, and reconstructions of Chinese religions from the late nineteenth century to the present day. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation-state. (Same as CHIN 3841, REL 3841).

CIVIL ENGINEERING (CE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CE 1010. Introduction to Civil and Environmental Engineering. 1 Credit.

An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall).

CE 1020. Introduction to a Sustainable World. 1 Credit.

The science underlying the basic processes that gave rise to the world we live in and that maintain its viability for human life. Ecosystem-functioning environmental issues, such as greenhouse gas emission and ozone, with current efforts to resolve them. Technological innovations in the context of sustainability.

CE 1098. Variable Topics. 1-36 Credits.

CE 1099. Variable Topics. 1 Credit.

CE 2210. Engineering Computations. 3 Credits.

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisites: APSC 2113 and CSCI 1121. (Spring).

CE 2220. Introduction to the Mechanics of Solids. 3 Credits.

Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisites: APSC 2057 and APSC 2113. (Fall and spring, Every Year).

CE 2510. Environmental Sustainability. 3 Credits.

An introduction to environmental sustainability with focus on the nexus of water, energy, and climate; energy demands of water systems, water footprints of energy generation, and how the two valuable resources are limiting each other; technologies and research frontiers toward a sustainable water and energy supply.

CE 2710. Introduction to Transportation Engineering. 3 Credits.

Transportation system components; roadway traffic capacity and network performance measures; signalized and unsignalized intersections; monitoring techniques, instruments and data processing. Sustainability issues and environmental impact of transportation systems with focus on urban design, planning and regulation. Prerequisite: MATH 2233. (Spring, Every Year).

CE 3110W. Civil Engineering Materials. 2 Credits.

Mechanical properties and behavior of civil engineering materials such as metals, concrete, and fiber-reinforced polymer composites. Properties range from plastic deformations of metallic materials to crushing of confined and unconfined concrete. Basis of the strength of materials. Concepts of creep, fatigue, fracture, and crack propagation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CE 2220 and CHEM 1111. (Fall, Every Year).

CE 3111W. Civil Engineering Materials Lab. 1 Credit.

Measurement of stress-strain characteristics and study of failure modes in ductile steel, brittle concrete, and anisotropic composite materials. Experiments include data collection, data analysis, and interpretation and presentation of results regarding tension, compression, bending, impact, and shear properties. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. CE 3110W may be taken as a corequisite. Prerequisites: CE 3110W. (Fall).

CE 3230. Structural Theory I. 3 Credits.

Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of beams, frames, trusses, and arches. Calculation of deflections. Prerequisites: CE 2210 and CE 2220. (Fall, Every Year).

CE 3240. Structural Theory II. 3 Credits.

Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 3230. (Spring, Every Year).

CE 3310. Reinforced Concrete Structures. 3 Credits.

Properties of concrete and reinforcement; design of flexural reinforcement, shear reinforcement; development of reinforcement; design of columns, floor slabs; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. CE 3240 may be taken as a corequisite. Prerequisite: CE 3240. (Fall and spring, Every Year).

CE 3520. Environmental Engineering I: Water Resources and Water Quality. 3 Credits.

Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisites: CE 3610 and CHEM 1111. (Spring, Every Year).

CE 3521. Environmental Engineering Laboratory. 1 Credit.

Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 3520.

CE 3610. Hydraulics. 3 Credits.

Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisites: CE 2210 and MAE 3126. (Spring, Every Year).

CE 3611. Hydraulics Laboratory. 1 Credit.

Laboratory experiments and demonstrations of hydraulics in pipe and open-channel flow. Topics include center of pressure, floating bodies, Bernoulli's theorem, discharge coefficients, velocity profile, and head losses. Prerequisite or corequisite: CE 3610.

CE 3720. Highway Engineering and Design. 3 Credits.

Road vehicle performance. Principles of highway design: horizontal and vertical alignments, roadside design; drainage and drainage structures, earthwork, intersections, interchanges, parking facilities; basic traffic models; highway materials. Application of safety standards. APSC 3115 and CE 2220 may be taken as a corequisite. Prerequisites: APSC 3115, CE 2220 and MATH 2233. (Fall and spring, Every Year).

CE 4320. Metal Structures. 3 Credits.

Principles of the design of metal structures, structural elements, connections, specific problems of analysis including the use of computer software, methods of construction, professionalism in design. Prerequisite: CE 3240.

CE 4330W. Contracts and Specifications. 3 Credits.

Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors. (Spring, Every Year).

CE 4341. Senior Design Project I. 1 Credit.

First in a two-course sequence for the senior design project in civil and environmental engineering. Outcomes include team formation, project selection, task formulation and assignments, preliminary design validation and/or prototyping. Restricted to students in the civil engineering program with senior standing. (Fall, Every Year).

CE 4342. Senior Design Project II. 3 Credits.

Second in a two-course sequence for the senior design project in civil and environmental engineering. Application of civil and environmental engineering concepts in the design of a project that integrates the concepts and technical knowledge learned in two or more of the following disciplines: engineering mechanics, materials, environmental engineering, geotechnical engineering, structural engineering, transportation engineering, and water resources engineering. Restricted to students in the civil engineering program with senior standing. Prerequisite: CE 4341. Recommended background: Knowledge of structural analysis of indeterminate structures, reinforced concrete and structural steel design, and soil mechanics. (Spring, Every Year).

CE 4410. Introduction to Geotechnical Engineering. 3 Credits.

Soils and rock formation, soil composition, permeability, seepage and flow net analysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisites: CE 2220, CHEM 1111 and MAE 3126. (Fall, Every Year).

CE 4411. Geotechnical Engineering Laboratory. 1 Credit.

Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture-density relationship of soils. CE 4410 may be taken as a corequisite. Prerequisite: CE 4410. (Fall and spring, Every Year).

CE 4450. Introduction to Geo-environmental Engineering. 3 Credits.

Characterization of soils and wastes, engineering properties of soils and geo-synthetics, fundamental concepts of fate and transport of contaminants, common practice in design and construction of waste containment systems, current methods for remediation of contaminated groundwater and soils. Prerequisites: CE 3520 and CE 4410. (Spring, Every Year).

CE 4530. Environmental Engineering II: Water Supply and Pollution Control. 3 Credits.

Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 3520.

CE 4620. Hydrology and Hydraulic Design. 3 Credits.

Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. APSC 3115 and CE 3610 may be taken as a corequisite. Prerequisites: APSC 3115 and CE 3610. (Fall and spring, Every Year).

CE 4810. Research. 1-8 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring, Every Year).

CE 4820. Special Topics. 1-6 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

CE 5099. Variable Topics. 1-99 Credits.**CE 6101. Numerical Methods in Engineering. 3 Credits.**

Eigenvalue problems. Numerical solution of systems of equations and ordinary differential equations. Solution techniques for elliptic, parabolic, and hyperbolic partial differential equations. Numerical methods for solving finite element equations. Introduction to solution of fluid-flow problems. Prerequisite: CE 2210.

CE 6102. Application of Probability Methods in Civil Engineering. 3 Credits.

Uncertainty in real-world information; basic probability concepts and models; random variables; useful probability distributions, statistical estimation of distribution parameters from observed data; empirical determination of distribution models; testing hypothesis; regression and correlation analyses; decision theory. Prerequisite: APSC 3115.

CE 6110. Contracts and Specifications In Construction Engineering. 3 Credits.

Overview of contracts, specifications, and the legal environment for engineers; construction contracts, specifications, bidding, contract administration, bonds and securities, dispute resolution. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6111. Project Management For Construction. 3 Credits.

Principles of project management in construction industry. Elements of project management such as structural organization, planning, scheduling, communications, bidding, change orders, contractual relationship, and labor relations and related activities in construction. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6112. Construction Project Acquisition. 3 Credits.

Basic principles used in the procurement and tendering stages of projects up to delivery; construction management activities, financial activities, and cost estimating software and techniques. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall, Every Year).

CE 6113. Construction Contracts, Insurance, and Bonds. 3 Credits.

Common laws used in construction such as contract, tort and statutory/regulatory laws. Elements of project dispute avoidance, subcontracts, project delivery, and insurance and performance and payment bonds. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6114. Construction Methods, Materials, Equipment, and Systems. 3 Credits.

Principles of construction methods, machinery and equipment selection, and production estimation. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6115. Project Planning and Scheduling. 3 Credits.

Fundamentals of project planning and scheduling, scoping estimation risk analysis with a focus on the tools and techniques available to a project planner for mitigation of project risks. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6116. Green Building Design and Construction. 3 Credits.

Sustainability issues and green building design and delivery with a focus on development of commercial and institutional high performance green buildings; LEED ratings and accreditation. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6117. Construction Finance and Engineering Economics. 3 Credits.

Fundamentals of financing construction projects. Commonly used business models, life cycle cost analysis, and software tools for construction project cost control. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6118. Advanced Construction and Computer-Aided Design. 3 Credits.

Integration of construction techniques and computer-aided design; building information modeling and other technologies in various phases of construction management. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall, Every Year).

CE 6119. Construction Safety And Quality Control. 3 Credits.

Principles and importance of construction quality assurance and contractor quality control. Quality control methods to assess design activities in design-build contracts. Overview of hazardous situations that may arise in the construction jobsite and methods for mitigation these dangerous situations. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6121. Construction Project Control. 3 Credits.

Basic principles of scope, cost, schedule, risk, and quality management; the organization of construction firms at the general corporate level and the project level, flow of information between parties in the project, scheduling software. Restricted to graduate students or with approval of the department. Recommended background: bachelor's degree in engineering, sciences, and related fields. (Fall and spring, Every Year).

CE 6201. Advanced Strength of Materials. 3 Credits.

Deflection of beams using singular functions, unsymmetrical bending of beams, beams on elastic foundation. Beam-column problems, shear center for thin-walled beam cross sections, curved beams. Applications of energy methods, torsion, basic equations for theory of elasticity, thin- and thick-walled cylinders, stress concentration, and failure criteria. Prerequisites: CE 2220 and CE 3240. (Spring, Every Year).

CE 6202. Methods of Structural Analysis. 3 Credits.

Theory and applications of modern methods of structural analysis, direct stiffness approach, energy and variational methods, elastoplastic analysis of frames, P-delta effects, application of commonly available structural analysis software. Prerequisites: CE 2220 and CE 3240. (Fall, Every Year).

CE 6203. Reliability Analysis of Engineering Structures. 3 Credits.

Probability theory, theory of structural reliability, probabilistic analysis of strength and loads, risk and reliability function, empirical distribution, probability plot. The design service life, method of perturbation, Monte Carlo simulation. Fatigue and fracture, proof testing, inspection and repair-replacement maintenance. Prerequisite: APSC 3115.

CE 6204. Analysis of Plates and Shells. 3 Credits.

Bending and stretching of thin elastic plates under loading with various boundary conditions, continuous plates and plates on elastic foundations, theory of folded-plate structures. Theory of curved surfaces; general linear bending theory and its simplification to membrane theory; bending stresses in shells of revolution, shallow-shell theory. Prerequisites: CE 2220 and CE 3240. (Spring, odd years).

CE 6205. Theory of Structural Stability. 3 Credits.

General criteria for stability, buckling of elastic and inelastic columns and frames, torsional and lateral buckling, variational methods. Buckling of plates and shells under static loads, stability of stiffened structures, effect of imperfections and boundary conditions. Prerequisites: CE 2220 and CE 3240. (Fall, Every Year).

CE 6206. Continuum Mechanics. 3 Credits.

Introduction to the mechanics of continuous media. Tensor calculus; kinematics; stress and stress rate, conservation of mass, conservation of linear and angular momentum, energy balance, second law of thermodynamics; constitutive theory; linear and nonlinear elasticity, newtonian fluids, micropolar elasticity. Prerequisites: CE 2220. (Fall, spring, and summer, even years).

CE 6207. Theory of Elasticity I. 3 Credits.

Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatic rods, plane problems. Prerequisites: CE 2220. (Same as MAE 6207) (Spring).

CE 6208. Plasticity. 3 Credits.

Introduction to the continuum theory of plastic deformation. Physical basis of rate-independent plasticity. Concepts of yield, strain hardening and softening, reverse yield, and cyclic plasticity. Constitutive equations describing plastic deformation. Prerequisite: CE 6201 or CE 6206.

CE 6209. Mechanics of Composite Materials. 3 Credits.

Stress-strain relationship for orthotropic materials, invariant properties of an orthotropic lamina, biaxial strength theory for an orthotropic lamina. Mechanics of materials approach to stiffness, elasticity approach to stiffness. Classical lamination theory, strength of laminates. Statistical theory of fatigue damage. Prerequisite: CE 3240. (Spring, even years).

CE 6210. Introduction to Finite Element Analysis. 3 Credits.

Calculus of variations. Variational formulation of the finite element method. Weighted residual techniques. Computer implementation of the finite element method. Application to problems in heat transfer, stress analysis, fluid flow, and structural analysis. Prerequisites: Proficiency in one computer language; and CE 2220 and CE 3240. (Fall, Every Year).

CE 6301. Design of Reinforced Concrete Structures. 3 Credits.

Structural behavior of reinforced concrete structures, ultimate strength and deformation characteristics; design of structural components including beams, columns, floor slabs, deep beams, corbels, and composite slab/beam systems. Prerequisite: CE 3310.

CE 6302. Prestressed Concrete Structures. 3 Credits.

Structural behavior and failure modes of prestressed concrete structures; design in prestressed concrete, including long-span structures, bridges, and precast systems. Prerequisite: CE 3310.

CE 6310. Advanced Reinforced Concrete Structures. 3 Credits.

Conception, analysis, and design of low-rise and high-rise buildings by ultimate-strength methods, precast systems, progressive collapse, earthquake considerations, domes, folded plates, shell-type structures, and special topics. Prerequisite: CE 6301.

CE 6311. Bridge Design. 3 Credits.

Application of basic design procedures for reinforced and prestressed concrete bridges, according to AASHTO bridge specifications. Various types of concrete bridges, design superstructure bridge elements (deck slab, girders, bearing pads), and development of superstructure/substructure details. Prerequisite: CE 6302.

CE 6320. Design of Metal Structures. 3 Credits.

Structural behavior of metal structures and composite girders. Conception, analysis, and design of low-rise and high-rise buildings by elastic and inelastic methods. Earthquake considerations and special topics. Prerequisite: CE 4320.

CE 6321. Advanced Metal Structures. 3 Credits.

Conception and design of advanced structural components and systems, hysteretic behavior, plastic design principles, box-type girders, cable systems, and unique structural systems. Prerequisite: CE 6320. (As arranged).

CE 6340. Structural Dynamics. 3 Credits.

Vibration of continuous systems: membranes, beam plates, and shells; approximate methods of vibration analysis; methods of integral transform; analysis of nonlinear systems; wave propagation. Prerequisites: APSC 2058 and CE 3240. (Fall, odd years).

CE 6341. Random Vibration of Structures. 3 Credits.

Introduction to random processes, responses of linear structures to stationary and nonstationary random inputs. Structural responses to earthquakes, waves, boundary-layer turbulences, wind loads, etc. Failure analysis of structures under random loads. Prerequisites: APSC 3115 and CE 6340. (Spring, even years).

CE 6342. Structural Design to Resist Natural Hazards. 3 Credits.

Prediction of forces due to earthquakes and strong winds; generalized codes; pseudostatic methods for preliminary design; codes based on spectra, energy absorption and ductility; influence of foundations; ground failures; static and aeroelastic effects of strong winds. Design project. Prerequisites: CE 3240 and CE 4340; and CE 6340 or CE 6701. (Spring, Every Year).

CE 6350. Introduction to Biomechanics. 3 Credits.

Fundamentals of continuum mechanics as they apply to biological materials: concepts of stress, strain, and equilibrium; elastic and viscoelastic properties of solids; physiological fluid mechanics and bioheat and mass transfer. Fundamentals of solid mechanics of soft tissues and bone structures. Development of computer models and applications. Prerequisite: CE 2220. (Fall, Every Year).

CE 6401. Fundamentals of Soil Behavior. 3 Credits.

Soil mineralogy, clay-water-electrolyte systems, soil composition, fabric, structure, volume change behavior, permeability, coupled phenomena, in-situ evaluation of soil behavior. Prerequisite: CE 4410. (Fall, even years).

CE 6402. Theoretical Geomechanics. 3 Credits.

Porous media, stress-strain behavior of soil skeleton, elastic and elastoplastic models for soil behavior, critical state concept, cam clay, strength of soils, stress-dilatancy, stress paths. (Fall, odd years).

CE 6403. Foundation Engineering. 3 Credits.

Principles of soil mechanics applied to the analysis and design of mat foundations, pile foundations, retaining structures including sheeting and bracing systems, and waterfront structures. Foundations on difficult soils and reinforced earth structures. Prerequisite: CE 4410. (Spring, Every Year).

CE 6404. Geotechnical Earthquake Engineering. 3 Credits.

Ground motion, wave propagation, foundation isolation, site response analysis, seismic stability of retaining structures, soil structure interaction. Prerequisite: graduate standing.

CE 6405. Rock Engineering. 3 Credits.

Classification and properties of rock; nature of rock masses and rock discontinuities; field exploration; methods of excavation; design and applications to foundation slopes, tunnels, and chambers in rock. Prerequisite: CE 4410.

CE 6501. Environmental Chemistry. 3 Credits.

Principles of thermodynamics and kinetics, acid-base chemistry, alkalinity, coordination chemistry, precipitation, adsorption, redox chemistry. Prerequisites: CHEM 1111 and CHEM 1112. (Fall, Every Year).

CE 6502. Advanced Sanitary Engineering Design. 3 Credits.

Elements of design, including basic parameters and hydraulic requirements; layout and design of water supply and wastewater systems, pumping stations, and treatment plants; plant expansions and modifications. Prerequisite: CE 4530. (Spring, Every Year).

CE 6503. Principles of Environmental Engineering. 3 Credits.

Principles of chemical equilibrium and reaction kinetics, acid-base and redox reactions, chemical transport, and reactors. Reactor design of ozone contactor, air stripping tower, activated carbon adsorption, and membrane filtration by the principle of mass balance. Prerequisite: CE 3520. (Fall, Every Year).

CE 6504. Water and Wastewater Treatment Processes. 3 Credits.

Theory and application of commonly used processes. Sedimentation, coagulation, filtration, disinfection, gas transfer, activated sludge, trickling filters, oxidation ponds, sorption, and sludge stabilization and disposal. Process combinations to produce treatment systems. Nanotechnology and water reuse systems. Prerequisite: CE 3520. (Spring, Every Year).

CE 6505. Environmental Impact Assessment. 3 Credits.

Public policy and legislation on environmental quality. Methods for assessing impacts of engineering projects. Technology for assessing impacts on air, water, and land environments, applied to transportation facilities, water and wastewater facilities, industrial and community development. Prerequisites: CE 3520. (Fall).

CE 6506. Microbiology for Environmental Engineers. 3 Credits.

Principles of microbiology and their applications to biological processes in the natural environment and engineered systems. Engineering applications, principles of biochemistry and microbiology of drinking water quality, waste and wastewater treatment, and bioremediation. Prerequisite: CE 3520. (Spring, even years).

CE 6507. Advanced Treatment Processes. 3 Credits.

Principles and applications of advanced treatment systems for water, waste-water, and hazardous wastes, including: biological nutrient removal, oxidation-reduction processes, stripping, sorption, membrane processes, chemical precipitation, others. Prerequisite: CE 6504. (Fall and spring, Every Year).

CE 6508. Industrial Waste Treatment. 3 Credits.

Types of industries, waste sources. Characteristics, measurements, and evaluation. Minimization and reuse. Treatment process selection, development, and design. Regulations, permits, standards, monitoring, and pretreatment. (Fall, Every Year).

CE 6509. Introduction to Hazardous Wastes. 3 Credits.

Regulations, including RCRA and Superfund; transport and fate of hazardous substances; elements of environmental toxicology, risk assessment, and hazard ranking; monitoring, data collection, and evaluation; waste minimization. Prerequisite: CE 3520. (Spring, Every Year).

CE 6601. Open Channel Flow. 3 Credits.

Types and regimes of flow; energy and momentum principles, uniform flow, gradually varied flow, spatially and rapidly varied flow. Flow in nonprismatic channels. Unsteady flow; dam break problem, flood routing. Prerequisite: CE 3610.

CE 6602. Hydraulic Engineering. 3 Credits.

Hydraulic design of conveyance, regulating, and measurement structures. Design for spillways, energy dissipators, inlet and outlet works related to dams. Forces on hydraulic structure and stability analysis. Hydraulic turbines and pumps. Design considerations for flow through pipes. Transients and cavitation. Prerequisite: CE 3610.

CE 6603. Design of Dams. 3 Credits.

Project planning and investigations. Types of dams; design of earth-rock fill dams; stability analysis, foundation treatment, wind-wave protection. Construction methods for dams. Reservoir sedimentation. Safety inspection of dams. Prerequisite: CE 3610.

CE 6604. Advanced Hydrology. 3 Credits.

Precipitation, evaporation, and transpiration. Soil physics; stream flow, drainage basins, hydrograph analysis, and stream-flow routing. Design criteria, flood frequency statistics and analysis, flood forecasting and control, water supply forecasting. Prerequisite: CE 4620.

CE 6605. Ground Water and Seepage. 3 Credits.

Permeability theory of groundwater flow, flow nets, analogs, computer solutions; applications to engineering problems such as excavation dewatering, flow through dams, stabilization of earth slopes. Prerequisites: CE 4410. (Spring).

CE 6606. Mechanics of Water Waves. 3 Credits.

Irrrotational theory for deep- and shallow-water waves, reflexion, refraction, diffraction, attenuation. Water waves of finite amplitude: shallow-water theory, tides, bores, long-waves theory, conoidal and solitary waves. Wave generation by wind. Wave breaking and reflexion. Prerequisites: APSC 6213 and permission of the instructor. (Fall and spring, Every Year).

CE 6607. Water Resources Planning and Control. 3 Credits.

The parameters of water resources planning and control, economics of water resources and related natural resources, economics of water-quality control, physical parameters of water resource development, water resources law. Prerequisite: CE 4410. (Fall and spring, Every Year).

CE 6608. Hydraulic Modeling. 3 Credits.

Dimensional analysis and similitude. Types of models—physical, mathematical. Distortions in physical models. Erodible bed models. Prerequisite: CE 3610.

CE 6609. Numerical Methods in Environmental and Water Resources. 3 Credits.

Use of microcomputers in water resources. Elements of finite difference schemes, basic operations, convergence, stability, and consistency. Nonuniform flow and error analysis; unsteady laminar flow; diffusion problems; unsteady flow in open channels; water hammer, seepage flow, and diffusion-dispersion problems. Prerequisites: CE 2210 and MAE 3126. (Spring, Every Year).

CE 6610. Pollution Transport Systems. 3 Credits.

Distribution of pollutants in natural waters and atmosphere, diffusive and advective transport, mathematics for stream pollutant deoxygenation rates, groundwater pollution transport, sediment transport, thermal transport, numerical simulation of pollutant transports in streams and estuaries. Prerequisites: CE 3610 and MAE 2131. (Fall and spring, Every Year).

CE 6701. Analytical Mechanics. 3 Credits.

Fundamental principles, particle and rigid-body dynamics, generalized coordinates, variational principles and Lagrange's equations, nonholonomic systems, Hamilton's equations, theory of small oscillations. Prerequisites: APSC 2058 and APSC 2113. (Fall, Every Year).

CE 6702. Vehicle Dynamics. 3 Credits.

Engineering principles and analytical methods explaining the performance of an automotive vehicle. Basic mechanics governing vehicle dynamic performance in longitudinal, ride, and handling modes. Engineering analysis techniques applied to basic systems and subsystems to derive the governing equations. CE 6701 may be taken as a corequisite. Prerequisite: CE 6701. (Spring, even years).

CE 6705. Nonlinear Finite Element Modeling and Simulation. 3 Credits.

Rigid and flexible body methods for modeling crashes. Application of dynamic nonlinear finite element methods with contact algorithms for modeling crash phenomena. Modeling and simulation of vehicles, airbags, safety restraining systems, and highway barriers. (Spring).

CE 6706. Pavement and Runway Design. 3 Credits.

Pavement types, wheel-load characteristics; stresses in pavements and subgrades; empirical methods of design of flexible and rigid highway and airfield pavements; general principles of runway design. (Spring, odd years).

CE 6707. Systems Dynamics Modeling and Control. 3 Credits.

Introduction of concepts in control theory and applications to solve problems in civil and transportation engineering dealing with single-input/single-output and multi-input/multi-output systems. Review of classical control theory in the frequency and time domain, state-space analysis, system optimization, and non-linear control. (Fall).

CE 6721. Traffic Engineering and Highway Safety. 3 Credits.

Roadway traffic capacity and network performance measures; steady and unsteady traffic flow phenomena; traffic control signalization theory and practical implementation; monitoring techniques, instruments, and data processing for highway safety. Traffic related highway safety design concepts. (Fall).

CE 6722. Intelligent Transportation Systems. 3 Credits.

Commands, controls, and communications in modern multimodal transportation; infrastructure/highway and vehicle automation, advanced traffic management, vehicle control and safety systems; information, data, and sensory requirements; practical applications and projects. Prerequisites: CE 2710 or CE 3720. Recommended background: Basic knowledge of transportation engineering. (Spring, Every Year).

CE 6730. Sustainable Urban Planning. 3 Credits.

Human and physical processes shaping urban ecologies and environments; human-environment interactions in the context of an urban region; urban land use, transport, and planning. Departmental approval is required prior to enrollment. Prerequisites: CE 2710. (As arranged, Every Year).

CE 6800. Special Topics. 1-6 Credits.

Topic to be announced in the Schedule of Classes.

CE 6801. Civil and Environmental Engineering Graduate Internship. 1 Credit.

May be repeated once for credit. Additional prerequisites may be required for a specific internship as determined by the research supervisor. Restricted to graduate students in the civil and environmental engineering program. Prerequisites: Required courses in the area of focus and permission of the department. (Fall and spring, Every Year).

CE 6808. Research. 1-12 Credits.

Basic research projects, as arranged. May be repeated for credit.

CE 6998. Thesis Research. 3 Credits.**CE 6999. Thesis Research. 3 Credits.****CE 8320. Theory of Elasticity II. 3 Credits.**

Application of integral transform and analytic function theory to solution of plane problems; elastic wave propagation. Three-dimensional elasto-statics. Prerequisites: APSC 6211 and CE 6207. (Spring, Every Year).

CE 8321. Nonlinear Mechanics of Continua. 3 Credits.

Polar decomposition, invariance, isotropy, representation theorems for invariants and isotropic tensor functions. Deformation, kinematics, stress, balance principles. Principles for constitutive relations. Applications to nonlinear elasticity and non-Newtonian fluids. Prerequisite: CE 6206.

CE 8330. Advanced Finite Element Analysis. 3 Credits.

Review of variational formulation of the finite element method. Formulation of various continuum and structural elements. Application to static and dynamic problems in elasticity, plasticity, large deflection, and instability in plates and shells. Recent developments in finite element methods. Prerequisites: CE 6206 and 6210; or MAE 6210 and MAE 6286. (Same as MAE 6288) (Fall and spring, Every Year).

CE 8350. Sedimentation Engineering. 3 Credits.

Problems of erosion and sedimentation. Properties of sediment. Initiation of motion. Suspension of sediment and sediment discharge theories. Sedimentation measurements. Economic and legal aspects. Prerequisites: CE 6601 or permission of the department. (Fall and spring, Every Year).

CE 8351. Mechanics of Alluvial Channels. 3 Credits.

Physical processes in drainage basins and channels. Channel forms and bed forms. Hydraulics and sediment transport in alluvial channels. Design of stable channels. Qualitative and quantitative response of rivers. Channel stabilization, navigation channels. Case studies including environmental impacts. Prerequisites: CE 6601 or permission of the department. (Fall and spring, Every Year).

CE 8352. Advanced Hydraulics. 3 Credits.

Theory of unsteady flow. Diffusion and dispersion through pipes and open channels. Numerical solutions using finite element and finite difference methods. Prerequisites: CE 6601 or permission of the department. (Fall and spring, Every Year).

CE 8370. Intelligent Systems Theory and Applications. 3 Credits.

Overview of artificial intelligence, neural networks, genetic algorithms, fuzzy systems, and hybrid intelligent systems and their integration with other information processing methods. Intelligent systems applications; examples are drawn from ITS and traffic engineering, vehicle safety, remote sensing, and structural design optimization. Prerequisite: CE 6707.

CE 8380. Advanced Biomechanics. 3 Credits.

Historical overview of biomechanics and biomaterials. Fundamental concepts in mechanics as applied to the treatment of biological systems. Approaches to the mechanical analysis of the human structure under physiological and non-physiological loading conditions. Constitutive laws for biological materials. Finite element applications. Prerequisite: CE 6206. (Fall and spring, Every Year).

CE 8998. Advanced Reading and Research. 1-12 Credits.

Doctoral candidates preparing for qualifying examination. (Fall and spring, Every Year).

CE 8999. Dissertation Research. 1-12 Credits.

Doctoral candidate research. Restricted to doctoral candidates. (Fall and spring, Every Year).

CLASSICAL STUDIES (CLAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CLAS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

CLAS 1001. Ancient Mediterranean Civilizations. 3 Credits.

Overview and brief introduction to the civilizations of the ancient Mediterranean world ca. 6000 BCE through ca. 476 CE. Aspects of the political, social, cultural, economic, diplomatic, military, artistic, and religious history of the ancient Near East, Egypt, Israel, Greece, and Rome. Restricted to freshmen.

CLAS 1099. Variable Topics. 1-36 Credits.**CLAS 2104. Ancient Medicine and Modern Medical Terms. 3 Credits.**

The formation of medical terms derived from Greek and Latin, along with principles that govern the derivation of their meaning. The course includes a survey of ancient medical centers and practices.

CLAS 2105. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

CLAS 2105W. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CLAS 2106. Mythology of the Classical World. 3 Credits.

The creation of the world, the nature of the gods, and the adventures of heroes as described in various Greek and Roman literary sources (e.g., epic, drama, hymns) and as shown in ancient art.

CLAS 2106W. Mythology of the Classical World. 3 Credits.

The creation of the world, the nature of the gods, and the adventures of heroes as described in various Greek and Roman literary sources (e.g., epic, drama, hymns) and as shown in ancient art. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CLAS 2107. Greek and Roman Drama. 3 Credits.

Study of Greek and Roman tragedy and comedy; the nature and setting of dramatic performance in classical antiquity.

CLAS 2112. History of Ancient Greece. 3 Credits.

A political and social survey of Bronze Age Minoan and Mycenaean civilizations, the Iron Age, Archaic Period, Classical Greece through Alexander the Great. (Same as HIST 2112).

CLAS 2113. The Roman World to 337 A.D.. 3 Credits.

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as HIST 2113.

CLAS 2114. Sport and Society in Ancient Greece. 3 Credits.

Understanding the place of ancient Greek athletics and sports in their civilization leads to the religious, political, and economic contexts of athletics. Issues of class, gender, nationalism, and ethnicity. Credit cannot be earned for this course and HIST 2114.

CLAS 2802. Gods and Goddesses of the Ancient Near East. 3 Credits.

Focus on texts from ancient Mesopotamia, Egypt, Syria, Phoenicia, Israel, and the Hittites. Readings from primary sources translated into English as well as secondary literature.

CLAS 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Credit cannot be earned for this course and HIST 2803.

CLAS 2804. History of Ancient Israel. 3 Credits.

The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as HIST 2804.

CLAS 3099. Variable Topics. 1-12 Credits.

CLAS 3104. Dead Sea Scrolls. 3 Credits.

Manuscript discoveries and excavations at Khirbet Qumran with some attention to additional sites in the region of the Dead Sea. Focus on the history and diversity of Second Temple Judaism, Second Temple hermeneutical methods, Jewish apocalypticism, Jewish messianism, the development of the canon, and textual criticism of the Hebrew Bible.

CLAS 3105. Topics in Classical Studies. 3 Credits.

CLAS 3107. Law and Diplomacy in the Ancient Near East and Mediterranean. 3 Credits.

Focus on texts from ancient Mesopotamia, Egypt, Syria, Phoenicia, Israel and Judah, and the Hittites, as well as Moab and Ammon. Readings from primary sources translated into English as well as secondary literature.

CLAS 3111. Topics in Ancient History. 3 Credits.

May be repeated for credit provided the topic differs. Same as HIST 3111.

CLAS 3112. Art and Archaeology of Pompeii. 3 Credits.

Introduction to the Roman world and Roman daily life through study of evidence found in the exceptionally well-preserved ancient town of Pompeii.

CLAS 3113. Greece and Rome in the Art and Architecture of Washington D.C.. 3 Credits.

The influences of Classical Greek and Roman architecture, design, and symbols on urban design, public architecture, and civic sculpture in late eighteenth, nineteenth, and early twentieth century Washington, D.C. within their historical, political, and cultural contexts. At least one third of this course involves field trips, including walking tours and visits to monuments and museums.

CLAS 3114. Topics in Ancient Literatures and Cultures. 3 Credits.

May be repeated for credit provided the topic differs.

CLAS 3115. Topics in Ancient Art and Archaeology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

CLAS 3116. Identity in the Greco-Roman World. 3 Credits.

Questions of identity surrounding the Romans and non-Romans who populated the ancient Mediterranean world in classical antiquity and whose culture is considered the cornerstone of Western civilization.

CLAS 3117. Alexander The Great. 3 Credits.

Close reading of ancient primary sources reveals the complex personality and remarkable deeds of Alexander the Great (356-323 BCE); the nature of Alexander's military success, lasting effects of his conquests, and long-term impact on the varied people and lands of his empire. Prerequisites: AH 3101 or HIST 2112. (Same as HIST 3117).

CLAS 3119. The Ancient Economy. 3 Credits.

This course introduces students to the sources and approaches to the study of the economic history of ancient Greece and Rome. Key issues that we will explore in this course include the "ecologies" of the Mediterranean region, trade and transport, the invention of coinage and monetization, taxation, food production, consumption, and slavery.

CLAS 3901. Directed Project. 1-3 Credits.

Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Permission of the instructor and the department required prior to enrollment.

CLAS 3901W. Directed Project. 1-3 Credits.

CLAS 4111. Capstone Study. 3 Credits.

The capstone study seminar enables junior or senior majors to design, in consultation with a Classical Studies faculty member, a culminating project aligned with their interests, previous curricular experience, and/or future goals. The results of a student's capstone study is submitted as a written report and shared with all Classical Studies majors in a presentation that might include written, oral, and/or digital formats. Capstone studies should demonstrate that a student can locate and evaluate information about the ancient world in both traditional and digital forms and present their findings clearly and logically. Restricted to juniors or seniors in the classical studies program.

CLAS 4901. Directed Project. 1-3 Credits.

Continuation of CLAS 3901. Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Permission of the instructor and the department required prior to enrollment.

CLAS 5099. Variable Topics. 1-99 Credits.

CLINICAL EMBRYOLOGY AND REPRODUCTIVE TECHNOLOGY (CERT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CERT 3004. Endocrinology for Health Sciences. 3 Credits.

How hormones control the flow of information between different cells and tissues with an emphasis on the human reproductive system; classes of hormones, sources and synthesis of hormones, receptors and target tissues, mechanisms of action and regulation, and methods used in endocrinology. Prerequisites: BISC 1111.

CERT 3005. Topics in Biomedical Science. 1 Credit.

Topics vary by semester. May be repeated for credit provided topic differs. See Schedule of Classes for more details. Prerequisites: BISC 1111 or BISC 1112.

CERT 4010. Clinical Human Embryology. 3 Credits.

Physiology of the female reproductive system; gamete biology, fertilization and early embryo development; embryo culture techniques, intracytoplasmic sperm Injection (ICSI), and embryo selection and transfer. Proctor fee. Prerequisites: BISC 1111.

CERT 4011. Human Embryology Laboratory. 1 Credit.

Techniques used in the clinical embryology laboratory, including embryo culture, oocyte retrievals, selection and egg denudation, sperm preparations for in vitro fertilization (IVF), and intracytoplasmic sperm injection (ICSI) procedures. CERT 4010 may be taken as a corequisite. Laboratory fee. Prerequisites: CERT 4010.

CERT 4012. Clinical Human Andrology. 3 Credits.

The physiology of the male reproductive system; sperm anatomy and motility, seminal plasma, and male gamete biology. Proctor fee. Prerequisites: BISC 1111.

CERT 4013. Human Andrology Laboratory. 1 Credit.

Techniques used to analyze semen for assisted reproduction procedure; sperm morphology, motility and vitality, sperm preparation, and chromatin assessment. CERT 4012 may be taken as a corequisite. Laboratory fee. Prerequisites: CERT 4012.

CERT 4014. Human Reproductive Cryobiology. 3 Credits.

Theory and methods used to freeze sperm, testicular tissues and embryos for use during in vitro fertilization procedures. Cryo-injuries and vitrification solutions. Proctor fee. Prerequisites: BISC 1111.

CERT 4015. Human Cryobiology Laboratory. 1 Credit.

Freezing techniques for assisted reproductive technologies; sperm and embryo freezing, embryo stage vitrification, blastocyst slow freezing, and testicular sperm freezing. CERT 4014 may be taken as a corequisite. Laboratory fee. Prerequisites: CERT 4014.

CERT 4016. Preimplantation Genetic Diagnosis Laboratory. 1 Credit.

The role of preimplantation genetics procedures for use in reproductive medicine; embryo biopsies at different developmental stages and trophectoderm cell biopsy at the blastocyst stage. MLS 4171 may be taken as a corequisite. Laboratory fee. Prerequisites: MLS 4171.

CERT 4017. Clinical Experience in Embryology. 3 Credits.

Application of embryology techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4010 and MLS 4011.

CERT 4018. Clinical Experience in Andrology. 3 Credits.

Application of andrology techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4012 and MLS 4013.

CERT 4019. Clinical Experience in Cryobiology. 3 Credits.

Application of cryobiology techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4014 and MLS 4015.

CERT 4020. Clinical Experience in Preimplantation Genetic Diagnosis. 3 Credits.

Application of preimplantation genetic diagnosis techniques in a clinical assisted reproductive technology (ART) laboratory facility. Proctor fee. Prerequisites: MLS 4016 and MLS 4171.

CLINICAL MANAGEMENT AND LEADERSHIP (CML)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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CML 2140. Management of Human Resources in Health Sciences Organizations. 3 Credits.

Builds on concepts introduced in HSci 104. Theory and application of management and leadership as they affect the management of human resources in health sciences organizations. Focus is on leadership, ethics, and organizational dynamics in a changing health care environment.

CML 2141. Planning and Marketing in Health Sciences. 3 Credits.

The role of planning and marketing in the management and promotion of health sciences services, products, and organizations. Focus on the theory and application of quality principles in assessment of on-going organizational effectiveness, concepts and techniques of project planning, and methods for identifying and addressing customer needs.

CML 2142. Financial Management in the Health Sciences. 3 Credits.

An overview of accounting and financial concepts for management of health sciences organizations. Budgeting, cash management, reimbursement guidelines, and financial management.

CML 2143. Current Issues in Health Sciences Management. 3 Credits.

Evaluation of major problem areas in the management of health sciences organizations. Discussions include legal, technological, managerial, organizational, and leadership issues in the changing health care environment.

CML 4144. Seminar in Health Science Leadership. 3 Credits.

CML 5099. Variable Topics. 1-99 Credits.

CML 6020. Fundamentals of Correctional Health Care. 3 Credits.

General overview of the U.S. criminal justice system; the legal framework underpinning correctional health care; defining elements of the correctional standard of health care; and ethical dilemmas facing the correctional health care administrator. Restricted to students in the graduate certificate in correctional health administration program or with the permission of the instructor.

CML 6021. Correctional Health Care Administration for Special Populations. 3 Credits.

Health care policy and programmatic requirements for managing incarcerated populations with special health care needs, including women, juveniles, detainees, sexual minorities, the elderly, disabled persons, and persons with serious mental illness (SMI) and chronic addiction. Restricted to students in the graduate certificate in correctional health administration program or with the permission of the instructor.

CML 6023. Correctional Health Care Fiscal Management. 3 Credits.

Essential fiscal management responsibilities of the correctional health care administrator; cost efficient health care staffing, budgeting and inventory management, contract development and oversight, cost containment strategies, and the effective use of financial metrics. Restricted to students in the graduate certificate in correctional health administration program or with the permission of the instructor.

CML 6025. Correctional Health Care Oversight. 3 Credits.

Essential policy and programmatic requirements that ensure effective oversight of a correctional health care program; health care governance, quality improvement, infection prevention and control, and risk management. Restricted to students in the graduate certificate in correctional health administration program or with the permission of the instructor.

CML 6050. Correctional Health Care Delivery. 3 Credits.

Key operational responsibilities of the correctional health care administrator; policy development, staffing, and managing a multidisciplinary health care team; ensuring access to efficiently run sick call and chronic care services; and providing necessary oral health care and ancillary support services. Restricted to students in the graduate certificate in correctional health administration program or with the permission of the instructor.

CML 6202. Human Resource Development. 3 Credits.

Methods, techniques and policies appropriate for the development and management of human resources complementary to an organization's vision, strategy, and desired culture. Managerial knowledge, skills and behaviors required for the effective management of people to promote and maintain a professional health care organization are explored.

CML 6203. Health Information Quality and Outcomes. 3 Credits.

Approaches to medical informatics to support managerial decision making, patient care, and quality improvement in clinical practices. Ethical, legal, and social dimensions of health care information technology.

CML 6204. Marketing Clinical Services. 3 Credits.

The marketing process from the viewpoint of clinical practice managers. Needs assessment, environmental analysis, planning, distribution, pricing, promotion.

CML 6205. Case Studies in Clinical Management and Leadership. 3 Credits.

Integrative case-based approach to the analysis of complex problems in the management and leadership of clinical practice services.

CML 6274. Health Economics and Finance. 3 Credits.

Issues of health care economics, financial management, and budgeting that relate to managerial decision-making. Applied financial management, management control systems, budgeting, staffing, and cost accounting.

CML 6275. Leadership and Change in Clinical Management. 3 Credits.

Theories and models of leadership and change from a systems perspective. The development of leadership solutions to problems in clinical organizations; integration of all field course work into implementation plans for health care system changes.

CLINICAL OPERATIONS AND HEALTHCARE MANAGEMENT (COHM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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COHM 2141. Marketing for Healthcare Leaders. 3 Credits.

Skills needed by health care leadership to promote services and strategic change; theory and application of marketing principles for the purpose of project planning, organizational growth, and public relations. Restricted to students in the graduate certificate in correctional health administration program or with the permission of the instructor.

COHM 2142. Finance for Health Care Managers. 3 Credits.

Introduction to key finance competencies necessary for clinical and healthcare operations; costs, expenditure, and reimbursement of services. Restricted to students in the clinical operations and health care management program.

COHM 4145. Case Studies for Clinical Healthcare Management and Leadership. 3 Credits.

Builds on prior coursework to apply clinical operations and health care management practices to a case studies format. Students analyze and discuss real-life operational case studies from various health care organizations. Recommended background: students in the clinical operations and health care management program.

COHM 4150. Practicum in Clinical Operations. 1-3 Credits.

Supervised field work in clinical operations and health management, arranged in consultation with the program director. May be repeated for credit. Restricted to students in the clinical operations and health care management program. Prerequisites: CML 4144 and COHM 4145.

COHM 6107. Economics of Health Care Systems. 3 Credits.

Economic principles as they apply to health policy in the public and private sectors. Restricted to students in the health services and outcome research program.

COHM 6210. Strategic Communications. 3 Credits.

Using effective communication in the health care environment to maximize operational outcomes; critical evaluation of personal communication styles. Recommended background: COHM major.

COHM 6215. Population Health for Health Care Innovators. 3 Credits.

Key concepts of population health; historical perspective on health care in the United States; public health as a health system; regulations and laws; the health workforce infrastructure; interventions.

COHM 6220. Finance for Health Care Operations. 3 Credits.

Applied health economics, finance and policy for high-quality, value-based health care operations; costs, expenditure, and reimbursement of services; strategic financial planning tools. Restricted to students in the clinical operations and health care management program.

COHM 6235. Leadership Development in Health Care Systems. 3 Credits.

Overview of principles related to leadership, including theories and styles, organizational management and values, communication strategies, and change in the context of health care systems. Credit cannot be earned for this course and HSCI 6223.

COHM 6245. Strategic and Operational Decision Making for Health Care Leaders. 3 Credits.

Overview of business principles related to health care systems and leadership, focusing on strategic management of health care service delivery in various settings. Credit cannot be earned for this course and HSCI 6241.

COHM 6320. Informatics for Operational Leadership and Health Care Quality. 3 Credits.

The life cycle of clinical informatics from a systems theory perspective; clinical informatics and its affiliated data, governance, and interoperability structures. Restricted to students in the clinical operations and health care management program.

COHM 6430. Health Care Systems Operations. 3 Credits.

Management in the health care industry; systems and functions required for planning, producing, and delivering high-quality, patient-centered health care services. Restricted to students in the clinical operations and health care management program.

COHM 6465. Practicum in Clinical Operations. 1-3 Credits.

Supervised field work in clinical operations and health management, arranged in consultation with the program director. May be repeated for credit. Program approval and completion of 9 credits in graduate-level clinical management and leadership (CML) coursework are required prior to enrollment. Restricted to students in the clinical operations and health care management program.

COHM 6470. Applications in Clinical Operations and Health Care Management. 3 Credits.

Builds on prior coursework to apply clinical operations and health care management practices; analysis and discussion of real-life operational case studies from a diverse array of health care organizations. Restricted to students in the clinical operations and health care management program. Prerequisite: COHM 6430.

CLINICAL RESEARCH ADMINISTRATION (CRA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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CRA 2101. Basics of Clinical Research. 3 Credits.

Fundamental concepts, trends, regulations, and practices in clinical research. An overview of industry and government practices and policies in the development of patient care products (drug, devices, biologicals, and diagnostics) and treatment protocols.

CRA 2102. Processes of Clinical Research. 3 Credits.

The key process steps involved in the design, implementation, analysis, and approval of investigational new products with an emphasis on the operational steps involved in conducting clinical trials.

CRA 2103. Good Clinical Practices. 3 Credits.

The organization and management of data, documents, materials and findings resulting from clinical research as prescribed by governmental institutions, regulatory agencies, industry sponsors, and research organizations. Audit standards and mechanisms are introduced, and practice audits are conducted.

CRA 2104. Business of Clinical Research. 3 Credits.

Fiscal and managerial components of clinical research, including the budgeting processes, fiscal management, software applications, legal and contractual issues, and recruitment of personnel and subjects. Examination of all entities involved in clinical research, including drug, device, biological, and diagnostics sponsors; academic medical centers; and contract research organizations, site management companies, physician-run organizations, and health delivery organizations.

CRA 2105. Capstone in Clinical Research Administration. 3 Credits.

Identification, analysis, and application of the various administrative aspects of clinical research associated with the development and implementation of a clinical trial for an investigational product.

CRA 2107. Introduction to Monitoring Clinical Trials. 3 Credits.

Introduction to the role of monitoring in clinical research administration to ensure valid, reliable, and accurate clinical data and adherence to good clinical practices by sponsors and study sites.

CRA 4106. Clinical Research Administration Internship. 3 Credits.

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CRA 5099. Variable Topics. 1-99 Credits.

CRA 6201. Critical Analysis Clinical Research. 3 Credits.

Analyses of the essential components of clinical research including good clinical practice, human subject protection, study design, and trials administration.

CRA 6202. Medicines Development. 3 Credits.

Examination of nonclinical, clinical, commercial, regulatory and risk assessment strategies required to develop a clinical development plan for an approvable, marketable new therapeutic and propose life cycle management strategies.

CRA 6203. Partnerships with Human Subjects. 3 Credits.

Regulatory, policy, ethical, and practical considerations associated with the engagement, recruitment, retention, and interaction with human research subjects.

CRA 6204. The Clinical Research Industry. 3 Credits.

Integration of project management principles, decision making models, cross-cultural competency, and interdisciplinary team dynamics to facilitate effective and efficient conduct of clinical trials.

CRA 6205. Clinical Investigation. 3 Credits.

Analysis and evaluation of study design strategies and current practices for major therapeutic areas of clinical research (e.g., vaccine development, cardiovascular disease, anti-infectives, CNS, etc.).

CRA 6208. International Clinical Research. 3 Credits.

Analysis of the strategies and methods of clinical research in international settings; explore cultural and ethical consideration in global clinical research projects.

CRA 6209. Quality and Risk Management. 3 Credits.

Managing risk and safety assessments to ensure quality in clinical research.

CRA 6210. Medical Writing/Clinical Research. 3 Credits.

Strategies and practices in writing documentation related to clinical research administration.

CRA 6211. Monitoring, Auditing, and Oversight in Clinical Research. 3 Credits.

Key stakeholder roles, responsibilities, and processes associated with monitoring, auditing, and oversight in clinical trial conduct. Recommended background: MSHS in CRA or graduate certificate student status.

CRA 6212. Teaching Strategies in the Health Professions. 3 Credits.

Teaching skills pertinent to the delivery of education in health sciences professions. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. (Same as EHS 6212).

CRA 6213. Curriculum Development in Health Professions. 3 Credits.

Curriculum development and assessment skills in the health professions. Variables that affect the manner in which individuals learn and interact within professions and organizations.

CRA 6275. Leadership and Change in Clinical Research Administration. 3 Credits.

A capstone course focusing on the concept of leadership within the contexts of health professionals, health systems, and health policy.

CLINICAL TRANSLATIONAL SCIENCE (CTS)

Explanation of Course Numbers

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CTS 6201. Critical Analysis in Clinical Research. 3 Credits.

Analyses of the essential components of clinical research including good clinical practice, human subject protection, study design, and trials administration.

CTS 6202. Research Methods for Clinical and Translational Research. 2 Credits.

The design and conduct of clinical research with an emphasis on the types of studies most relevant to health care professionals.

CTS 6203. Legal and Ethical Issues in Clinical and Translational Research. 1 Credit.

Legal and ethical issues that arise in the design and conduct of clinical and translational research.

CTS 6205. Clinical Investigations. 3 Credits.

Analysis and evaluation of study design strategies and current practices for major therapeutic areas of clinical research, including vaccine development, cardiovascular disease, anti-infectives, CNS, and others.

CTS 6261. Foundations in Clinical and Translational Research. 3 Credits.

Overview and analysis of translational research principles and practice; analysis and integration of basic clinical community health and health services research concepts as applied to key diseases.

CTS 6264. Clinical and Translational Research Capstone Project. 3 Credits.

Application of the knowledge gained during the course of the program through the completion of a mentored independent research project.

CTS 6265. Grantsmanship in Translational Health Science. 3 Credits.

Writing grant proposals to fund clinical research, with an emphasis on translational research proposals; persuasive communication, conceptually-based hypotheses, and research methods and the grant application process.

CTS 6266. Grant Writing for the Individual Investigator. 3 Credits.

The complete process of research grant proposal development; organizing collaborators, mentors and advisory committees, and negotiating those relationships. Designed for early independent investigators (MD/DO, EdD, PhD, or other terminal degree) who are prepared to develop a grant for submission.

CTS 6273. Bioinformatics for Genomics. 3 Credits.

Bioinformatics tools for different analytical situations; strengths and limitations of the most common bioinformatics strategies. Generalizing acquired knowledge and its underlying principles and techniques to other types of big data applications for the purpose of interpretation of results. Same As: HSCI 6273.

CTS 6275. Transdisciplinary Research Proposal. 3 Credits.

Integration of the competencies acquired throughout the program. Development and submission of a transdisciplinary research proposal that responds to a call for proposals from an external sponsor, such as the National Institutes of Health.

CTS 6285. Collaboration and Team Science in Practice and Research. 3 Credits.

Approaching health, technology, social, and environmental problems with cross-disciplinary engagement and collaboration. Foundational and practical principles and their impact on collaborative and team science engagements. Credit cannot be earned for this course and HSCI 6285.

COLLEGE OF PROFESSIONAL STUDIES (CPS)

Explanation of Course Numbers

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COLUMBIAN COLLEGE OF ARTS AND SCIENCES (CCAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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CCAS 0920. Continuing Research - Master's. 1 Credit.

CCAS 0940. Continuing Research - Doctoral. 1 Credit.

CCAS 1001. First-Year Experience. 1 Credit.

Designed to assist CCAS students in developing their personal, academic, and career goals. Includes three core components: service learning, academic planning, and personal/professional development with content delivered by a variety of means. Restricted to first-year students.

CCAS 1005. GWECP Advising. 0 Credits.

CCAS 1200. Caminos al Futuro. 3 Credits.

Survey of social and cultural dimensions of Latinidad in the United States. Topics include the history of Hispanic/Latino immigration in the United States and the intersection of race and ethnicity, among others. Restricted to students in the Caminos al Futuro pre-college summer program.

CCAS 2154. Elective Internship. 3 Credits.

Fieldwork and academic work carried out under faculty supervision. Students contract with agency, faculty, and Columbian College. Restricted to students of at least sophomore standing who have obtained approval from the Columbian College Undergraduate Studies Office.

CCAS 2190. Special Interdisciplinary Topics. 1-3 Credits.

May be repeated for credit provided the topic differs.

CCAS 2190W. Special Interdisciplinary Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CCAS 3001. Undergraduate Research. 3 Credits.

Open to undergraduates at any level. Focused exploration of an idea, question, or issue, under the guidance of a research mentor/supervisor, culminating in a report about the experience. Students must find a sponsoring faculty member and receive approval from the Office of Undergraduate Studies in the Columbian College of Arts and Sciences. Zero-credit option is graded on a P/NP basis only and is available only during summer sessions. Restricted to students who find a faculty mentor/supervisor and receive CCAS approval.

CCAS 4191. Special Interdisciplinary Major Capstone. 3 Credits.

Required of all students completing a special interdisciplinary major.

CCAS 5099. Variable Topics. 1-99 Credits.

CCAS 6154. Elective Internship. 3 Credits.

Fieldwork and academic work carried out under faculty supervision. Students contract with agency, faculty, and Columbian College. May be repeated to a maximum of 6 credits. Admission by permission of Columbian College. Graded on a P/NP basis only. Zero credit option available only during summer sessions.

CCAS 8920. Continuing Research - Masters. 1 Credit.

N/A.

COMMUNICATION (COMM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

COMM 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

COMM 1025. Introduction to Communication Studies. 3 Credits.

Introduction to historical and intellectual development of the field. Students survey the origins of contemporary theory; learn about fundamental concepts, models, investigative tools, and contexts of communication; and explore a variety of professional opportunities awaiting communication graduates.

COMM 1040. Public Communication. 3 Credits.

Study and practice of the basic techniques of public speaking used to inform, to entertain, and to persuade audiences. Emphasis on the speech-building process: audience analysis, research, development, composition, organization, style, delivery, and criticism.

COMM 1041. Interpersonal Communication. 3 Credits.

Study and practice of verbal and nonverbal communication in ritual, information and perspective sharing, problem solving, and relationship formation, maintenance, and dissolution. Designed to raise awareness of the complexity and power of the communication process in daily life and to help students develop interpersonal skills cognitively, affectively, and behaviorally.

COMM 1042. Business and Professional Speaking. 3 Credits.

Study of the communication process in business and professional organizations; practice in interviewing, small group communication, and public presentations. For non-majors and non-minors only.

COMM 1099. Variable Topics. 1-36 Credits.**COMM 2000. Sophomore Colloquium. 3 Credits.**

Topic vary by semester. See the Schedule of Classes for more detailed information. Restricted to CCAS students with sophomore standing.

COMM 2100. Communication Theory. 3 Credits.

The nature and function of communication theory as a framework for the study of communicative behavior; analysis of paradigmatic approaches in rhetorical, interpersonal, and mass communication theories and models. Restricted to students in the communication program. Prerequisite: COMM 1025.

COMM 2120. Small Group Communication. 3 Credits.

The study and practice of communication in small groups, focusing on problem solving, norms, roles, and leadership. Prerequisite: COMM 1025 or permission of the instructor.

COMM 2140. Nonverbal Behavior. 3 Credits.

Introduction to predominant theories, principles, and problems in the study of nonverbal behavior; application of research results to everyday life. Topics include facial expression, eye behavior, physical appearance, body movement and gestures, tactile messages, vocal characteristics, use of time, spatial dynamics, gender and life-stage differences.

COMM 2162. Sociology of the Family. 3 Credits.

Examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement, and old age. Special emphasis on development and maintenance of interpersonal relations. Prerequisites: SOC 1001 or SOC 1002 or COMM 1025. (Same as SOC 2162).

COMM 3099. Variable Topics. 1-12 Credits.**COMM 3110. Research Methods in Communication. 3 Credits.**

Processes of inquiry within interpersonal and public communication. Framing research questions, conducting literature reviews, developing a research design, using qualitative and quantitative research tools, and interpreting research results. Restricted to students in the communication program. Prerequisites: COMM 2100.

COMM 3170. Organizational Communication. 3 Credits.

Exploration of the philosophy, process, problems, and potential of human communication within organizational contexts. May involve experiential workshops and fieldwork.

COMM 3171. Professional Communication. 3 Credits.

Principles and theories of communication applied to situations encountered in organizational and professional environments. Development of knowledge and abilities for workplace tasks, such as interviewing, facilitating meetings, providing performance appraisals, designing and delivering instructional materials and other professional presentations.

COMM 3172. Health Communication. 3 Credits.

Exploration of the nature, functions, and impact of relational communication in the context of health care. Both formal (health care organizations) and informal (family communication) systems may be studied. Topics can include provider-patient interaction, media and health, confirmatory communication. Prerequisites: COMM 1041 or COMM 2100 or permission of the instructor.

COMM 3173. Communication in a Mediated World. 3 Credits.

An exploration of human-to-human communication mediated by computer technology. Traditional communication theories are applied and adapted to the computer-mediated realm; newer theories of computer-mediated communication are addressed.

COMM 3174. Intercultural Communication. 3 Credits.

Exploration of the process, trends, rewards, and difficulties of human communication in intercultural contexts, with an eye toward establishing guidelines for mitigating miscommunication across cultures. May involve fieldwork.

COMM 3175. Strategic Communication. 3 Credits.

Exploration of the strategies and techniques employed in successful communication in the face of obstacles such as shrinking budgets and technological expansion. Emphasis on the principles of communication planning through a strategic matrix in an evolving communication environment.

COMM 3176. Issues and Image Management. 3 Credits.

The issues and image management function in corporate, professional, and nonprofit organizations. Assignments may include in-class collaboration on case studies of communication campaigns and crisis communication strategies, interviews with professionals in the practice of communication management, and a communication audit of strategies and messages of a selected organization.

COMM 3177. Corporate Ethical Communication. 3 Credits.

How businesses analyze their communication methods in the context of internal ethical standards. General codes of ethics, marketing ethics, corporate social responsibility, consumer protection, environmental protection, and ethical issues that corporate decision makers face in developing policies that affect employees, customers, and society as a whole.

COMM 3179. Sexual Communication. 3 Credits.

Exploration of sexual communication addressing behaviors, attitudes, and knowledge; the formation of sexual norms, negotiating sexual intimacy and safer-sex, gender roles in sexual relationships, sexual health communication campaigns, and parent-child sexual communication. Same As: COMM 6179.

COMM 3180. Communication Criticism. 3 Credits.

Evaluation of communication paradigms along critical dimensions of analysis. Prerequisites: COMM 1040 or COMM 4150 or permission of the instructor.

COMM 3190. Selected Topics. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

COMM 4150. Persuasion. 3 Credits.

In-depth study of the principles and techniques of persuasion from both production and consumption perspectives, in both personal and mediated contexts. Emphasis on the common-premise model, with consideration of such topic areas as pathos/ethos/logos, attitude and behavior change, effectiveness, ethics, and subconscious influence. Restricted to students in the communication program. Prerequisite: COMM 1025.

COMM 4196. Independent Study. 1-3 Credits.

Independent research and special projects. Before students are permitted to register, they must submit a written proposal of the plan of study and obtain approval of the faculty member who directs the study and of the program chair. Restricted to seniors and juniors in the communication program; juniors must receive permission of the department prior to enrollment.

COMM 4197. Internship. 3 Credits.

Student-secured internships in public or private communication-related organizations in the metropolitan area. Students spend at least 15 hours per week doing communication-related work. Meetings, reports, and/or analysis paper are required. Permission of the program required prior to enrollment. Graded on a Pass/No Pass basis. Restricted to students in the communication program.

COMM 4199W. Senior Seminar. 3 Credits.

Capstone course in which students work on an individually designed research project to be presented in a major paper. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to students in the BA in communication program. Prerequisites: COMM 2100 and COMM 3110.

COMM 5099. Variable Topics. 1-99 Credits.**COMM 6100. Communication Theory. 3 Credits.**

Theories of human communication; interpersonal, small group, intercultural, and media communication. Additional work is required when taken for graduate credit. Restricted to students in the MA in communication management program.

COMM 6110. Research Methods in Communication. 3 Credits.

Graduate-level study of communication-based quantitative and qualitative research methods. Restricted to students in the MA in communication management program.

COMM 6150. Persuasion. 3 Credits.

Principles, techniques, and ethics of persuasion from both sender and receiver perspectives, and across both personal and mediated contexts; the common-premise model with special consideration of such topics as audience analysis; systems of ethics; persuasive claims; pathos/ethos/logos; attitude and behavior change; sender, message, channel, and receiver characteristics; subconscious influence. Restricted to students in the MA in communication management program.

COMM 6165. Organizational and Communication Networks. 3 Credits.

The application of tools of social network analysis to organizational settings and behavior as well as communication processes, both within and among organizations. Restricted to graduate students.

COMM 6171. Professional Communication. 3 Credits.

Principles and theories of advanced public communication used in organizational and professional environments; job interviewing, providing performance appraisals, designing and delivering instructional materials, facilitating and participating on panels, and other professional presentations. Restricted to graduate students.

COMM 6172. Health Communication. 3 Credits.

Health communication theory, methods of health communication research, and practices of effective health communication campaigns. Restricted to graduate students.

COMM 6174. Intercultural Communication. 3 Credits.

A multidisciplinary examination of the conceptual foundations of culture, the effects of culture on communication in comparative and multicultural contexts, and the suggested guidelines for communication competence in intercultural communication settings. Restricted to graduate students.

COMM 6179. Sexual Communication. 3 Credits.

How public and private communication about sex reflects and affects sexual attitudes, behaviors, and knowledge; health communication, interpersonal communication, and mass communication theories, with consideration of topics such as sexual norms, negotiating sexual intimacy and safer sex, gender roles, and parent-child sexual communication. Restricted to graduate students. (Same as COMM 3179).

COMM 6189. Intercultural Negotiation. 3 Credits.

Introduction to negotiation and dispute resolution in intercultural contexts. Students hone their negotiation and conflict management skills through a series of simulation exercises. Theoretical and methodological issues related to the study of negotiation in intercultural contexts. Open to undergraduate students with permission of the instructor.

COMM 6190. Leadership Communication. 3 Credits.

Leadership as a function of human communication; theories of leadership and communication strategies employed by leaders in a variety of contexts; leadership as a form of social action; effectiveness and social implications of the strategies employed in leadership communication. Open to undergraduate students with the permission of the instructor. Restricted to graduate students.

COMM 6196. Independent Study. 1-12 Credits.

Directed research and study in a specific area of communication management, which must be pre-approved by department faculty prior to registration. Restricted to graduate students.

COMM 6242. Organizational Communication and Conflict Management. 3 Credits.

Models for effective organizational communication and constructive conflict resolution; organizational communication principles and theoretical and practical approaches to conflict analysis, management, and resolution. Restricted to graduate students. (Same as ORSC 6242).

COMM 6999. Master's Thesis. 3-6 Credits.

Students must identify a member of the full-time faculty to serve as thesis adviser prior to enrollment. May be repeated for credit. Restricted to students in the MA in communication management program who have selected the thesis option.

COMPUTER SCIENCE (CSCI)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CSCI 1010. Computer Science Orientation. 1 Credit.

Introduction to the field of computer science. Basic and emerging concepts and applications of computer science. Hands-on experiments and team projects. Technical resources, professional ethics, writing, and presentation.

CSCI 1011. Introduction to Programming with Java. 3 Credits.

An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, GUI widgets, containers, and exceptions.

CSCI 1012. Introduction to Programming with Python. 3 Credits.

Introduction to programming a computer using the Python language; variables, types, assignment, conditionals, loops, lists, and program units. (Fall, spring, and summer, Every Year).

CSCI 1020. Applications Software. 3 Credits.

Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business.

CSCI 1021. Introduction to Computers and the Internet. 3 Credits.

Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring).

CSCI 1022. Introduction to Internet Technology. 3 Credits.

An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia.

CSCI 1023. Introduction to Web Software Development. 3 Credits.

Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring).

CSCI 1030. Technology and Society. 3 Credits.

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills.

CSCI 1030W. Technology and Society. 3 Credits.

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property, professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Fall and spring, Every Year).

CSCI 1041. Introduction to FORTRAN Programming. 3 Credits.

Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. MATH 1220 or MATH 1231 may be taken as a corequisite. Prerequisites: MATH 1220 or MATH 1231. (Fall and spring, Every Year).

CSCI 1099. Variable Topics. 1-36 Credits.

CSCI 1111. Introduction to Software Development. 3 Credits.

Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment.

CSCI 1112. Algorithms and Data Structures. 3 Credits.

Object-oriented software. Inheritance, exceptions, development of classes, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science. Prerequisites: CSCI 1111 with a minimum grade of C; and MATH 1220 or MATH 1231. (Spring, Every Year).

CSCI 1121. Introduction to C Programming. 3 Credits.

Structured programming with the C language; control structures; data types; use of pointers; matrix manipulation to solve simultaneous equations; external subroutines for mathematical and graphical applications; introduction to C++; complex number representation. Co-requisites: MATH 1220 and MATH 1231. (Spring, Every Year) Credit cannot be earned for this course and ECE 1120.

CSCI 1131. Introduction to Programming with C. 3 Credits.

Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital computer using C programming language in a Unix environment. Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: MATH 1232.

CSCI 1132. Data Structures and Software Design. 3 Credits.

Data structures such as trees, lists, stacks, queues, and strings. Big-O notation and introduction to algorithm performance analysis. Solutions of numerical and non-numerical problems. Use of I/O libraries. Application development and software testing. Prerequisite: CSCI 1121.

CSCI 1311. Discrete Structures I. 3 Credits.

Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science. Prerequisites: MATH 1220 or MATH 1231. (Fall).

CSCI 2113. Software Engineering. 3 Credits.

Programming techniques and software development in one or more programming languages; application development with GUIs, database access, threads, web programming. Prerequisites: CSCI 1112 with a minimum grade of C; and MATH 1221 or MATH 1231. (Fall and spring, Every Year).

CSCI 2312. Discrete Structures II. 3 Credits.

Basic discrete techniques in computer science; proofs, algebraic structures, number theory, graph theory, (coloring and planar graphs, communication networks), advanced recurrences, advanced sums, approximations and asymptotics. Students must have received a minimum grade of C in CSCI 1311. Prerequisites: CSCI 1311; and MATH 1220 or MATH 1231; and MATH 1221. (Fall, Every Year).

CSCI 2441. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, normal forms, and design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, and software copyrights. Students cannot receive credit for both CSCI 2441 taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 2541 and CSCI 6441. (Fall and spring, Every Year).

CSCI 2441W. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, normal forms, and design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, privacy, and software copyrights. Students cannot receive credit for both CSCI 2441W taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 2441W and CSCI 6441. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Corequisite: CSCI 2113. (Spring, Every Year).

CSCI 2460. Introduction to Computer Systems. 1,2 Credit.

Introduction to computer organization and computer systems. Data representation; computer organization; processor instruction sets and assembly programming; language translation; memory; input/output; introduction to operating systems. Restricted to students in the BA and minor programs in computer science. Prerequisites: CSCI 1112; and CSCI 1311 with a minimum grade of C. Corequisites: CSCI 2113. Recommended background: introductory coursework and background in computer science, programming, and discrete mathematics. (Spring, Every Year).

CSCI 2461. Computer Architecture I. 3 Credits.

Number representation, computer arithmetic, digital logic, and circuit design. Computer organization, micro-architecture and processor datapath, assembly and machine language programming. Introduction to memory organization and the hardware-software interface. Implementation of high-level language constructs. Prerequisites: CSCI 1112 and CSCI 1311. (Fall, Every Year).

CSCI 2501. Ethical Issues in Computing. 1 Credit.

Introduction and analysis of the ethical issues of the technological age; ethical principles and skills and social analysis skills needed to evaluate future consequences of the design and implementation of complex computer systems; application of professional ethics codes in decision-making in professional practice. Restricted to computer science majors. Prerequisites: CSCI 1010 and CSCI 1011. (Fall and spring, Every Year).

CSCI 2541W. Database Systems and Team Projects. 3 Credits.

Design of relational database systems, relational query languages, Introduction to Not just SQL (NoSQL) database systems, normal forms, and design of database applications. Team software development, integration, and testing. Students cannot receive credit for both CSCI 2541W taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 2541 and CSCI 6441. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Corequisite: CSCI 2113. Prerequisite: CSCI 1311. (Spring, Every Year).

CSCI 3212. Algorithms. 4 Credits.

Core concepts in design and analysis of algorithms, data structures, and problem-solving techniques. Hashing, heaps, trees. Graph algorithms, searching, sorting, graph algorithms, dynamic programming, greedy algorithms, divide and conquer, backtracking. Combinatorial optimization techniques. NP-completeness. Prerequisites: CSCI 1311 and CSCI 2113. (Fall and spring, Every Year).

CSCI 3221. Programming Languages. 3 Credits.

Programming language and software design fundamentals. Writing programs in a non-procedural programming language. Closures; procedure and data abstraction; object-oriented, procedural, and declarative programming; continuation compilation and interpretation, and syntactic extension. Advanced control structures appropriate for parallel programming. Prerequisite: CSCI 2113.

CSCI 3240. Pre-Senior Design with Research. 3 Credits.

For students who wish to combine a research project with their Senior Design project. The goal is to complete the research, under a faculty mentor, within three semesters. Prerequisites: CSCI 3212, CSCI 3313, CSCI 3411 and permission of the instructor. (Fall and spring, Every Year).

CSCI 3313. Foundations of Computing. 3 Credits.

Introduction to the theory of computing and automata theory. Formal languages and automata; regular expressions, context-free languages; finite state automata and pushdown automata; Turing machines and computability, recursive function theory, undecidability. Prerequisites: CSCI 1311, CSCI 2113, and CSCI 2461. (Fall and spring, Every Year).

CSCI 3362. Probability for Computer Science. 3 Credits.

Introduction to probability and statistics for computer scientists; random variables; conditional probability, independence, correlation; applications to computer science, including information theory, data compression, coding, inference, Markov chains, randomized algorithms. Students cannot receive credit for both CSCI 3362 taken while an undergraduate and CSCI 6362 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 3362 and CSCI 6362. Prerequisites: CSCI 1311 and MATH 1232. (Spring, Every Year).

CSCI 3410. Systems Programming. 3 Credits.

Concepts underlying all computer systems. Processor operation, hierarchical memory systems, embedded boards, data acquisition, actuation, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Use of embedded platforms to examine how programs interact with and are constrained by hardware. Prerequisites: CSCI 2461 and CSCI 2113. (Fall and spring, Every Year).

CSCI 3411. Operating Systems. 4 Credits.

Process management, process state, concurrent processing, synchronization, events; operating system structure, the kernel approach, processor scheduling, task switching, monitors, threads; system management, memory management, process loading, communication with peripherals; file systems; socket programming, packets, Internet protocols. Prerequisites: CSCI 2113 and CSCI 2461. (Fall, Every Year).

CSCI 3462. Computer Architecture II. 3 Credits.

Computer organization; design of computer components and of a simple computer. Instruction set and assembly language of a pipelined RISC processor; introduction to high-performance processors; design of cache, main memory, and virtual memory systems; program performance models and system performance; I/O structure and peripherals. Prerequisites: CSCI 2113 and CSCI 2461. (Spring, Every Year) Credit cannot be earned for this course and ECE 3515.

CSCI 3571. Introduction to Bioinformatics. 3 Credits.

An introduction to the use of computational techniques in molecular biology, genetics, and evolution. Techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. May be taken for graduate credit. Prerequisites: BISC 1111 or BISC 1115 and BISC 1125; and BISC 1112 or BISC 1116 and BISC 1126. (Same as BISC 2584) (Spring, Every Year).

CSCI 3907. Special Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes. (Fall and spring).

CSCI 3908. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Restricted to juniors and seniors. (Fall and spring, Every Year).

CSCI 4222. Theory of Computer Translators. 3 Credits.

Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisites: CSCI 3313 and CSCI 3462. (Fall and spring, Every Year).

CSCI 4223. Principles of Programming Languages. 3 Credits.

Fundamental concepts underlying design of programming languages. Detailed study of functional and object-oriented computational models. Types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Practice learning new languages. Students cannot receive credit for both CSCI 4223 taken while an undergraduate and CSCI 6223 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4223 and CSCI 6223. Prerequisites: CSCI 1311 and CSCI 2113. (Spring, odd years).

CSCI 4235. Development of Open-Source Software. 3 Credits.

Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4237. Software Design for Handheld Devices. 3 Credits.

Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4243. Capstone Design Project I. 3 Credits.

Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status.

CSCI 4243W. Capstone Design Project I. 4 Credits.

Planning, design, and construction of the capstone project; economic analysis of the project; application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CSCI 3212 and CSCI 3411. (Fall, Every Year).

CSCI 4244. Capstone Design Project II. 4 Credits.

Continuation of CSCI 4243. Planning, design, and construction of the capstone project. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Restricted to seniors. Prerequisites: CSCI 4243W or CSCI 4243. (Spring, Every Year).

CSCI 4314. Discrete Analysis-Computer Science. 3 Credits.

Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisites: CSCI 1311 or permission of the instructor. (Fall, Every Year).

CSCI 4331. Cryptography. 3 Credits.

Algorithmic principles of cryptography from Julius Caesar to public key cryptography. Key management problems and solutions. Cryptographic systems and applications. Students cannot receive credit for both CSCI 4331 taken while an undergraduate and CSCI 6331 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4331 and CSCI 6331. Prerequisites: CSCI 2312, CSCI 3212 and CSCI 3313. (Spring, Every Year).

CSCI 4341. Continuous Algorithms. 3 Credits.

Structures in continuous mathematics from a computational viewpoint; continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Students cannot receive credit for both CSCI 4341 taken while an undergraduate and CSCI 6341 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4341 and CSCI 6341. Prerequisites: CSCI 1311 and CSCI 2113. (Spring, Every Year).

CSCI 4342. Computational Linear Algebra and Applications. 3 Credits.

Application of linear algebra to computer science and engineering, with a computational perspective; points, vectors, matrices, and their programming representations; algorithms for 3D transformations, pose and viewpoint estimation; linear equations, independence, rank; algorithms for matrix decompositions, reduction of dimension; computation with large matrices, under and over-determined systems; applications to large data, computer vision, text processing. Students cannot receive credit for both CSCI 4342 taken while an undergraduate and CSCI 6342 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4342 and CSCI 6342. Prerequisite: CSCI 2113. (Spring, Every Year).

CSCI 4361. Simulation Methods. 3 Credits.

Computational methods for continuous and discrete system simulation; effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing; calibration and scaling technique; verification and validation technique. May be taken for graduate credit. Prerequisite: CSCI 2113 or permission of the instructor. (Spring, Every Year).

CSCI 4364. Machine Learning. 3 Credits.

Overview of core machine learning techniques: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Students cannot receive credit for both CSCI 4364 taken while an undergraduate and CSCI 6364 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4364 and CSCI 6364. Prerequisites: CSCI 3212, CSCI 3362 and MATH 2184. (Fall, Every Year).

CSCI 4414. Introduction to Blockchain Technology and Applications. 3 Credits.

Introduction to blockchain concepts. Illustrates applications in both technical and business contexts. May be taken for graduate credit. Recommended background: prior coursework and background in computer science disciplines, programming, security protocols, machine learning, and distributed systems is helpful. (Fall and spring, Every Year).

CSCI 4415. Real-Time and Embedded Systems. 3 Credits.

Development of software for real-time control of physical systems; reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSCI 2113. (Spring, Every Year).

CSCI 4417. UNIX System Programming. 3 Credits.

Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience.

CSCI 4418. UNIX System Administration. 3 Credits.

System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms. Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSCI 4417.

CSCI 4431. Computer Networks I. 3 Credits.

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Students cannot receive credit for both CSCI 4431 taken while an undergraduate and CSCI 6431 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4431 and CSCI 6431. Prerequisites: CSCI 2113 and CSCI 2461. (Fall, Every Year).

CSCI 4431W. Computer Networks I. 3 Credits.

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CSCI 2113 and CSCI 2461. (Fall and spring, Every Year).

CSCI 4432. Computer Networks II. 3 Credits.

Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSCI 4431.

CSCI 4455. Computer Game Design and Programming. 3 Credits.

Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. (Fall).

CSCI 4511. Artificial Intelligence Algorithms. 3 Credits.

Knowledge representation and reasoning, propositional logic and predicate calculus. Logic programming; search, game trees, backtracking; planning. May be taken for graduate credit. Prerequisites: CSCI 3212 and CSCI 3221. (Spring, Every Year).

CSCI 4521. Introduction to Mobile Robotics. 3 Credits.

Overview of autonomous mobile robotics. Sensing, localization, calibration, mapping, perception, decision making, planning, and control. Emphasis on algorithmic rather than hardware aspects of robotics. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisites: MATH 1232 and MATH 2184; and CSCI 3362 or CSCI 4341. (Fall and spring, Every Year).

CSCI 4525. Autonomous Robotics: Manipulation. 3 Credits.

Introduction to robot manipulation. Core principles necessary to program robots for autonomous operation in dynamic and typically human-centric environments. Transdisciplinary concepts from computer science (reinforcement learning, perception), mechanical engineering (kinematics, dynamics), and electrical engineering (control theory). Prerequisites: Permission of the instructor. (Fall and spring, Every Year).

CSCI 4527. Introduction to Computer Vision. 3 Credits.

Introduction and overview of computer vision. Image-formation signal processing and filtering. Saliency, image features and feature extraction, tracking, stereo disparity estimation, structure from motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Prerequisites: MATH 1232 and MATH 2184; and CSCI 3362 or CSCI 4341. (Spring, Every Year) Same As: CSCI 6527.

CSCI 4531. Computer Security. 3 Credits.

Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Students cannot receive credit for both CSCI 4531 taken while an undergraduate and CSCI 6531 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4531 and CSCI 6531. Corequisite: CSCI 4331. Prerequisite: CSCI 3411. (Spring, Every Year).

CSCI 4532. Information Policy. 3 Credits.

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use. Students cannot receive credit for both CSCI 4532 taken while an undergraduate and CSCI 6532 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4532 and CSCI 6532. (Fall, Every Year).

CSCI 4541. Network Security. 3 Credits.

Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Students cannot receive credit for both CSCI 4541 taken while an undergraduate and CSCI 6541 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4541 and CSCI 6541. Prerequisite: CSCI 4531. (Spring, Every Year).

CSCI 4551. Concepts and Applications of Computer Graphics. 3 Credits.

Introduction to computer graphics without programming; building 3-D geometry and rendering; computer animation; virtual reality and computer games; hands-on projects in modeling, rendering, and animation using commercial software; hands-on projects in photo and video manipulation.

CSCI 4552. Design of Computer Animation I. 3 Credits.

Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. (Fall, Every Year).

CSCI 4553. Design of Computer Animation II. 3 Credits.

Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-production. Emphasis on developing original content and attaining high production values. Prerequisite: CSCI 4552.

CSCI 4554. Computer Graphics I. 3 Credits.

Graphics primitives; 2D, 3D, and viewing transformations; hierarchical modeling and animation; illumination and shading; texture mapping; shaders; visibility and collision detection; sampling and anti-aliasing; global illumination; projects using OpenGL graphics API. May be taken for graduate credit. Prerequisites: CSCI 2113 or CSCI 6221. (Spring, Every Year).

CSCI 4561. Design of User-Interface Programs. 3 Credits.

Structure of interactive programs. Widgets, windows, and input devices. Client-server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSCI 2113 or CSCI 6221.

CSCI 4572. Computational Biology. 3 Credits.

Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisite: CSCI 3571 and CSCI 3212 or CSCI 6212.

CSCI 4576. Introduction to Biomedical Computing. 3 Credits.

A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations.

CSCI 4577. Biomedical Computing. 3 Credits.

Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Corequisite: CSCI 2441. Restricted to graduate students. Prerequisites: CSCI 2113 and CSCI 4576. (Spring, Every Year).

CSCI 5099. Variable Topics. 1-99 Credits.

CSCI 6001. Introduction to Computer Programming and Software Development. 3 Credits.

Introduction to concepts and skill development in programming and software development, including problem solving on a digital computer and writing, debugging, and executing programs. Restricted to students in select programs; departmental permission is required. (Fall, spring, and summer, Every Year).

CSCI 6002. Introduction to Data Structures and Their Applications. 3 Credits.

Introduction to core computer science data structures including: arrays, lists, linked structures, stacks, queues, and trees. Sorting, searching, and comparison of algorithmic performance. Restricted to students in select programs; departmental permission is required. (Fall, spring, and summer, Every Year).

CSCI 6003. Introduction to Software Design and Engineering. 3 Credits.

Introduction to objects and object-oriented programming. Software development for applications including development with GUIs, database access, threads, web programming. Restricted to students in select programs; departmental permission is required. (Fall, spring, and summer, Every Year).

CSCI 6010. Introduction to Computer Science Fundamentals. 3 Credits.

Review of programming in a high-level language using Java or C++ Introduction to objects and object-oriented programming: static and dynamic objects, inheritance, dynamic method invocation. Data structures: 2D-arrays, linked-lists, stacks, queues, trees, hashing. Discrete structures: sets, graphs, permutations and combinations. Restricted to students whose letter of admission stated that the course is required. (Fall and spring, Every Year).

CSCI 6011. Introduction to Computer Systems. 3 Credits.

Introduction to basic concepts underlying all computer systems; processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Students must have completed one year of coursework in programming in C, C++, or Java prior to registration. Restricted to students whose letter of admission stated that the course is required. (Fall and spring, Every Year).

CSCI 6012. Cybersecurity and Privacy. 3 Credits.

Overview of cybersecurity and privacy, including cryptography, authentication, malware, viruses, network security, anonymity, privacy and online privacy, risk management; common cyberattacks and techniques for detection and defense; policy and legal perspectives for managing cybersecurity missions supporting private sector and government; cyber technologies as applied to the stability of global information and communications infrastructure; government cybersecurity policies. (Fall, spring, and summer).

CSCI 6013. Security in Mobile Computing. 3 Credits.

Relationship between security strategic plan and business strategic plan; mobile device solutions (MDS) to access enterprise corporate data; bring your own device (BYOD) paradigm; mobile device management (MDM) best practices, policies, network controls to identify countermeasures, and risk mitigation strategies against common threats. Overview of mobile security solutions for classified processing and communications. Prerequisites: CSCI 6012. (Fall, spring, and summer).

CSCI 6015. Cyber Forensics. 3 Credits.

Acquiring, preserving and analyzing digitally stored information while ensuring that this information is admissible as evidence in a court of law. Principles and techniques for cyber forensics investigations using industry-standard forensic process. Restricted to SEAS online students. (As arranged, Every Year).

CSCI 6016. Applied Network Defense. 3 Credits.

Computer security: protection aspects of the Internet. Cryptographic tools to provide security, such as shared key encryption (DES, 3DES, RC and more), public key encryption, key exchange, and digital signature. Internet protocols and applications. Restricted to SEAS online students. (As arranged, Every Year).

CSCI 6018. Cloud Application Architecture. 3 Credits.

Cloud application design guidelines and software patterns. Survey of cloud services for scalable secure cloud applications. Trade-offs in cloud application design, container vs virtual machine deployments, and monolithic vs microservice. Restricted to SEAS online students. (As arranged, Every Year).

CSCI 6114. Introduction to Computer Systems and Systems Programming. 3 Credits.

Introduction to basic concepts underlying all computer systems; processor operation, hierarchical memory systems, elementary logic circuits, and systems software such as compilers, linkers, and operating systems from the programmer's perspective. Software development with the C programming language. Students cannot receive credit for this course and CSCI 6011. Restricted to students in select programs; departmental permission is required. Prerequisites: CSCI 2113 or CSCI 6003. (Fall, spring, and summer, Every Year).

CSCI 6115. Application Development I. 3 Credits.

Client-server programming, web development, front end design, back-end server development, introduction to databases. Front and back-end languages, server administration and tools. Students cannot get credit for this course and CSCI 2441, CSCI 2441W, CSCI 2541, or CSCI 2541W. Restricted to students in select programs; departmental permission is required. Prerequisites: CSCI 2113 or CSCI 6003. (Fall, spring, and summer, Every Year).

CSCI 6116. Advanced Application Development. 3 Credits.

Design of large software systems and installable applications, development frameworks, integration of components and services, cloud and web programming, and mobile device development; software specification and testing. Prerequisites: CSCI 6115, CSCI 6431 and CSCI 6441. (Fall, spring, and summer, Every Year).

CSCI 6212. Design and Analysis of Algorithms. 3 Credits.

Design and analysis of algorithms; Turing machines; NP-complete theory; algorithmic techniques: divide-and-conquer, greedy, dynamic programming, graph traversal, backtracking, and branch-and-bound; applications include sorting and searching, graph algorithms, and optimization. Students are expected to know data structures and possess general programming skills in one or more procedural/OOP language such as C/C++/Java, and to have a good mathematical background such as discrete math and some calculus, prior to registration. (Fall, spring, and summer, Every Year).

CSCI 6221. Advanced Software Paradigms. 3 Credits.

Object-oriented, procedural, functional, and concurrent software design paradigms; design patterns; software life cycle concepts; tradeoffs between compiled and interpreted languages; examples from Java, C, C++ and Perl. Restricted to graduate students. (Fall, spring, and summer, Every Year).

CSCI 6223. Principles of Programming Languages. 3 Credits.

Fundamental concepts underlying design of programming languages; detailed study of functional and object-oriented computational models; types, evaluation, abstraction, control flow, modules, mutation, laziness, polymorphism, subtyping, inheritance. Students cannot receive credit for both CSCI 6223 taken while a graduate and CSCI 4223 taken while an undergraduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4223 and CSCI 6223. (Spring, odd years).

CSCI 6231. Software Engineering. 3 Credits.

The life-cycle model. Requirements and specifications. Design models, structured and object-oriented design. Program development, PDL's tools, configuration control. Program, unit, and integration testing. Program verification. Other development models. Development metrics. Computer-aided software engineering (CASE). Prerequisites: CSCI 6221 and CSCI 6212. (Fall and spring, Every Year).

CSCI 6232. Software Engineering Development. 3 Credits.

Formal methods in software engineering. First-order logic, basic specification elements, rigorous proofs, formal development process, concurrency. Prerequisites: CSCI 6461 and CSCI 6212. (Fall and spring, Every Year).

CSCI 6233. Software Testing and Quality. 3 Credits.

Flow graphs and path testing, transaction flow testing, data flow testing, software metrics, system testing, test planning and documentation, reliability, statistical testing. Prerequisite: CSCI 6231. (Fall and spring, Every Year).

CSCI 6234. Object-Oriented Design. 3 Credits.

Object-oriented systems, software reusability, software modularity, top-down and bottom-up approaches, object classification, genericity, metaprogramming, concurrent object-oriented programming languages. Prerequisite: CSCI 6221.

CSCI 6235. Component-Based Enterprise Software Development. 3 Credits.

Component-based software development for enterprise applications. Component models, multi-tier architecture. Specific case studies may include topics such as Enterprise Java Beans, DCOM, and COBRA. Prerequisite: CSCI 6221.

CSCI 6311. Theory of Computation. 3 Credits.

Theoretical foundations of computer science. Formal languages and automata; regular expressions, context-free languages, parsing; Turing machines and complexity; partial recursive functions; undecidability; program correctness; fixed-point theory; formal specifications of software. Prerequisite: CSCI 6212.

CSCI 6312. Graph Theory and Applications. 3 Credits.

Undirected and directed graphs. Connectivity, partitions, cycles and matchings. Edge and vertex coloring, chromatic polynomials, and the four-coloring problem. Planar graphs and Kuratowski's theorem. Properties of random graphs. Applications to a variety of problems. Prerequisite: CSCI 6212. (Fall and spring, Every Year).

CSCI 6318. Complex Systems. 3 Credits.

The edge-of-chaos phenomenon, phase transitions, power laws, small-world networks, Boolean networks, cellular automata, and complex dynamics. Applications to networks and biological systems. Prerequisite: CSCI 6212.

CSCI 6331. Cryptography. 3 Credits.

Review of mathematical theory for cryptography; classical ciphers; modern block and stream ciphers; symmetric and asymmetric systems; digital signatures; public key infrastructure; authentication. Students cannot receive credit for both CSCI 4331 taken while an undergraduate and CSCI 6331 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4331 and CSCI 6331. Prerequisite: CSCI 6212. (Spring, Every Year).

CSCI 6341. Continuous Algorithms. 3 Credits.

Structures in continuous mathematics from a computational viewpoint; continuous system simulation, computational modeling, probability, statistical techniques, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Students cannot receive credit for both CSCI 4341 taken while an undergraduate and CSCI 6341 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4341 and CSCI 6341. (Spring, Every Year).

CSCI 6342. Computational Linear Algebra and Applications. 3 Credits.

Linear algebra applied to computational problems in computer science and engineering; points, vectors, matrices, and their programming abstractions; 3D transformations, pose and viewpoint estimation; linear equations; algorithms for matrix decompositions, dimension reduction, computation with large matrices, under- and over-determined systems; applications to big data, computer vision, text processing. Students cannot receive credit for both CSCI 4342 taken while an undergraduate and CSCI 6342 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4342 and CSCI 6342. (Spring, Every Year).

CSCI 6351. Data Compression. 3 Credits.

Background on signals, information theory, transforms, human vision, and metrics. Lossless and lossy compression techniques. Video compression. Compression standards. Progressive transmission. Prerequisite: CSCI 6212.

CSCI 6362. Probability for Computer Science. 3 Credits.

Concepts of probability and statistics used in computer science; random variables; conditional probability, independence, correlation; law of large numbers, central limit theorem; applications to computer science, including entropy, information theory, data compression, coding, inference, Markov chains, randomized algorithms. Students cannot receive credit for both CSCI 3362 taken while an undergraduate and CSCI 6362 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 3362 and CSCI 6362. (Spring, Every Year).

CSCI 6364. Machine Learning. 3 Credits.

Machine learning algorithms: nearest-neighbor, regression, classification, perceptron, kernel methods, support vector machine (SVM), logistic regression, ensemble methods, boosting, graphical models, hidden Markov models (HMM), non-parametrics, online learning, active learning, clustering, feature selection, parameter tuning, and cross-validation. Students cannot receive credit for both CSCI 4364 taken while an undergraduate and CSCI 6364 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4364 and CSCI 6364. Prerequisites: CSCI 6212 and CSCI 6362. (Fall, Every Year).

CSCI 6365. Advanced Machine Learning. 3 Credits.

Theory and algorithms for machine learning research; in-depth focus on advanced machine learning topics such as clustering, learning from data streams, and climate informatics. Prerequisite: CSCI 6364. (Spring, Every Year).

CSCI 6411. Advanced Operating Systems. 3 Credits.

Fundamentals of operating system design and structure, resource management, and system support for multi-core. Topics include scheduling, synchronization, system structure, virtual address spaces, memory management, I/O management, and systems abstractions for modern multi-core architectures. The course involves an implementation component and requires substantial programming experience. This course can be taken for credit by undergraduates who have taken CSCI 3411. Prerequisite: CSCI 6461 or CSCI 2461.

CSCI 6412. OS Design and Implementation. 3 Credits.

Builds on CSCI 6411 to provide students with the knowledge to build parts of modern operating systems, which is studied and motivated from the viewpoint of practical design and implementation. Students learn how operating system's components for resource management and abstraction are built from the ground up and integrated into working systems considering the challenges of reliability, multi-core, and security. The course has a significant implementation component; substantial low-level programming experience is required. Prerequisite: CSCI 6411. (Fall and spring, Every Year).

CSCI 6418. Unix Systems Administration. 3 Credits.

System administration for the stand-alone system or small networks; installation of two or more UNIX variants (Linux, FreeBSD, Solaris) hardware platforms; configuration of mail, name services, and other network utilities; backup and recovery, security and ethics. Students cannot receive credit for both CSCI 4418 taken while an undergraduate and CSCI 6418 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4418 and CSCI 6418. Prerequisites: CSCI 6114; or CSCI 6010 and CSCI 6011. (Fall, spring, and summer, Every Year).

CSCI 6419. Advanced Systems Administration. 3 Credits.

Administration of large systems, non-Unix platforms, web document systems, website administration, cloud and web services, user and IT personnel components, and economics of IT support. Prerequisite: CSCI 6418. (Fall, spring, and summer, Every Year).

CSCI 6421. Distributed and Cluster Computing. 3 Credits.

Algorithmic and implementation challenges in building large scale distributed applications; distributed coordination, scheduling, consistency issues, and fault tolerance algorithms; fundamental distributed systems concepts applied to both high performance computing and cloud computing environments. Prerequisite: CSCI 6212. Recommended background: Substantial programming experience. (Fall, Every Year).

CSCI 6431. Computer Networks. 3 Credits.

Fundamental concepts in the design and implementation of computer communication networks and internet, their protocols, and applications; layered network architectures, applications, network programming interfaces, transport, routing, data link protocols, local area networks, network management, and network security. Students cannot receive credit for both CSCI 4431/CSCI 4431W taken while an undergraduate and CSCI 6431 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4431/CSCI 4431W and CSCI 6431. Prerequisite: CSCI 6461. (Fall, Every Year).

CSCI 6433. Internet Protocols. 3 Credits.

Understanding of the layered protocols for the Internet. Interconnection of networks. The IP protocol and routing algorithms, switches, bridges, and routers. The transmission control protocol (TCP). Addressing and names. Application-specific protocols, FTP, TELNET, SMTP, SNMP, HTTP. Domain name services. Prerequisites: CSCI 6221 and CSCI 6431. (Fall and spring, Every Year).

CSCI 6434. Design of Internet Protocols. 3 Credits.

Protocol specifications and formal description methods. Finite-state descriptions of Internet protocols. Specification and Description Language. Implementation of protocol specifications. Prerequisites: CSCI 6212 and CSCI 6433. (Fall and spring, Every Year).

CSCI 6441. Database Management Systems. 3 Credits.

Design and architecture of relational database management systems; query languages, data models, index structures, database application design. Students cannot receive credit for CSCI 2441W or 2541W taken while an undergraduate and CSCI 6441 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for CSCI 2441W or CSCI 2541W and CSCI 6441. Prerequisites: CSCI 6221 and CSCI 6461. (Spring, Every Year).

CSCI 6442. Database Systems II. 3 Credits.

Concepts in database systems. Relational database design. Editing, report generation, updating, schema refinement, tuning. Construction of database management systems. Conceptual and logical design of a database. Prerequisite: CSCI 6441.

CSCI 6443. Data Mining. 3 Credits.

Fundamental concepts of data mining. Algorithm techniques for data mining, including classification, clustering, association rules mining. Prerequisites: CSCI 6441 or permission of the instructor. (Fall and spring, Every Year).

CSCI 6444. Introduction to Big Data and Analytics. 3 Credits.

Big data, its properties, technology, and the types and classes of analytics that can be applied to it; associated storage and programming systems. Students gain practical experience through focused projects to apply different analytics to a data set. Prerequisite: CSCI 2113 or CSCI 6221. (Fall, spring, and summer).

CSCI 6451. Information Retrieval Systems. 3 Credits.

Information organization and retrieval of natural language data by digital computer systems; statistical, syntactic, and logical analysis of natural language; dictionary and thesaurus systems; searching strategies and cataloging. Large-scale file structures. Prerequisites: CSCI 6221 and CSCI 6461. (Fall and spring, Every Year).

CSCI 6461. Computer System Architecture. 3 Credits.

Concepts in processor, system, and network architectures; architecture of pipeline, superscalar, and VLIW/EPIC processors; multiprocessors and interconnection networks; cache coherence and memory subsystem design for multiprocessor architectures; parallel and distributed system architecture; internetworking. Restricted to graduate students. (Fall, spring, and summer, Every Year).

CSCI 6511. Artificial Intelligence. 3 Credits.

Representation and space search; heuristic search; predicate calculus; knowledge representation and knowledge engineering for expert systems; rule-based, hybrid, and O-O systems; semantic nets, frames, and natural language; theorem provers; planning, learning, neural nets; use of AI languages. Prerequisite: CSCI 6212. (Spring, Every Year).

CSCI 6515. Natural Language Understanding. 3 Credits.

The state of the art of natural language parsing and semantic understanding by computer systems. Review of formal, context-free, and transformational grammars and parsing. Augmented transition networks: problems of complexity, semantics, and context. Deterministic parsing and semantic parsing. Prerequisite: CSCI 6511.

CSCI 6521. Introduction to Mobile Robotics. 3 Credits.

Concepts of autonomous mobile robotics with emphasis on algorithmic aspects. Sensing, sensor fusion, localization, calibration, mapping, perception, decision making, planning, behavior-based control, world modeling, and navigation. Development of algorithms that can operate autonomous mobile platforms in complex, real-world environments. Prerequisites: MATH 1232 and MATH 2184; and CSCI 6362 or CSCI 4341. (Fall and spring, Every Year).

CSCI 6525. Autonomous Robotics: Manipulation. 3 Credits.

Manipulation and autonomous operation in dynamic, human-centric environments. Reinforcement learning, perception, optimization algorithms, kinematics, dynamics, control theory. Prerequisites: CSCI 6362 and MATH 2184; or permission of the instructor. (Fall and spring, Every Year).

CSCI 6527. Introduction to Computer Vision. 3 Credits.

Image signal processing and filtering. Saliency, features and feature extraction, tracking, stereo disparity estimation, structure from motion, photogrammetry, optic flow, homography estimation and warping, scene segmentation, place recognition, object recognition, robust estimation, and camera calibration. Current research topics. Prerequisites: MATH 1232 and MATH 2184; and CSCI 6362 or CSCI 6341. (Fall and spring, Every Year).

CSCI 6531. Computer Security. 3 Credits.

Functional description of cryptographic primitives; risk analysis; policy models; design principles; assurance; malicious logic. Students cannot receive credit for both CSCI 4531 taken while an undergraduate and CSCI 6531 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4531 and CSCI 6531. Prerequisite: CSCI 6461. (Spring, Every Year).

CSCI 6532. Information Policy. 3 Credits.

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use. Students cannot receive credit for both CSCI 4532 taken while an undergraduate and CSCI 6532 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4532 and CSCI 6532. (Fall, Every Year).

CSCI 6534. Information Security in Government. 3 Credits.**CSCI 6541. Network Security. 3 Credits.**

Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Students cannot receive credit for both CSCI 4541 taken while an undergraduate and CSCI 6541 taken while a graduate student. Students in the combined BS/MS program cannot receive credit for both CSCI 4541 and CSCI 6541. Prerequisite: CSCI 6531. (Spring, Every Year).

CSCI 6542. Computer Network Defense. 3 Credits.

Offensive and defensive information warfare operations. Simulation of various attacks on and defenses of computer systems. Laws related to information warfare. History and literature related to information warfare attacks. Prerequisite: CSCI 6541.

CSCI 6545. Software Security. 3 Credits.

Security for software systems. Theory and practice of designing and implementing secure software. Security in the context of software engineering. Practical experience with building a software system and securing it, with emphasis on correctness and robustness. Requires substantial prior programming experience. Prerequisites: CSCI 6461 or CSCI 6411; and CSCI 6531 or EMSE 6540; or permission of the instructor. (Fall and spring, Every Year).

CSCI 6547. Wireless and Mobile Security. 3 Credits.

Mobile agents, wireless Web, WAP, WEP, peer-to-peer computing; secure routing; intrusion detection and authentication on wireless networks; security for handheld devices; encryption and cryptographic measures for wireless; real-time wireless security; security measures for embedded devices. Prerequisites: CSCI 6431 and CSCI 6531. (Spring, Every Year).

CSCI 6548. E-Commerce Security. 3 Credits.

Advanced technical topics in e-commerce security. Key security threats. Authentication and authorization models, directory services, cloud based IAM, federated identity. Public key cryptography and PKI. Mobile payment methods, digital currencies, blockchain. Technologies and applications for securing web commerce. Web service security standards. Prerequisites: CS 4531 or CS 6531. (Fall and spring, Every Year).

CSCI 6554. Computer Graphics II. 3 Credits.

Algorithmic aspects of computer graphics; 3D viewing transformation; shape modeling; shading and illumination models; visible-surface determination; curves and surfaces; sampling and aliasing; global illumination, ray tracing and radiosity; shadows; image manipulation and texture mapping; procedural models. (Spring, Every Year).

CSCI 6555. Computer Animation. 3 Credits.

Euler angles and quaternions; articulated figure motion; forward and inverse kinematics; kinematic, physics based, and behavioral motion control; character animation; motion capture; temporal aliasing; sound synthesis and synchronization. (Fall, Every Year).

CSCI 6561. Design of Human-Computer Interface. 3 Credits.

Design of dialogues for interactive systems. Psychological, physiological, linguistic, and perceptual factors. Advantages and disadvantages of various interaction techniques, command language syntaxes, and data presentations. Design methodology and guidelines. Case studies, research readings, and projects. Prerequisite: CSCI 6221.

CSCI 6562. Design of Interactive Multimedia. 3 Credits.

History, theory, and development of multimedia concepts. Hardware components, platforms, and authoring tools. Scientific, technical, and cognitive foundations of various media including text, sound, graphics, and video. Interface design. Use of a media taxonomy as a design and evaluation tool. Completion of a multimedia portfolio required. Prerequisite: CSCI 6221.

CSCI 6572. Computational Biology Algorithms. 3 Credits.

Algorithms and models for DNA and protein sequence alignments, gene finding, identification of gene regulatory regions, sequence evolution and phylogenetics, RNA and protein structure, microarray and/or proteomics data analysis. Prerequisites: CSCI 6212; and programming experience in C/C++ or Java. (Spring, Every Year).

CSCI 6900. Colloquium. 0 Credits.

Lectures by outstanding authorities in computer science. Topics to be announced each semester. (Fall and spring).

CSCI 6907. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit if the topic differs. See department for details. (Fall and spring, Every Year).

CSCI 6908. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit.

CSCI 6998. Thesis Research. 3 Credits.**CSCI 6999. Thesis Research. 3 Credits.****CSCI 8211. Advanced Topics in Algorithms. 3 Credits.**

Graph algorithms, strongly connected components, biconnected components, dominators in acyclic graphs, ordered trees, network flow, planarity testing, bipartite matching, theory of NP completeness, NP-complete problems. Design and analysis of approximation algorithms for NP-complete problems. Prerequisite: CSCI 6212.

CSCI 8231. Advanced Topics in Software Engineering. 3 Credits.

Seminar on current research and developments in software engineering. Students develop a software package with the aid of available software tools such as requirement tool, design tool, code generators, testing tools, measurement tools, cost estimation tools. Prerequisites: CSCI 6232 and CSCI 6233. (Fall and spring, Every Year).

CSCI 8331. Advanced Cryptography. 3 Credits.

Linear and differential cryptanalysis. Cryptanalysis of AES. Factorization and primality. Computational and information-theoretic secrecy. Theory of secrecy. Zero-knowledge proofs. Secret sharing. Cooperative distributed cryptography. Provable security. Prerequisite: CSCI 6331.

CSCI 8401. Advanced Topics in Systems. 3 Credits.

Seminar on current research and developments in computer operating systems. May be repeated for credit. (Spring, even years).

CSCI 8431. Advanced Topics in Computer Networks and Networked Computing. 3 Credits.

Seminar on current research and developments in computer networks, Internet, networked computing, mobile computing and pervasive computing. May be repeated for credit. Prerequisites: CSCI 6461, CSCI 6212 and CSCI 6433. (Fall and spring, Every Year).

CSCI 8440. Advanced Topics in Data Management. 3 Credits.

Seminar on current research and developments in computer database systems and information retrieval. May be repeated for credit. Prerequisite: CSCI 6442 or CSCI 6451.

CSCI 8531. Advanced Topics in Security. 3 Credits.

Seminar on current research and developments in information assurance. May be repeated for credit. Prerequisite: CSCI 6531.

CSCI 8554. Advanced Topics in Computer Graphics. 3 Credits.

Seminar on current research and developments in computer graphics. Spatial and temporal anti-aliasing: hidden-surface algorithms: illumination models, radiosity, textural mapping. May be repeated for credit. Prerequisite: CSCI 6554.

CSCI 8900. Advanced Selected Topics. 3 Credits.

Topics announced in the Schedule of Classes.

CSCI 8901. Research and Evaluation Methods. 3 Credits.

Required for all computer science doctoral candidates. The scientific method; research/design requirements and objectives: qualitative, quantitative, and case studies; performance metrics; design procedures and control; sources of error and bias; evaluation tools; formal validation methods; documentation standards. Prerequisite: APSC 3115.

CSCI 8998. Computer Science Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the qualifying examination. (Fall and spring, Every Year).

CSCI 8999. Dissertation Research. 1-12 Credits.

Doctoral candidates performing dissertation research. Restricted to doctoral candidates. (Fall and spring, Every Year).

CORCORAN ART HISTORY (CAH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CAH 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 1000.

CAH 1001. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details. Same As: AH 1000.

CAH 1031. Survey of Art and Architecture I. 3 Credits.

Selective survey of painting, sculpture, architecture, and material culture in Europe, Asia and the Mediterranean before 1300 CE; theoretical, analytical and critical approach to works of art in relation to their greater historical, cultural, political, economic, and religious contexts. Includes visits to area museums. Credit cannot be earned for this course and AH 1031.

CAH 1032. Survey of Art and Architecture II. 3 Credits.

History of art through the study of major monuments, art movements, and concepts in relation to their historical, cultural, political, economic, and religious contexts. Early Renaissance through the Baroque and modern eras. Includes visits to area museums. Credit cannot be earned for this course and AH 1032.

CAH 1070. The American Cinema. 3 Credits.

History and criticism of American films; recognizing and evaluating cinema techniques; and the role of films in the context of American culture. (Same as AMST 1070).

CAH 1090. Art History I: Art Now, Contemporary Perspectives in the Visual Arts. 3 Credits.

Through a focused study of artworks, exhibitions, and critical writings, students are introduced to the major ideas and issues in modern and contemporary art and design as they explore what it means to be an artist today and how the arts evolved into the diverse media landscape of the present.

CAH 1091. Art History II: Historical Perspectives in the Visual Arts. 3 Credits.

The history of art and architecture produced by cultures around the world from prehistory to the end of the nineteenth century; works of architecture, sculpture, and painting both in the process of their creation and meaning in cultural context.

CAH 1099. Variable Topics. 36 Credits.**CAH 1135. History of Spanish Art From the Golden Age to Goya. 3 Credits.**

Spanish cultural history of the early modern period connecting developments in art and architecture with social, intellectual, and political history; interpretation of images through direct analysis of works of art. Offered through the GW Madrid program. Credit cannot be earned for this course and AH 1135.

CAH 2001. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Same As: AH 2001.

CAH 2001W. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See Schedule of Classes for topics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AH 2001W.

CAH 2071. Introduction to the Arts in America. 3 Credits.

Survey of American art from the period of colonial exploration and settlement to the postmodern present; political and social meanings of painting, sculpture, architecture, prints, and photographs; the relationship of art to religion and nationalism; issues of class, race, and gender. Credit cannot be earned for this course and AH 2071, AMST 2071.

CAH 2113. Survey of Early Islamic Art and Architecture from the Seventh to Fourteenth Centuries. 3 Credits.

Introductory survey of the visual arts and architecture in the Muslim lands from the seventh to the fourteenth centuries. Analysis of arts ranging from Spain in the west to Central Asia, Iran, and India in the east within their historical, religious, and cultural contexts.

CAH 2114. Survey of Islamic Art and Architecture from the Fourteenth Century to the Present. 3 Credits.

Introductory survey of the visual arts and architecture in the Muslim lands from the fourteenth century to the present. Analysis of arts ranging from Spain in the west to Central Asia, Iran, and India in the east within their historical, religious, and cultural contexts.

CAH 2145. History of European Decorative Arts. 3 Credits.

Changing styles of European furniture, textiles, ceramics, and glass in the context of general trends in art history and changing patterns in economic, technological, social, and cultural history from antiquity to the modern age. Credit cannot be earned for this course and AH 2145.

CAH 2154. American Architecture I. 3 Credits.

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns as a means of interpreting historic meaning; analysis of buildings both as artifacts and as signifiers of social, cultural, and economic tendencies. 1600 to 1860. (Same as AH 2154, AMST 2520).

CAH 2155. American Architecture II. 3 Credits.

Continuation of CAH 2154. Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns as a means of interpreting historic meaning; analysis of buildings both as artifacts and as signifiers of social, cultural, and economic tendencies. 1860 to present. Recommended background: Prior completion of AMST 2520 or CAH 2154. (Same as AMST 2521, AH 2155).

CAH 2161. History of Decorative Arts: American Heritage. 3 Credits.

The decorative arts in America from the seventeenth century to the modern period; consideration of changing visual characteristics in relation to the changing American experience. Recommended background: Assumes some prior knowledge of European design styles and history, such as that covered in CAH 2145. Credit cannot be earned for this course and AH 2161.

CAH 2162. History of Photography. 3 Credits.

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform one's understanding of photographic meaning. Credit cannot be earned for this course and AH 2162.

CAH 2162W. History of Photography. 3 Credits.

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 2162W.

CAH 2190. East Asian Art. 3 Credits.

Introduction to the visual and material cultures of East Asia from the prehistoric to modern periods, covering the areas of contemporary China, Japan, and Korea. Same As: AH 2190.

CAH 2191. South Asian Art. 3 Credits.

Visual and material cultures of South Asia from the prehistoric to contemporary periods, covering modern Afghanistan, Bangladesh, India, Nepal, Pakistan, and Sri Lanka. (Same as AH 2191).

CAH 2192. Art of Southeast Asia. 3 Credits.

Introduction to the arts of visual and material cultures of Southeast Asia covering areas of contemporary Vietnam, Laos, Cambodia, Myanmar, Thailand, and Indonesia, especially Java and Bali. (Same as AH 2192).

CAH 3060. History of Design. 3 Credits.

History of designed objects, images, and spaces, including products, furniture, appliances, interiors, posters and other printed materials, and the latest digital media. Influences among the design disciplines, as well as developments in materials and technologies, within their cultural, political, economic, and social contexts. Recommended for all design students.

CAH 3065. Digital Media Culture. 3 Credits.

From the early days of the telegraph, telephone, radio, television, to the Internet and beyond, the ease and speed with which information can be conveyed digitally is dramatically changing long-established business and social patterns, including how we live, work, and interact. Considering both contemporary media and older technologies as they have been transformed through digitization, this course covers the impact of the digital revolution on the creation, production, and spectatorship of new forms of visual art and design.

CAH 3099. Variable Topics. 1-36 Credits.

. Same As: AH 3099.

CAH 3101. Ancient Art of the Bronze Age and Greece. 3 Credits.

Survey of Greek art from the Minoans and Mycenaeans (c. 2000 BC) to the age of Alexander (c. 300 BC); relationships among the arts of different groups in the Aegean area and their impact on Western culture; Thera volcanic eruption, Dorian Invasion, portrayal of women, heroic nudity, and assumption of a stylistic chronology. Credit cannot be earned for this course and AH 3101.

CAH 3102. Ancient Art of the Roman Empire. 3 Credits.

Survey of Roman art from the successors of Alexander the Great (c. 300 BC) to the fall of the Roman Empire in the West (c. 300 AD); impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia. Credit cannot be earned for this course and AH 3102.

CAH 3103. Art and Archaeology of Egypt and the Near East. 3 Credits.

The great artistic tradition of the Nile Valley and the contemporary civilizations (c. 3000 BC to after 1000 BC) between the rivers Tigris and Euphrates (present day Iraq). The Pyramid Age, temples at Karnak and Luxor, tombs of the Valley of the Kings, and artistic traditions of the Sumerians, Akkadians, Babylonians, Assyrians, and Persians. Credit cannot be earned for this course and AH 3103.

CAH 3104. Art and Archaeology of the Aegean Bronze Age. 3 Credits.

Excavational and multidisciplinary aspects of classical archaeology in the Bronze Age Aegean utilizing archaeology, ancient history, art history, classical studies, and anthropology; Minoan and Mycenaean civilizations (1700 to 1200 BCE). (Same as ANTH 3806).

CAH 3105. Topics in Ancient Art and Archaeology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3105, CLAS 3115.

CAH 3112. Proseminar in Romanesque and Gothic Art and Architecture. 3 Credits.

The origin of Western art in the Hiberno-Saxon and Carolingian worlds and their relationship to the Ancient heritage and to the contemporary Byzantine art. Romanesque and Gothic architecture and its sculptural decoration as art historical and social phenomena. Same As: AH 3112, CAH 3112, CAH 6212.

CAH 3113. Islamic Art and Architecture. 3 Credits.

Introduction to the visual culture of the Muslim world, from Spain to India, from the seventh century to the present. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. (Same as AH 3113).

CAH 3114. Art of the Book in the Medieval Muslim World. 3 Credits.

Painting and book illumination in the Islamic world, beginning with the rise of Islam in the seventh century and ending with the seventeenth century. Uses written sources and works of art and material culture to better understand the unity and diversity of the Islamic world and its complex attitude toward images. Recommended background: Prior completion of CAH 3113. (Same as AH 3114).

CAH 3117. Special Topics in Precolumbian Art and Archaeology. 3 Credits.

Topic vary by semester. May be repeated for credit provided the topic differs. See the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3117, ANTH 3891.

CAH 3120. Italian Art and Architecture of the 13th through 15th Centuries. 3 Credits.

Origins, development, and theoretical foundations of painting, sculpture, architecture and urban form in Renaissance Italy from the early 13th to late 15th centuries. Credit cannot be earned for this course and AH 3120, CAH 6220.

CAH 3121. Italian Art and Architecture of the Sixteenth Century. 3 Credits.

Development and theoretical foundations of painting, sculpture, architecture, and urban form in Renaissance Italy from the early fifteenth to late sixteenth centuries. Credit cannot be earned for this course and AH 3121.

CAH 3122. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3122.

CAH 3122W. Topics in Early Northern Renaissance Art and Architecture. 3 Credits.

Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 3122W.

CAH 3123. Topics in Northern Renaissance Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. (Same as AH 3122).

CAH 3123W. Topics in Northern Renaissance Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 3123W.

CAH 3131. Italian Art and Architecture of the Seventeenth Century. 3 Credits.

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena). Credit cannot be earned for this course and AH 3131.

CAH 3132. Topics in Northern European Art and Architecture of the Seventeenth Century. 3 Credits.

Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. (Same as AH 3132).

CAH 3134. Topics in Spanish and Portuguese Art through the Sixteenth Century. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3134.

CAH 3134W. Topics in Spanish and Portuguese Art Through the Sixteenth Century. 3 Credits.

The Kingdoms of the Iberian Peninsula from the reconquest of Granada to the Renaissance Age of Exploration. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 3134, AH 3134W.

CAH 3135. Topics in Seventeenth and Eighteenth Century Spanish and Portuguese Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3135.

CAH 3140. European Art of the Eighteenth Century. 3 Credits.

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo. Painting, sculpture, and architecture in France, Great Britain, and Italy. Restricted to Graduate standing. Credit cannot be earned for this course and AH 3140.

CAH 3141. European Art of the Early Nineteenth Century. 3 Credits.

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich. Same As: CAH 3141W. Credit cannot be earned for this course and AH 3141, AH 3141W.

CAH 3141W. European Art of the Early Nineteenth Century. 3 Credits.

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: CAH 3141. Credit cannot be earned for this course and AH 3141, AH 3141W.

CAH 3142. European Art of the Late Nineteenth Century. 3 Credits.

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments; representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin. Same As: AH 3142, AH 3142W, CAH 3142W.

CAH 3142W. European Art of the Late Nineteenth Century. 3 Credits.

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments; representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AH 3142, AH 3142W, CAH 3142.

CAH 3143. Early Twentieth-Century Art. 3 Credits.

History and theory of early twentieth-century modernism in the visual arts, from origins in the late nineteenth century through Surrealism. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Credit cannot be earned for this course and AH 3143.

CAH 3143W. Early Twentieth-Century Art. 3 Credits.

History and theory of early twentieth-century modernism in the visual arts, from origins in the late nineteenth century through Surrealism. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 3143, AH 3143W, CAH 3143.

CAH 3146. Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the twentieth century. Credit cannot be earned for this course and AH 3146.

CAH 3146W. Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the twentieth century. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 3146W, CAH 3146.

CAH 3150. Theories and History of Graphic Design. 3 Credits.

This course investigates traditional and contemporary ideas, language, and theories of graphic design. It includes a survey of the development of graphic design from 1900 until the present. Specific graphic design assignments are assigned to support certain historical lessons.

CAH 3150W. Theories and History of Graphic Design. 3 Credits.

Analysis of the history of graphic design and visual communication. How cultural factors, such as new technologies, economic shifts, and developments in art and culture, have shaped the field of graphic design.

CAH 3151. American Art in the Age of Revolution. 3 Credits.

American art during the eighteenth-century consumer revolution, the American War for Independence, and the early republic; socioeconomic and political purposes of art, focusing on Enlightenment symbolism and the visualization of national identity. (Same as AMST 3151).

CAH 3152. American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion. Credit cannot be earned for this course and AH 3152.

CAH 3153. American Art of the Twentieth Century. 3 Credits.

Twentieth-century American painting and sculpture from the turn of the century to the beginnings of postmodernism. Artists of the Stieglitz circle and later modernist movements such as abstract expressionism, pop, op, minimal, and conceptual art. Credit cannot be earned for this course and AH 3153.

CAH 3160. Topics in Latin American Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3160.

CAH 3165. Later Twentieth-Century Art. 3 Credits.

Artists, art, and critical concepts from the later twentieth century; key movements and issues, including abstract expressionism, minimalism, conceptual art, feminism, identity politics, and the rise of globalization. Same As: AH 3165, AH 3165W, CAH 3165W.

CAH 3165W. Later Twentieth-Century Art. 3 Credits.

Artists, art, and critical concepts from the later twentieth century, focusing on key movements and issues, including abstract expressionism, minimalism, conceptual art, feminism, identity politics, and the rise of globalization. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AH 3165, AH 3165W, CAH 3165.

CAH 3170. Materials, Methods, and Techniques in Art History. 3 Credits.

Hands-on introduction to the materials, methods, and techniques of the fine arts through traditional practices and processes of manufacture including panels, canvases, grounds, pigments, and drawings and paintings from raw materials. Credit cannot be earned for this course and AH 3170.

CAH 3181. Special Topics in Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: AH 3181.

CAH 3182. Special Topics in South Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 3182.

CAH 3182W. Special Topics in South Asian Art. 3 Credits.

Introduction to the art, architecture, and visual culture of the Indian subcontinent from ancient to contemporary periods. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 3182, AH 3182W, CAH 3182.

CAH 3240. Cultures of Photography: WWII to 2000. 3 Credits.

The nature of photography, its practices, meanings, and visual results during a critical era of rapid development of the medium; how contextual and cultural understandings have shaped the readings of images over the second half of the twentieth century. Additional work is required if taken for graduate credit.

CAH 3330. The Twentieth Century Artist Book. 3 Credits.

The historical, theoretical, and critical development of artists' books throughout the 20th and early 21st centuries within the context of movements and trends in the visual and performing arts; Arts and Crafts Movement, Russian Futurism, Surrealism, fluxus, Conceptual Art, and Postmodernism, among others. Restricted to Priority to graduate students of the Art and the Book department; open to other degree students as space is available.

CAH 3530. Art and Architecture of Washington, D.C. 3 Credits.

The art and architecture of the city of Washington, D.C. Major collections, special exhibitions, historic architecture, and the city itself. As a majority of class time is spent at various sites outside the classroom, this is a walking-intensive course. Additional work is required if taken for graduate credit.

CAH 4109. Topics in Ancient Art and Archaeology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4109, CLAS 3115.

CAH 4119. Seminar in Medieval Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4119.

CAH 4129. Seminar in Renaissance Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4129.

CAH 4139. Seminar in Baroque Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 4139.

CAH 4149. Seminar in Modern European Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4149.

CAH 4150. Seminar in Modern Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4150, AH 4150W, CAH 4150W.

CAH 4150W. Seminar in Modern Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AH 4150, AH 4150W, CAH 4150.

CAH 4157. Seminar in Photography. 3 Credits.

Advanced undergraduate study of photography and lens-based media. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Same As: AH 4157.

CAH 4159. Seminar in American Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: CAH 4159W. Credit cannot be earned for this course and AH 4159.

CAH 4159W. Seminar in American Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors. Same As: AH 4159W, CAH 4159. Credit cannot be earned for this course and AH 4159.

CAH 4165. Topics in Islamic Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4165.

CAH 4169. Seminar in Contemporary Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Restricted to juniors and seniors. Same As: AH 4169.

CAH 4179. Topics in Design History and Theory. 3 Credits.

Practical, historical, and theoretical underpinnings of designed spaces, objects, and interactions. Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

CAH 4181. Topics in Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Restricted to juniors and seniors. Same As: AH 4181.

CAH 4182. Topics in South Asian Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult program for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4182.

CAH 4189. Seminar: Topics in Art History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors. Credit cannot be earned for this course and AH 4189.

CAH 4197. Senior Thesis. 1-4 Credits.

Students should consult the Director of Undergraduate Studies by the end of their junior year regarding eligibility, selection of an area of research, and the appropriate faculty members to supervise the project. May be repeated for credit. Same As: AH 4197.

CAH 4198. Independent Study. 1-3 Credits.

Directed research and study in a specific area of art history to be approved by a faculty member. A written proposal of the plan of study and approval from the faculty member and the Director of Undergraduate Studies is required for registration. May be repeated for credit. Same As: AH 4198.

CAH 4199. Internship in Art History. 1-3 Credits.

Students gain practical experience working in an arts institution such as a museum or gallery. Advisor approval required for registration. A maximum of 3 credits may count toward the major. Restricted to Corcoran BA and BFA majors. Same As: AH 4199.

CAH 4300. Victorian Avant-Garde: British Art and Culture from 1851 to 1901. 3 Credits.

The second half of the nineteenth century was a period of extreme technological, social, and cultural upheaval. During these years, traditional ideas about art, design, literature, and journalism were challenged by new ways of thinking that seeded the ground for more radical changes in the twentieth century. The class focuses on close and critical readings of primary artworks and texts in Washington-area libraries, archives, and museums. Visits are scheduled for the Rare Book and Special Collections Department of the Library of Congress and the National Gallery of Art. Topics include: The Great Exhibition of 1851, the Pre-Raphaelite Brotherhood, the Arts and Crafts Movement, Aestheticism, and the Revival of Printing. Key figures include: John Ruskin, Dante Gabriel Rossetti, Julia Margaret Cameron, Elizabeth Siddal, William Morris, W.E. Godwin, Walter Pater, J.M.W. Whistler, Aubrey Beardsley, and Oscar Wilde. Along with weekly readings and short written responses, there is one long-form seminar essay and presentation due at the conclusion of the semester, as well as a shorter theoretical essay and a mid-term exam. Same As: CAH 7300.

CAH 6201. Proseminar in Ancient Art of the Bronze Age and Greece. 3 Credits.

Greek art from the Minoans and Mycenaeans (c. 2000 BC) to the age of Alexander (c. 300 BC). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Thera volcanic eruption, the Dorian Invasion, the portrayal of women, heroic nudity, and the assumption of a stylistic chronology. Restricted to graduate students. Credit cannot be earned for this course and AH 3101, AH 6201.

CAH 6202. Proseminar in Ancient Art of the Roman Empire. 3 Credits.

Roman art from the successors of Alexander the Great (c. 300 BC) to the fall of the Roman Empire in the West (c. 300 AD). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia. Credit cannot be earned for this course and AH 6202, CAH 3102.

CAH 6205. Topics in Ancient Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Same As: AH 6205.

CAH 6211. Proseminar in Early Christian and Byzantine Art and Architecture. 3 Credits.

Art of the Mediterranean world following the collapse of Roman administration. Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453. Credit cannot be earned for this course and AH 6211.

CAH 6212. Proseminar in Romanesque and Gothic Art and Architecture. 3 Credits.

The origin of Western art from the Hiberno-Saxon and Carolingian worlds and their relationship to the Ancient heritage. Romanesque and Gothic architecture and its sculptural decoration as social phenomena. Restricted to graduate students. Same As: CAH 3112. Credit cannot be earned for this course and AH 6212.

CAH 6213. Islamic Art and Architecture. 3 Credits.

Introduction to the visual culture of the Muslim world, from Spain to India, from the seventh century to the present. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. Restricted to graduate students. Same As: AH 6213.

CAH 6214. Art of the Book in the Medieval Muslim World. 3 Credits.

An advanced-level introduction to the visual culture of the Muslim world, from Spain to India, from the seventh to the seventeenth century. Examination of artworks in their historical, religious, and cultural contexts; key points in the field's historiography. Restricted to graduate students. Credit cannot be earned for this course and AH 6214.

CAH 6215. Seminar in Medieval Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6215.

CAH 6220. Proseminar in Italian Art and Architecture of the Thirteenth Through Fifteenth Centuries. 3 Credits.

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli). Credit cannot be earned for this course and AH 6220, CAH 3120.

CAH 6221. Proseminar in Italian Art and Architecture of the Sixteenth Century. 3 Credits.

Development and theoretical foundations of painting, sculpture, architecture, and urban form in Renaissance Italy from the early fifteenth to late sixteenth centuries. Credit cannot be earned for this course and AH 6221.

CAH 6222. Proseminar in Early Northern Renaissance Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Credit cannot be earned for this course and AH 6222, CAH 3122.

CAH 6223. Proseminar in Northern Renaissance Art and Architecture. 3 Credits.

Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6223.

CAH 6225. Seminar in Renaissance Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Same As: AH 6225.

CAH 6231. Proseminar in Italian Art and Architecture of the Seventeenth Century. 3 Credits.

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena). Restricted to graduate students. Credit cannot be earned for this course and AH 6231, CAH 3131.

CAH 6232. Proseminar in Northern European Art and Architecture of the Seventeenth Century. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6232, CAH 3132.

CAH 6234. Proseminar in Spanish and Portuguese Art through the Sixteenth Century. 3 Credits.

The kingdoms of the Iberian Peninsula from the reconquest of Granada to the Renaissance Age of Exploration. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6234.

CAH 6235. Topics in Design History and Theory. 3 Credits.

Examines practical, historical and theoretical underpinnings of designed spaces, objects, and interactions. Topics vary by semester. May be repeated for credit provided the topic differs. Restricted to This course is restricted to graduate students.

CAH 6236. Seminar in Baroque Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Same As: AH 6235.

CAH 6240. Proseminar in European Art of the Eighteenth Century. 3 Credits.

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo. Credit cannot be earned for this course and AH 6240.

CAH 6245. Seminar in European Art of the Nineteenth Century. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6245.

CAH 6246. Proseminar in Modern Architecture in Europe and America. 3 Credits.

Major developments in architecture and urbanism from the Industrial Revolution to the end of the twentieth century. Restricted to graduate students. Credit cannot be earned for this course and AH 6246, CAH 3146.

CAH 6250. Seminar in Modern Art. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6250.

CAH 6251. Proseminar in American Art in the Age of Revolution. 3 Credits.

American art during the eighteenth-century consumer revolution, the American War of Independence, and the early republic. The socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity. Prerequisite: graduate students. Credit cannot be earned for this course and AH 6251, AMST 3151, CAH 3151.

CAH 6252. Proseminar in American Art in the Era of National Expansion. 3 Credits.

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. The role of art in the expansion of the United States, exploring issues of race, class, and gender. Art and religion. Restricted to graduate students. Credit cannot be earned for this course and AH 6252, AMST 3152, CAH 3152.

CAH 6254. Seminar in American Art before 1900. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6254.

CAH 6255. Seminar Studies in American Art and History. 3 Credits.

Selected problems and themes in American cultural history involving the use of artistic materials in different media. Emphasis on methodology and analytic techniques. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. (Same as AMST 6730).

CAH 6257. Seminar in Photography. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Same As: AH 6257.

CAH 6258. Art Historiography. 3 Credits.

The development of art history as a discipline from the eighteenth century to the present. An investigation of different art historical methodologies, including formal analysis, iconological, feminist, Marxist, semiotic, and deconstructivist approaches. Restricted to graduate students. Same As: AH 6258.

CAH 6259. Textile Historiography. 3 Credits.

Critical perspectives, theories, and methodologies of the study of textiles across academic disciplines such as including anthropology, art history, gender studies, philosophy, and design disciplines. Restricted to graduate students.

CAH 6260. Seminar in African Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Restricted to graduate students. Same As: AH 6260.

CAH 6261. Seminar in Asian Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Restricted to graduate students. Same As: AH 6261.

CAH 6262. Seminar in South Asian Art. 3 Credits.

Topics in the visual cultures of South Asia from a range of time periods; artworks in their historical, religious, and cultural contexts; key points in the field's historiography. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Same As: AH 6262.

CAH 6265. Seminar in Islamic Art and Architecture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Credit cannot be earned for this course and AH 6265.

CAH 6269. Seminar in Contemporary Art. 3 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Restricted to graduate students. Same As: AH 6269.

CAH 6270. Special Topics in Art History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Same As: AH 6270.

CAH 6286. Preventive Conservation Concepts. 3 Credits.

Historical development of preventive conservation in museums, conservation ethics, team approaches to conservation, interactions of various materials with agents of deterioration. Basics of materials testing, preparation of condition reports, choosing museum storage and exhibition materials, and risk assessment. Restricted to graduate students. (Same as CMST 6203, ANTH 6203).

CAH 6287. Preventive Conservation Techniques. 3 Credits.

Practical applications of preventive conservation of materials, monitoring environmental conditions, conducting risk assessments, evaluation of exhibit and storage areas; developing plans, policies, and procedures for collections care; grant proposal preparation for collections care initiatives. Restricted to graduate students. (Same as CMST 6204, ANTH 6204).

CAH 6298. Independent Research in Art History. 3 Credits.

Directed research and study in a specific area of art history to be approved by a faculty member. A written proposal of the plan of study and approval from the faculty member and the Director of Graduate Studies are required prior to enrollment. May be repeated for credit. Restricted to graduate students. Credit cannot be earned for this course and AH 6298.

CAH 6299. Museum Internship. 3-12 Credits.

Students gain hands-on experience working in an arts institution such as a museum or gallery. Approval of the Director of Graduate Studies is required prior to enrollment. May be repeated for credit. Restricted to graduate students. Same As: AH 6299.

CAH 6400. History of Exhibitions. 3 Credits.

The exhibition is where modern and contemporary art meets the public. This course looks at the history and theory of exhibiting new art in the past 150 years, starting with the French Salon and the independent alternatives that challenged it (Courbet, the Impressionists, and Post-Impressionists), through avant-garde exhibitions (Expressionists, Dada, and Surrealists), installation art and alternative exhibition strategies, and leading to today's art fairs and biennials (Art Basel, Documenta, the Venice Biennale, the Whitney Biennial, etc.). We cover historic exhibits including the Armory Show and Hitler's Degenerate Art exhibit. Individual and group projects research specific recent exhibitions, as we consider such issues as design, audience, and critical reception. At times this course may be cross-tallied at the undergraduate level as CAH 4400. Students wishing to pursue undergraduate credit should register for the undergraduate section.

CAH 7300. Victorian Avant-Garde: British Art and Culture (1851-1901). 3 Credits.

The effects of the technological, social, and cultural upheaval of the nineteenth century on traditional ideas about art, design, literature, and journalism; the more radical changes in these media in the twentieth century. Study of primary artworks and texts in Washington-area libraries, archives, and museums. The Great Exhibition of 1851, Pre-Raphaelite Brotherhood, Arts and Crafts Movement, Aestheticism, and Revival of Printing. John Ruskin, Dante Gabriel Rossetti, Julia Margaret Cameron, Elizabeth Siddal, William Morris, W.E. Godwin, Walter Pater, J.M.W. Whistler, Aubrey Beardsley, and Oscar Wilde. (Same as CAH 4300).

CORCORAN CONTINUING EDUCATION (CCE)

CORCORAN DECORATIVE ARTS AND DESIGN (CDAD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CDAD 6570. Proseminar in Decorative Arts and Design. 3 Credits.

Preparation for careers in the history of decorative arts and design. Students choose an object on which to conduct research, write, and make a presentation. Writing intensive. Restricted to graduate students.

CDAD 6571. Survey of Decorative Arts and Design I. 3 Credits.

Overview of major historical developments in decorative arts and design from the 1400s through the 1700s. Focus on objects from Italy, France, England, Germany, and the Netherlands. Restricted to graduate students.

CDAD 6572. Survey of Decorative Arts and Design II. 3 Credits.

Overview of major developments in decorative arts and design in Europe and the United States from 1800 to present. Restricted to graduate students.

CDAD 6573. Material Culture Theory. 3 Credits.

Exploration of material culture theory through a detailed case study of material and artistic output in a particular time period. Topics vary. See department for more details. Restricted to graduate students.

CDAD 6574. Topics in Medium-Based Decorative Arts and Design. 3 Credits.

Provides opportunities for introductory-level study of media – including textile, wood, glass, ceramics, metal, and paper –outside of the student's major area of focus. Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Restricted to graduate students.

CDAD 6575. Non-Western Influences in Decorative Arts and Design. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Restricted to graduate students.

CDAD 6600. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Restricted to graduate students.

CDAD 6900. Independent Study. 3 Credits.

Advanced study of a particular topic or theme in decorative arts and design through readings, research, and analysis. Faculty advisor's approval is required prior to enrollment. Restricted to graduate students.

CDAD 6902. Internship. 3 Credits.

Practicum at a museum, gallery, auction house, arts center, or other approved institution. Students must spend 120 contact hours on-site over the course of the semester, including development of a final project based on their internship experience. Restricted to students in the MA in decorative arts and design program.

CDAD 6998. Thesis Research. 3 Credits.

Original advanced research of a particular topic or theme in decorative arts and design that results in an annotated scholarly paper. Includes a thesis defense. May be repeated for credit. Restricted to students in the MA in decorative arts and design program with the permission of the advisor.

CDAD 6999. Thesis Research. 3 Credits.

Original advanced research of a particular topic or theme in decorative arts and design that results in an annotated scholarly paper. Includes a thesis defense. May be repeated for credit. Restricted to students in the MA in decorative arts and design program with the permission of the advisor.

CORCORAN EXHIBITION DESIGN (CEX)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CEX 6010. Exhibition Design Studio 1. 3 Credits.

The curatorial or content studio. Focus on the building blocks of an exhibition, emphasizing the body's relationship to objects and spaces. Provides a foundation in designing with two- and three-dimensions and across scales. Corequisites: CEX 6011.

CEX 6011. Spatial Representation and Making I. 3 Credits.

The skills and tools required for two- and three-dimensional design work. Foundational theories of representation and production. Corequisites: CEX 6010.

CEX 6012. Spatial Representation and Making II. 3 Credits.

Enhances approaches to three-dimensional design and introduces those of the fourth-dimension (time) through visualizations of atmosphere, materiality, and other spatial/experiential expressions. Prerequisites: CEX 6011. Corequisites: CEX 6020. Same As: CEX 6120.

CEX 6014. Materials, Detailing, and Fabrication/Installation. 3 Credits.

Focuses on exhibition prototyping and installation through detail drawing and fabricating. Design intent, function, aesthetics, and user experience are considered alongside material properties and building methodologies. Prerequisites: CEX 6012. Corequisites: CEX 6040. Same As: CEX 6110.

CEX 6020. Exhibition Design Studio 2. 3 Credits.

The narrative studio. Emphasis on spatial organization and sequencing in exhibitions. Introduces circulation, choreography, and wayfinding as unifying forces in spatial/experiential design. Time as a design consideration. Prerequisites: CEX 6010. Corequisites: CEX 6012.

CEX 6030. Exhibition Design Studio 3. 3 Credits.

The site studio. Influences of context on an exhibition through hands-on field experience and with outside partners. Uses public settings to test and transform design intentions. Prerequisites: CEX 6020. Same As: CEX 7010.

CEX 6040. Exhibition Design Studio 4. 3 Credits.

Capstone and comprehensive design studio. Students produce a public exhibition design and installation as an independent pursuit within an instructor-provided methodological framework. Prerequisites: CEX 6030 and CEX 6220. Corequisites: CEX 6014 and CEX 6230. Same As: CEX 7900.

CEX 6100. Lighting, Acoustics, and Design for the Senses. 3 Credits.

Fundamentals of static and kinetic lighting, sound, and acoustics, and other atmospheric/sensory contributors to spatial/experiential design. Students develop a foundation for professional collaboration with related specialists.

CEX 6110. Materials, Detailing, and Fabrication/ Installation. 3 Credits.

Focuses on exhibition prototyping and installation through detail drawing and fabricating. Design intent, function, aesthetics, and user experience are considered alongside material properties and building methodologies. Prerequisites: CEX 6012. Corequisites: CEX 6040. Same As: CEX 6014.

CEX 6120. Spatial Representation and Making II. 3 Credits.

Enhances approaches to three-dimensional design and introduces those of the fourth-dimension (time) through visualizations of atmosphere, materiality, and other spatial/experiential expressions. Prerequisites: CEX 6011. Corequisites: CEX 6020. Same As: CEX 6012.

CEX 6210. Special Topics in Exhibition Design. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

CEX 6220. Exhibition Design Research. 3 Credits.

Preparation for exhibition design capstone. Students create an exhibition design proposal, complete pre-design research, and produce a schematic design package. Prerequisites: CAH 6400 and CEX 6020. Corequisites: CEX 6030. Same As: CEX 7800.

CEX 6230. Art and Design Writing. 3 Credits.

Principles of writing artist/designer statements, grant proposals, exhibition text, creative marketing, and art/design criticism. Production of capstone installation collateral and didactic documents. Corequisites: CEX 6040.

CEX 6800. Independent Study: Exhibition Design. 1-3 Credits.

For degree students only. Enrollment requires prior permission. Restricted to Instructor Permission Required.

CEX 7010. Exhibition Design Studio 3. 3 Credits.

The site studio. Influences of context on an exhibition through hands-on field experience and with outside partners. Uses public settings to test and transform design intentions. Prerequisites: CEX 6020. Same As: CEX 6030.

CEX 7800. Exhibition Design Research. 3 Credits.

Preparation for exhibition design capstone. Students create an exhibition design proposal, complete pre-design research, and produce a schematic design package. Prerequisites: CAH 6400 and CEX 6020. Corequisites: CEX 6030. Same As: CEX 6220.

CEX 7900. Exhibition Design Studio 4. 3 Credits.

Capstone and comprehensive design studio. Students produce a public exhibition design and installation as an independent pursuit within an instructor-provided methodological framework. Prerequisites: CEX 6030 and CEX 6220. Corequisites: CEX 6014 and CEX 6230. Same As: CEX 6040.

CORCORAN FIRST-YEAR FOUNDATION (CFN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CFN 1000. Communication Design. 3 Credits.

This course examines digital design techniques and concepts that are relevant to all majors. Students learn the basics of visual communication, typography, and design by utilizing Adobe Photoshop to create a series of projects that result in the creation of their own basic website. Students learn how to scan, import, and create artwork and how to correct and adjust image tone and color. Students also use Photoshop's many selection and editing tools and are introduced to layers, channels, color palettes, and scripted actions. By going through lessons ranging from image retouching to title banner and button creation and simple time-based animation, students assemble and produce a simple website which showcases a portfolio of their own work. In addition to the projects above, students are introduced to the theories and practices of visual communications and graphic design through a series of lectures and demonstrations. Other Adobe CS software such as InDesign are touched on as well.

CFN 1090. Drawing and Surface. 3 Credits.

An intensive studio covering the principles of drawing and mark-making and their place in contemporary art and design practice. Through the physical activity of drawing, students refine their capacity to observe and visualize. Materials fee. Restricted to BFA majors.

CFN 1091. First-Year Studio 1: Form and Materials. 3 Credits.

Comprehensive studio course providing a broad experience with the tools and materials of traditional and conceptual sculptural practices in art and design; develops students' ability to think, perceive, visualize, design, and build in three dimensions and explore questions of space, place, site, presentation, and context. Required for all first-year BFA majors.

CFN 1092. Time and Light. 3 Credits.

Technical applications of lens and non-lens based dark-room photographic processes; video recording and editing; field and experimental audio recording, and outdoor projection; the roles of time-based media in contemporary art and design practice. Required for first-year BFA majors.

CFN 1093. First-Year Studio 4: Interaction. 3 Credits.

Understanding, conceptualizing, and creating art and design projects that expect interaction from audiences or users; the influence of design on the human experience; politics of space; skills for working collaboratively with other makers. Required in the first year for BFA majors.

CORCORAN GRAPHIC DESIGN (CGD)

Explanation of Course Numbers

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- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CGD 1010. Fundamentals of Graphic Design. 3 Credits.

This course is an introduction to the visual components that serve as fundamental principles in the field of Design. Projects include the study, classification, and application of Gestalt theories of perception; color systems for designers; and pattern design. Course projects focus on visual relationships of form, image, type and grid structures. Students are engaged in a series of projects that address 2D and 3D abstract forms and their professional applications. Students learn design methodology and processes, design language, and the critique process for designers. These design methods and processes help students observe, understand, and articulate their intuitive visual decision-making skills. Professional practices for designers, project workflow, and professional presentation are integrated into course projects. Digital software tools and hand craft tools are learned and applied to course projects. Prerequisites: CDM 1200 and a working knowledge of OSX and Illustrator, InDesign, and Photoshop.

CGD 1090. Design Fundamentals I. 3 Credits.

The study, classification, and application of Gestalt theories of perception. Design methodology, project workflow; professional practices and presentation; and digital software and hand craft tools. Students create 2D and 3D forms and learn to use materials in design projects.

CGD 1091. Design Fundamentals II. 3 Credits.

Further development of skills acquired in CGD 1090. Visual relationships of form and image, type and grid structures, and scale. A minimum grade of C in the prerequisite course is required. Prerequisites: CGD 1090 or CDE 1090.

CGD 1099. Variable Topics. 36 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

CGD 2020. Communication Design. 3 Credits.

An introduction to visual communication practices that are built on fundamental principles in the field of graphic design and typography. Prerequisites: CGD 1091.

CGD 2050. Typography I. 3 Credits.

Introduction to typefaces and letterforms. Typographic terminology, history, technology, classification, measurement, and context. Prerequisites: CGD 1090 or CGD 1091.

CGD 2060. Typography II. 3 Credits.

This is an intermediate studio course in typography. Topics covered include typographic vocabulary, terminology, history, technology, classification, measurement, and syntax. Projects explore audience, structure/syntax, content/meaning, visual hierarchy, and aesthetics in message building for visual communications. Students further their knowledge of typographic history, nationality, technology, and the grid as organizing principle and system. Students must have received a grade of C or above in CGD 2050 to have it count toward the prerequisite requirement. Prerequisites: CGD 2050; and CDE 2090 or CGD 2000.

CGD 2090. Design Studio I. 3 Credits.

Exploration of visual hierarchies, composition, design principles, and an intro to Semiotics. Students learn through an iterative design process. Requires a high level of execution through precise craftsmanship. Restricted to graphic design majors. Prerequisites: CDE 1090 or CGD 1090.

CGD 2091. Design Studio II. 3 Credits.

Brand identity systems and programs. Iterative design process used to develop a cohesive and comprehensive branding program, with the developed brand identity applied to print, motion, and web media. A grade of C or above is required in the prerequisite course. Prerequisites: CGD 2090. Same As: CDE 2091.

CGD 3010. Special Topics in Design. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Prerequisite: CDE 1090.

CGD 3050. Typography III. 3 Credits.

Advanced design study exploring typography as both a legible and expressive communication tool. Exploration of traditional and contemporary practices through experimentation with narrative and hierarchical structures in static and kinetic media. Prerequisites: CGD 2060 or permission of the department chair.

CGD 3060. Typography IV. 3 Credits.

This is a course in advanced typography. Projects cover advanced visual hierarchy, sequence, kinetic type, narrative tools, and the grid as organizing principle and system. Students explore typography as legible and expressive communication within cultural context. Letterform ideation is investigated. Media utilized includes print and motion. Students must have received a grade of C or above in CGD 3050 or CGD 3090 or CDM 3090 to have it count toward the prerequisite requirement. Prerequisites: CGD 3050 or CGD 3090 or CDM 3090; or permission of the department chair.

CGD 3070. Typography in Motion. 3 Credits.

This course focuses on advanced experimental typography for animation and motion graphics. Projects focus on narrative, storyboarding, style frames, kinetic sequence, transitions, and workflow. Students explore typography as legible and expressive communication within cultural context. Methods and iterative processes for experimental typeface design are explored and developed. Students must have received a grade of C or above in CGD 3050 or CGD 3090 or CDM 3090 to have it count toward the prerequisite requirement. Prerequisites: CGD 3050 or CGD 3090 or CDM 3090; or permission of the department chair.

CGD 3090. Graphic Design Studio III. 3 Credits.

In this advanced level course, students focus on interactive and interaction design. Course projects immerse students in interactive web design, and mobile apps design for smart phones and tablet devices. Students learn, employ, and engage in systems design, user experience, user interface design, user interaction, and responsive design. Students learn to use mobile devices (smart phones/tablet devices) and computers as digital tools to communicate designed messages and visual content. Students learn advanced design process which includes: iterative concept development, wire framing, prototyping, design development, craft, details, production, and coding. Software and coding used in course projects include Adobe Digital Publishing Suite (DPS), HTML, and CSS. Students develop professional oral presentation skills by participating in weekly critiques. Project workflow, professional presentation, and professional practices for designers are integrated into course projects. At the end of the semester, students obtain experience in professional design projects and skill sets, while understanding on-the-job expectations for a fast-paced professional design studio. Students must have received a grade of C or above in CDE 2091 to have it count toward the prerequisite requirement. Restricted to graphic design majors. Prerequisites: CDE 2091 or permission of the department chair.

CGD 3091. Graphic Design Studio IV. 3 Credits.

In this advanced level course, students focus on design as instrument for social change. The semester long course project is Design Ignites Change. The project focuses on a social change or a social awareness issue. Students learn and develop skill sets in research, messaging, strategy, mood boards, branding, identity, production, and implementation. The project components include print design, interactive design, motion design, and social media. Students learn advanced design processes and create a cohesive brand package as they work with numerous project components and phases. The design process includes: iterative concept development, design development, craft, details, and production. Students develop professional oral presentation skills by participating in weekly critiques. Project workflow, professional presentation, and professional practices for designers are integrated into course projects. At the end of the semester, students obtain experience in professional design projects and skill sets, while understanding on-the-job expectations for a fast-paced professional design studio. Students must have received a grade of C or above in CGD 3090 to have it count toward the prerequisite requirement. Restricted to graphic design majors. Prerequisites: CGD 3090; or permission of the department chair.

CGD 3800. Independent Study: Corcoran Graphic Design. 3 Credits.

Independent research and special projects. Prior approval of the instructor or the program director is required. Restricted to junior and senior graphic design majors.

CGD 3900. Internship in Graphic Design. 3 Credits.

Provides opportunities for students to develop marketable skills, establish professional contacts, and explore different career options. Program approval is required prior to enrollment. Restricted to graphic design majors. Prerequisites: CGD 3090.

CGD 3960. Design Lab. 3 Credits.

This course offers a select group of undergraduate junior and senior graphic design students the unique opportunity to design and oversee production of projects for the Corcoran Gallery of Art and College of Art Design. Design Lab serves as an in-house design studio as students gain experience interacting with clients, managing deadlines, understanding and working within the limitations of their projects, and scheduling timelines. Elements of the design process covered in the course include writing design briefs and contracts, conceptual and design development phases, producing print-ready artwork, and fabrication coordination and supervision. Permission of department required for enrollment.

CGD 3961. Design Lab II. 3 Credits.

To be announced.

CGD 4090. Graphic Design Thesis I. 3 Credits.

"Graphic Design Senior Thesis is comprised of three components: written paper, interview of a design professional, and a final graphic design thesis project. In this course, students select a topic related to the field of Design, develop a thesis statement and written paper through a research and writing phase. Graphic Design briefs pertaining to the development of the written thesis and paper are explored during the semester. This course is for BFA/Graphic Design only. Prerequisite: A grade of "C" or better in CGD 3091 Graphic Design Studio IV; or Department Chair's approval."

CGD 4091. Graphic Design Thesis II. 3 Credits.

"Graphic Design Senior Thesis is comprised of three components: written paper, interview of a design professional, and a final graphic design thesis project. Students finalize the written thesis paper on a design-related topic. Then, students interview a prominent practitioner in the field of Design. As the third component of Graphic Design Senior Thesis, students translate their thesis paper into a graphic design thesis project. Upon completion, the thesis projects are presented in a special museum exhibition. This course is for BFA/Graphic Design only. Prerequisite: A grade of "C" or better in CGD 4090 Graphic Design Thesis I; or Department Chair's approval."

CGD 4120. Environmental Design. 3 Credits.

Reading the environment and the unique messages within it, using the environmental sign as a medium. A grade of C or above is required in the prerequisite course. Prerequisites: CGD 2091 or CDE 2091.

CGD 4170. Professional Practices for Designers. 3 Credits.

Resume and portfolio development and business considerations of the practicing designer. Personal goal assessment, operation of a design business, and designer-client relationships. Prerequisites: CGD 3091.

CORCORAN INTERACTION DESIGN (CIXD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CIXD 2090. Narrative Media for Interaction. 3 Credits.

Exploration of narrative as a method to conceptualize, communicate, and evaluate interactions across design contexts and media; using key aspects of narrative and event structure as a method for framing and analyzing designed interaction. Materials fee. Restricted to interaction design majors. Prerequisite: CFN 1093.

CIXD 2091. Systems Thinking for Interaction Design. 3 Credits.

The importance of technological, organizational, and social systems in the practice of interaction design. Materials fee. Restricted to interaction design majors. Prerequisites: CIXD 2090 and CIXD 2111 or permission of the instructor.

CIXD 2111. Creative Code. 3 Credits.

Procedures and methods of code-based strategies for realizing creative ideas; fundamental skills in creative coding languages and environments. Materials fee.

CIXD 3090. Human Centered Design for Social Engagement. 3 Credits.

Studio-based introduction to participatory design processes and their application for interaction design and social innovation. Materials fee. Prerequisite: CIXD 2091.

CIXD 3091. Prototyping and Fabrication for Interaction. 3 Credits.

Investigation of prototyping as a method for testing and communicating initial design assumptions and creating platforms for participatory response; refinement of associated fabrication skills. Materials fee. Prerequisites: CIXD 2091 and CIXD 2111.

CIXD 3110. Topics in Interaction Design Studio. 3 Credits.

Issues in contemporary design practice. Topics vary by semester. May be repeated for credit provided topic differs. See department for more details.

CIXD 3112. Data Visualization and Sonification. 3 Credits.

Tools and processes for visualizing and sonifying data sets using current web-based tools; critical analysis of data visualization examples; interactive possibilities of creating user experiences around data. Materials fee. Prerequisites: CIXD 2111 or permission of the instructor.

CIXD 3120. Interaction Design Internship. 3 Credits.

For interaction design majors pursuing an internship directly relevant to program themes and goals. Permission of the major advisor required prior to enrollment. Graded on a Credit/No Credit basis. Restricted to interaction design majors.

CIXD 3820. Engagement Lab. 3-6 Credits.

Design lab with a focus on social, environmental, and community impact. Project teams collaborate with a community partner to identify and respond to local challenges that might be addressed through interaction design processes and skills. Materials fee.

CIXD 3910. Collaborative Design Project. 3 Credits.

Practical experience in the conceptualization, production, and delivery of a multidisciplinary design project. Materials fee.

CIXD 4020. Topics in Design Research. 3 Credits.

Key theoretical and methodological concepts in the field of interaction design connect research in design innovation with qualitative and quantitative research methods, providing insights into user behaviors, attitudes, and expectations. Prerequisites: CGD 2091 or CIXD 2091.

CIXD 4090. Interaction Design Thesis I. 3 Credits.

The development of a senior thesis project and accompanying research. Student work evolves in a studio atmosphere that stresses user-oriented research, analysis, and prototyping of digital and physical interactive experiences, services, or products with a focus on social and environmental impacts. Materials fee. Restricted to Interaction Design majors. Prerequisites: CIXD 3090 and CIXD 3091.

CIXD 4091. Interaction Design Thesis II. 3 Credits.

Completion of a senior thesis project and accompanying research. Student work evolves in a studio atmosphere that stresses user-oriented research, analysis, and prototyping of digital and physical interactive experiences, services, or products with a focus on social and environmental impacts. Materials fee. Restricted to undergraduate interaction design majors. Prerequisite: CIXD 4090.

CIXD 4193. Topics in Design Leadership. 3 Credits.

Experiential study of professional practices of interaction designers and the leadership skills that promote innovative, equitable, and sustainable design solutions. Topics vary by semester. See program for more details. Restricted to undergraduate interaction design majors. Prerequisite: CIXD 3091.

CIXD 6001. Design Intensive. 1-3 Credits.

Design processes for students transitioning careers or entering a design graduate program from a non-design background; design thinking, design tools and technologies, digital imaging, sketching, model making and prototyping. Recommended background: No prior experience is necessary.

CIXD 6010. Interaction Design for Service. 3 Credits.

Tools and approaches for developing interactive services and experiences. Students work to define and frame problems, generate innovative proposals, and think comprehensively about the social, ethical, and organizational models surrounding the solutions they design. Restricted to graduate students in the interaction design program or with the permission of the instructor.

CIXD 6011. Narrative Media Design for Interaction. 3 Credits.

Exploration of narrative as a method to conceptualize, communicate, and evaluate interactions across design contexts and media; key aspects of narrative and event structure as a method for framing and analyzing designed interaction. Restricted to graduate students in the interaction design program or with the permission of the instructor.

CIXD 6012. Prototyping Interaction. 3 Credits.

Investigation of prototyping as a method for testing and communicating initial design assumptions, establishing feedback processes, creating platforms for participatory response, improving design ideas, and assessing the life-cycle implications of design solutions. Restricted to graduate students in the interaction design program or with the permission of the instructor.

CIXD 6020. Topics in Human Centered Design. 3 Credits.

Critical analysis of human-centered design methods in public policy and civic contexts using a case study approach. Topics vary by semester. See department for details. Prerequisites: CIXD 6010, PPPA 6006 and PPPA 6011.

CIXD 6021. Topics in Design Leadership. 3 Credits.

Practice-based investigation of leadership skills that promote innovative, equitable, and sustainable design solutions. Topics vary by semester. See department for more details. Permission of the instructor may be substituted for the prerequisites. Prerequisites: CIXD 6010 and CIXD 6011.

CIXD 6080. Engagement Lab. 3-6 Credits.

Design lab with a focus on social, environmental, and community impact. Project teams collaborate with a community partner to identify and respond to local challenges through interaction design. Restricted to graduate students in the interaction design program or with the permission of the instructor.

CIXD 6090. Topics in Design Research. 3 Credits.

Key theoretical and methodological concepts in the field of interaction design; connecting research in design innovation with research methods that offer insight into users' behaviors, attitudes, and expectations. Topics vary by semester. See department for more details. Restricted to graduate students in the interaction design program or with the permission of the instructor.

CIXD 6110. Studio Topics in Interaction Design. 3 Credits.

Issues in contemporary design practice. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

CIXD 6111. Creative Code. 3 Credits.

Procedures and methods of code based strategies for realizing creative ideas; fundamental skills in creative coding languages and environments. Restricted to graduate students in the interaction design program or with the permission of the instructor.

CIXD 6112. Data Visualization and Sonification. 3 Credits.

Tools and processes for visualizing and sonifying data sets using current web-based tools; critical analysis of data visualization examples and interactive possibilities of creating user experiences around data. Students are expected to have foundational knowledge of digital design processes prior to enrollment. Restricted to graduate students in the interaction design program or with the permission of the instructor. Recommended background: Prior experience with digital imaging and web-based tools.

CIXD 6210. Interaction Design Capstone I. 3 Credits.

Development of project and research, stressing user-oriented research, analysis, prototyping of digital and physical interactive experiences, products. Restricted to graduate students in the interaction design program. Prerequisites: CIXD 6010, CIXD 6011, and CIXD 6012.

CIXD 6220. Interaction Design Capstone II. 3 Credits.

Continuation of CIXD 6210. Completion of project and related research. Emphasis on user-oriented research, analysis, and prototyping of digital and physical interactive experiences, services, or products. Restricted to graduate students in the interaction design program. Prerequisites: CIXD 6210.

CIXD 6998. Interaction Design Thesis I. 3 Credits.

The development of a thesis project and accompanying research. Student work evolves in a studio and seminar atmosphere that stresses user-oriented research, analysis, and prototyping of digital and physical interactive experiences, services, or products with a focus on their social and environmental impacts. Restricted to graduate students in the interaction design program. Prerequisites: CIXD 6010, CIXD 6011, and CIXD 6012.

CIXD 6999. Interaction Design Thesis II. 3 Credits.

Completion of thesis project and related research. Emphasis on user-oriented research, analysis, and prototyping of digital and physical interactive experiences, services, or products with a focus on their social and environmental impact. Restricted to graduate students in the interaction design program. Prerequisites: CIXD 6998.

CORCORAN INTERIOR ARCHITECTURE (CIAR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CIAR 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details.

CIAR 2100. Studio 1. 6 Credits.

Introduction to design through study and application of fundamental design principles and elements to two- and three-dimensional projects. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 2100.

CIAR 2125. Introduction to Graphic Communications. 3 Credits.

Introduction to a variety of techniques used in communicating design ideas; image creation, logo design and branding, rendering, basic layouts, modeling, printed and digital presentation skills. Credit cannot be earned for this course and IA 2125.

CIAR 2150. Beginning Sketching for Designers. 3 Credits.

Freehand sketching developed and applied as a tool in all phases of the creative design process. Credit cannot be earned for this course and IA 2150.

CIAR 3200. Studio 2. 6 Credits.

All phases of design, from development of a concept through producing a complete presentation; implementing the different aspects of the design process. Prerequisites: CIAR 2100. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 3200.

CIAR 3225. Understanding Materials and Color. 3 Credits.

The visual perception and interaction of color; interior and exterior materials for use in residential and commercial environments. Credit cannot be earned for this course and IA 3225.

CIAR 3250. Introductory Digital Design Tools. 3 Credits.

Introduction to CAD technology, two-dimensional drawings, plotting, and enhancement of presentations; using CAD for the production of construction drawings. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 3250.

CIAR 3300. Studio 3. 6 Credits.

Studio course emphasizing continued refinement of the design process as applied to multifaceted and complex problems in non-residential space. Prerequisites: CIAR 3200. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 3300.

CIAR 3325. Concepts in Modern Architecture. 3 Credits.

Introduction to the history and concepts of architecture, interiors, and furniture from the Bauhaus movement until the present; creative thinking and cross-cultural perspectives emphasized. Credit cannot be earned for this course and IA 3325.

CIAR 3350. Basic Sustainability Design Strategies. 3 Credits.

Introduction to sustainable design and to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Rating Systems for Interior Design and Construction. Credit cannot be earned for this course and IA 3350.

CIAR 4400. Studio 4. 6 Credits.

Continuation and refinement of the design process to further advance conceptual thinking for development of larger-scale and more complex design problems. Prerequisites: CIAR 3300. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 4400.

CIAR 4425. Fundamentals of Lighting and Acoustics. 3 Credits.

Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 4425.

CIAR 4450W. Pre-Design for Studio 5. 3 Credits.

Research methodology applied to development of the senior project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: CIAR 3300. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 4450W.

CIAR 4500. Studio 5. 6 Credits.

Culmination of skills and knowledge gained through the program as demonstrated by the development of an interior design project covering all aspects from conception through presentation. Prerequisites: CIAR 4400. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 4500.

CIAR 4525W. Professional Practice and Internship. 3 Credits.

Industry professionals provide students with guidance concerning the roles and responsibilities of the professional interior designer; written business procedures and practices, legal implications, ethics, trade relations, and designer-client relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 4525W.

CIAR 4550. Building Systems: Methods and Processes. 3 Credits.

Organization and preparation of construction documents; methods and materials; application of codes; building systems (mechanical, electrical, plumbing) relevant to function and design of interior spaces. Restricted to undergraduate IA majors. Credit cannot be earned for this course and IA 4550.

CIAR 6100. Studio 1 Graduate. 6 Credits.

Introduction to the theory and application of design principles and elements in the built environment and to two- and three-dimensional projects; understanding the design process while adhering to a concept or parti. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6100.

CIAR 6125. Graphic Communications. 3 Credits.

Concepts and techniques used successfully in communicating design; graphic design principles, including hierarchy, emphasis, balance, rhythm and contrast, tools used in creating two-dimensional communication ideas; image creation, logo design and branding, rendering, basic layouts, three-dimensional modeling, printed and digital presentation skills. Credit cannot be earned for this course and IA 6125.

CIAR 6150. Sketching Architecture and Design. 3 Credits.

Three-dimensional mechanical drafting and free-hand sketching developed and applied as a tool in all phases of the creative design process; using line value, 2D and 3D representation of the built environment. Credit cannot be earned for this course and IA 6150.

CIAR 6200. Studio 2 Grad. 6 Credits.

Application of fundamental knowledge of design to complex three-dimensional projects and small scale interior projects. Prerequisites: CIAR 6100. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6200.

CIAR 6225. Interior Materials and Color Theory. 3 Credits.

Visual perception and interaction of color; interior and exterior materials for residential and commercial environments; interior building methods and materials as they relate to interior build-outs, furniture grade materials, and construction; materials qualities, strengths, weaknesses, and appropriate usage. Credit cannot be earned for this course and IA 6225.

CIAR 6250. Digital Drafting and Modeling. 3 Credits.

Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6250.

CIAR 6300. Studio 3 Graduate. 6 Credits.

Continued exploration of the design process as applied to medium scale projects. Prerequisites: CIAR 6200. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6300.

CIAR 6325. Case Studies: Bauhaus to Bilbao. 3 Credits.

Modern and contemporary architectural ideas and concepts explored through key buildings and interiors of the twentieth and twenty-first centuries; focus on modernist works in Washington, DC. Credit cannot be earned for this course and IA 6325.

CIAR 6350. Sustainability and the Built Environment. 3 Credits.

The application of sustainable design; introduction to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system, the Living Building Challenge, and the WELL Building Standard. Credit cannot be earned for this course and IA 6350.

CIAR 6400. Studio 4 Graduate. 6 Credits.

Continued refinement of the design process to further advance conceptual thinking for development of larger-scaled and more complex design problems. Prerequisites: CIAR 6300. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6400.

CIAR 6425. Lighting and Acoustics. 3 Credits.

Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6425.

CIAR 6450. Research Seminar for Studio 5. 3 Credits.

Students synthesize knowledge and define an area of interest that is well established or newly emerging within the discipline in preparation for the capstone project in Studio 5. Prerequisites: CIAR 6300. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6450.

CIAR 6500. Studio 5 Graduate. 6 Credits.

Students create and design an individual capstone interior design project that meets the learning objectives, accreditation standards, and requirements of the program. Prerequisites: CIAR 6400. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6500.

CIAR 6525. Practicum and Internship. 3 Credits.

Students work with professional interior designers, architects, or industry-related professionals participating in a project based setting. Roles and responsibilities of the professional interior designer; business procedures, legal-implications, ethics, trade relations, and designer-client-contractor relations. Prerequisites: CIAR 6400. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6525.

CIAR 6550. Structures and Building Systems. 3 Credits.

Organization and preparation of construction documents; methods and materials; application of codes; mechanical, electrical, and plumbing building systems as related to function and design of interior spaces. Restricted to graduate IA majors. Credit cannot be earned for this course and IA 6550.

CIAR 6800. Studio A. 6 Credits.

Students identify and solve a problem through individual design projects, then work collaboratively on a larger scale project with meaningful social impact in CIAR 6900 (Studio B). Restricted to students in the MA in interior architecture program.

CIAR 6825. Advanced Visual Communications Methods. 3 Credits.

Introduction to advanced sketching, modeling, and graphic methods that enhance students' ability to communicate their concept ideas and design projects. Restricted to graduate students.

CIAR 6850. Architectural Design Theory and Criticism. 3 Credits.

Core design ideas in interiors and architecture; analysis of and theoretical meanings behind those ideas. Includes projects related to and site visits in Washington, DC. Restricted to graduate students.

CIAR 6900. Studio B. 6 Credits.

Students design and execute a collaborative project using research and assessment developed through CIAR 6900 (Studio A). The group project is displayed at the Corcoran School of the Arts and Design final exhibition. Restricted to students in the MA in interior architecture program. Prerequisites: CIAR 6800.

CIAR 6925. Psychology of the Built Environment. 3 Credits.

Topics related to the human experience, such as social design, ethical responsibilities, and sustainability. Case study projects allow students to investigate precedents as they explore the psychological impact of design. Restricted to graduate students.

CIAR 6950. Leadership in Design. 3 Credits.

The attributes of successful leaders and how individuals come to master those qualities. Students interact with professionals in leadership and management roles in the design field. Restricted to graduate students.

CORCORAN MUSEUM STUDIES (CMST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CMST 6101. Museum Management. 3 Credits.

Overall operation of the museum; legal status of the museum and its obligations to the public, governance, staffing, and policymaking as a nonprofit organization. Theory applied to practical situations. Restricted to graduate students. Same As: MSTD 6101.

CMST 6102. Museum Financial Management. 3 Credits.

Financial management of museums, including how the roles and responsibilities of a variety of museum professionals involve financial management, revenue generation, and budgeting in order to assure a museum's daily operation, growth and sustainability. Restricted to graduate students.

CMST 6103. Leading Change. 3 Credits.

Leadership challenges and styles as they relate to organizational change efforts; museums undergoing change; best practices in leadership at all levels of the museum. Restricted to graduate students.

CMST 6104. Managing People and Projects. 3 Credits.

Organizational development and modern management concepts as applied to museums. Managing people in the organization; the importance of project management systems to museum administration. Restricted to graduate students.

CMST 6105. Museum Fundraising. 3 Credits.

Introductory topics in museum fundraising, including sources of funds, best practices and approaches, annual funds and capital campaigns, and the internal management of the fundraising effort. Restricted to graduate students.

CMST 6106. Museum Marketing. 3 Credits.

Opportunities and responsibilities within museum marketing. Development of a marketing plan; situational analysis and market research; segmentation and targeting; positioning and intent; identification of business, strategies and key performance metrics. Restricted to graduate students.

CMST 6107. Museum Ethics and Values. 3 Credits.

Ethical questions museums face in practical, political, and institutional contexts, including governance and funding, collecting and preservation, exhibiting culture, and education and public programs. Restricted to graduate students.

CMST 6201. Introduction to Museum Collections. 3 Credits.

Issues and practices in creating, controlling, protecting, and providing access to collections. Fundamentals of planning, policies, records, accession and the physical protection of objects; legal and ethical issues related to registrarial work and cultural heritage. Restricted to graduate students.

CMST 6202. Collections Management: Practical Applications. 3 Credits.

Development and implementation of policies and procedures relevant to management of museum collections. Practical experience with acquisition, documentation, loans, preservation, exhibition, storage, packing, transportation and disposal. Restricted to graduate students. Prerequisite: CMST 6201.

CMST 6203. Preventive Conservation Concepts. 3 Credits.

Histories of preventive conservation, ethics, team approaches to conservation. Basics of materials testing, interactions of materials, condition reports, museum storage and exhibition materials, and risk assessment. Restricted to graduate students. (Same as ANTH 6203).

CMST 6204. Preventive Conservation Techniques. 3 Credits.

Continuation of CMST 6203. Practical exercises and ethical issues; evaluation and monitoring of collections; development and implementation of policies and procedures to facilitate collections care. Prerequisites: One of the following: ANTH 6203, CAH 6286, or CMST 6203. Credit cannot be earned for this course and AH 6287, ANTH 6204.

CMST 6205. Archival Practice. 3 Credits.

Introduction for museum professionals to the core ideas and practices of archivists and archival institutions. Restricted to graduate students.

CMST 6206. Digitization and Digital Asset Management. 3 Credits.

Management of digital assets, projects, or programs involving digitization and access for museum professionals. Current methods in creation and dissemination of digital surrogates, associated metadata, and digital descriptive records of museum collections. Restricted to graduate students.

CMST 6301. Museum Exhibition Curatorial Research and Planning. 3 Credits.

The role of the curator in contemporary museums with an emphasis on curatorial work on exhibitions. Includes ethics, collecting, documentation, communication, scholarly research, and public presentation. Restricted to graduate students. Credit cannot be earned for this course and MSTD 6301.

CMST 6302. Museum Exhibition Design. 3 Credits.

Language, materials, and processes for developing and designing museum exhibitions.

CMST 6304. Exhibition Development and Scriptwriting. 3 Credits.

Exhibition development from a content perspective. How exhibitions incorporate storytelling, the role of the audience including community stakeholders, and the collaborative work of exhibitions teams. Restricted to graduate students. Prerequisites: CMST 6301 or permission of the Director for Graduate Studies.

CMST 6305. Visitor Perspectives: Museum Evaluation. 3 Credits.

Theory and practice of museum evaluation with emphasis on how evaluation informs stages of exhibition development, including concept generation, design, interpretation, and installation. Students conduct an evaluation study and present evaluation results to museum staff. Restricted to graduate students. Same As: MSTD 6305. Credit cannot be earned for this course and EDUC 6706.

CMST 6306. Race, Gender, Sexuality, and the Museum. 3 Credits.

Exploration of the role that museums play in the construction, reification, and representation of ideas about race and gender. Restricted to graduate students.

CMST 6307. Interpreting Historic Sites and House Museums. 3 Credits.

Interpretation of historic sites and house museums, the most common type of museum in the United States, including historical significance, visitor needs and interests, and online and on-site interpretive methods. Restricted to graduate students.

CMST 6403. Museums and Technology. 3 Credits.

Critical analysis of the historical and contemporary relationships between museums and digital technologies. How human and institutional cultures shape and are shaped by their technologies and how such ideas inform museum practices. (Same as EDUC 6710).

CMST 6404. Museums and Social Media. 3 Credits.

How museums engage users through the internet. Online platforms used to evaluate the complexities of social media including strategies, tactics, and benchmarks for measuring online engagement and associated challenges and risks. Restricted to graduate students.

CMST 6501. Museum Studies Internship. 1-3 Credits.

Individual work experience in museums of the Washington area or elsewhere. Students are supervised by staff members of the cooperating museum in the areas of museum management, object care and conservation, or exhibitions. Restricted to students in the master's and certificate programs in museum studies.

CMST 6502. Directed Research. 3 Credits.

Individual research on special topics in the museum field under supervision by a professor or museum professional. Topics must be approved by the director of the Museum Studies Program. May be repeated for credit. Restricted to graduate students.

CMST 6601. Special Topics in Museum Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CMST 6701. Museum History and Theory. 3 Credits.

Origins of the modern museum and the history of museums. Theorists whose ideas have been accessed to inform our understanding of museums as places of meaning making, power and empowerment, and cultural authority. Restricted to graduate students.

CMST 6703. Museums and Community Engagement. 3 Credits.

How museums engage with local communities as primary audiences for programming and support. Students perform community-engaged work with a local museum or historic site. Restricted to graduate students.

CMST 6704. Museums and Cultural Property. 3 Credits.

Legal and ethical principles of ownership and restitution of stolen art and other cultural property wrongfully removed from its owners or countries of origin. Current museum policies and procedures for acquisition, exhibition, retention, and restitution of their collections analyzed using claims brought against museums. Restricted to graduate students. Prerequisite: CMST 6201.

CORCORAN MUSIC (MUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MUS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

MUS 1061. Instrumental Ensemble. 1 Credit.

Chamber ensemble groups are approved by audition. Section numbers are .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19 Latin band, .20 blues band.

MUS 1071. Jazz Band. 1 Credit.

Preparation and performance of classic and contemporary "big band" literature. Prerequisite: audition before director.

MUS 1081. Orchestra. 1 Credit.

Preparation and performance of orchestral literature. Prerequisite: audition before director.

MUS 1083. University Band. 1 Credit.

Consisting of two ensembles: The University Symphonic Band and GW Colonial Brass. See schedule of classes for section information. Audition before director required.

MUS 1091. University Singers. 1 Credit.

Preparation and performance of choral literature. Prerequisite: audition before director. Section .10 is University Singers; Section .11 is Chamber Choir.

MUS 1093. University Singers/Chamber Choir. 1 Credit.

Preparation and performance of choral literature. Section .10 is University Singers; Section .11 is Chamber Choir. Prerequisites: audition before director.

MUS 1095. Vocal Theater Workshop. 1 Credit.

Development of body awareness for the stage, acting improvisations, and character development. Scenes chosen from the opera, operetta, and musical theater repertoire. Musical coaching, use of makeup, and audition preparation.

MUS 1099. Variable Topics. 1-36 Credits.**MUS 1101. Elements of Music Theory. 3 Credits.**

Elements necessary for the study of music, including practical musicianship and musical notations; develops skills in music reading, writing, and aural acuity. Concurrent registration in a music reading lab is required.

MUS 1102. Comprehensive Musicianship I. 3 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: MUS 1101.

MUS 1103. Music in the Western World. 3 Credits.

Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors.

MUS 1104. Topics in Music. 3 Credits.

A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, DC.

MUS 1105. Introduction to Musical Thought and Practice. 3 Credits.

Introduction to concepts, methods, and practices that guide the study and performance of music. Old and new paradigms of musical thought are subject to discussion and critical investigation.

MUS 1106. Introduction to Musical Performance and Experience. 3 Credits.

Through discussion, writing, and performance, students engage with issues such as the putative transcendent character of music, the false divisions between interpretation, improvisation, and composition, and the impact of modernity on expressive culture. Placing their own processes of musical decision making within these conceptual frames allows students to interrogate and develop their performative and social selves. Restricted to Register for this course in the Music department.

MUS 1107. Music of the World. 3 Credits.

Introduction to music in culture through comparative study of music from a variety of cultures worldwide.

MUS 1108. History of Jazz. 3 Credits.

Introduction to the styles, composers, and performers of jazz music from its origins to the present.

MUS 1151. Conducting. 3 Credits.

Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: MUS 2101.

MUS 1511. Piano. 1 Credit.

MUS 1512. Piano. 2 Credits.

MUS 1513. Voice. 1 Credit.

MUS 1514. Voice. 2 Credits.

MUS 1515. Organ. 1 Credit.

MUS 1516. Organ. 2 Credits.

MUS 1517. Classical Guitar. 1 Credit.

MUS 1518. Classical Guitar. 2 Credits.

MUS 1519. Violin. 1 Credit.

MUS 1520. Violin. 2 Credits.

MUS 1521. Viola. 1 Credit.

MUS 1522. Viola. 2 Credits.

MUS 1523. Cello. 1 Credit.

MUS 1524. Cello. 2 Credits.

MUS 1525. Bass. 1 Credit.

MUS 1526. Bass. 2 Credits.

MUS 1527. Flute. 1 Credit.

MUS 1528. Flute. 2 Credits.

MUS 1529. Recorder. 1 Credit.

MUS 1530. Recorder. 2 Credits.

MUS 1531. Oboe. 1 Credit.

MUS 1532. Oboe. 2 Credits.

MUS 1533. Clarinet. 1 Credit.

MUS 1534. Clarinet. 2 Credits.

MUS 1535. Saxophone. 1 Credit.

MUS 1536. Saxophone. 2 Credits.

MUS 1537. Bassoon. 1 Credit.

MUS 1538. Bassoon. 2 Credits.

MUS 1539. French Horn. 1 Credit.

MUS 1540. French Horn. 2 Credits.

MUS 1541. Trumpet. 1 Credit.

MUS 1542. Trumpet. 2 Credits.

MUS 1543. Trombone. 1 Credit.

MUS 1544. Trombone. 2 Credits.

MUS 1545. Tuba. 1 Credit.

MUS 1546. Tuba. 2 Credits.

MUS 1547. Harp. 1 Credit.

MUS 1548. Harp. 2 Credits.

MUS 1549. Percussion. 1 Credit.

MUS 1550. Percussion. 2 Credits.

MUS 1555. Lute. 1 Credit.

MUS 1556. Lute. 2 Credits.

MUS 1557. Harpsichord. 1 Credit.

MUS 1572. Jazz Performance Techniques. 2 Credits.

MUS 2012. Piano. 2 Credits.

Prerequisite: Open by examination.

MUS 2014. Voice. 2 Credits.

Prerequisite: Open by examination.

MUS 2016. Organ. 2 Credits.

Prerequisite: Open by examination.

MUS 2018. Classical Guitar. 2 Credits.

Prerequisite: Open by examination.

MUS 2020. Violin. 2 Credits.

Prerequisite: Open by examination.

MUS 2022. Viola. 2 Credits.

Prerequisite: Open by examination.

MUS 2024. Cello. 2 Credits.

Prerequisite: Open by examination.

MUS 2026. Bass. 2 Credits.

Prerequisite: Open by examination.

MUS 2028. Flute. 2 Credits.

Prerequisite: Open by examination.

MUS 2030. Recorder. 2 Credits.

Prerequisite: Open by examination.

MUS 2032. Oboe. 2 Credits.

Prerequisite: Open by examination.

MUS 2034. Clarinet. 2 Credits.

Prerequisite: Open by examination.

MUS 2036. Saxophone. 2 Credits.

Prerequisite: Open by examination.

MUS 2038. Bassoon. 2 Credits.

Prerequisite: Open by examination.

MUS 2040. French Horn. 2 Credits.

Prerequisite: Open by examination.

MUS 2042. Trumpet. 2 Credits.

Prerequisite: Open by examination.

MUS 2044. Trombone. 2 Credits.

Prerequisite: Open by examination.

MUS 2046. Tuba. 2 Credits.

Prerequisite: Open by examination.

MUS 2048. Harp. 2 Credits.

Prerequisite: Open by examination.

MUS 2050. Percussion. 2 Credits.

Prerequisite: Open by examination.

MUS 2058. Harpsichord. 2 Credits.

Prerequisite: Open by examination.

MUS 2071. Jazz Performance Techniques. 1-3 Credits.

MUS 2072. Jazz Performance Techniques. 2 Credits.

Prerequisite: Open by examination.

MUS 2101. Harmony. 3 Credits.

Study of tonal harmonic practice from Baroque, Classical, Romantic, and twentieth-century repertoires. Concurrent registration in the weekly keyboard lab is required.

Prerequisite: MUS 1102.

MUS 2102. Comprehensive Musicianship II. 3 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard.

Prerequisite: MUS 2101.

MUS 2105. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor.

Application and critique of models in the design and execution of student independent field research. Prerequisites: MUS 1101 or ANTH 1002 or ANTH 1004; or permission of the instructor.

Same As: ANTH 2505.

MUS 2105W. Introduction to Ethnomusicology. 3 Credits.

Models of understanding music as a cultural endeavor.

Application and critique of models in the design and execution of student independent field research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites:

MUS 1101 or ANTH 1002 or ANTH 1004; or permission of the instructor. Same As: ANTH 2505.

MUS 2106. Music History III: Twentieth-Century Art Traditions. 3 Credits.

Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society.

Prerequisite: MUS 1101.

MUS 2122. Music in the U.S.. 3 Credits.

History of music and musical life in the United States,

emphasizing relationships among traditions of diverse origin.

Prerequisites: MUS 1101 or permission of the instructor.

MUS 2122W. Music in the U.S.. 3 Credits.

History of music and musical life in the United States,

emphasizing relationships among traditions of diverse origin.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

Prerequisites: MUS 1101 or permission of the instructor. Same As: MUS 2122.

MUS 2123. Musical Cultures of Black Americans. 3 Credits.

Musical genres and styles developed by African Americans since Reconstruction in their historical and cultural contexts.

Emphasis on black musical contributions to the cultural life of Washington, DC.

MUS 2134. Composition. 3 Credits.

Introduction to twenty-first-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit.

Prerequisite: MUS 2101.

MUS 2140. Pedagogy. 3 Credits.

Principles, materials, and methods of teaching in selected

areas. Permission of the instructor required prior to enrollment.

MUS 2173. Comprehensive Musicianship for Jazz. 2 Credits.

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance. Prerequisite: MUS 1102.

MUS 2174. Introduction to Jazz Harmony. 3 Credits.

Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context. Prerequisite: MUS 1102.

MUS 2318. Orchestral Instrument. 2 Credits.

Prerequisite: Open by examination.

MUS 2661. Electronic and Computer Music I. 3 Credits.

Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee.

MUS 2662. Electronic and Computer Music II. 3 Credits.

Continuation of MUS 2661. Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing, properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee. Prerequisite: MUS 2661.

MUS 3099. Variable Topics. 1-12 Credits.

MUS 3126. Music History I: Antiquity through Early Baroque. 3 Credits.

The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: MUS 1102 and sophomore standing.

MUS 3127. Music History II: The Tonal Era. 3 Credits.

Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: MUS 1102.

MUS 3127W. Music History II: Tonal Era. 3 Credits.

Styles, structures, social foundations and aesthetic change in European music of the late seventeenth through the late nineteenth centuries. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: MUS 1102.

MUS 3139. Form and Analysis. 3 Credits.

Analysis of musical forms in representative musical literature. Prerequisite: MUS 2101.

MUS 3139W. Form and Analysis. 3 Credits.

Analysis of musical forms in representative musical literature. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: MUS 2101.

MUS 3174. Topics in Music Theory and Composition. 3 Credits.

A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of fourteenth-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

MUS 3175. Topics in Music History and Literature. 3 Credits.

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, DC. Prerequisites depend on the topic; consult the department. Credit cannot be earned for this course and TRDA 2185.

MUS 3175W. Topics in Music History and Literature. 3 Credits.

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, DC. Prerequisites depend on the topic; consult the department. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and TRDA 2185.

MUS 4085. Senior Capstone Project. 2-4 Credits.

Research, composition, or performance project. Students must consult with a faculty mentor and present a written proposal prior to enrollment and meet regularly with their mentor throughout the semester. Restricted to senior music majors. Recommended background: prior completion of MUS 4198.

MUS 4184. Advanced Composition. 3 Credits.

Private instruction in composition in tutorial format. Prerequisite: MUS 2134.

MUS 4198. Senior Seminar. 3 Credits.

Methodologies of musical research, including studies in performance, composition, history, bibliography, and cultural theory. Recommended for students completing senior capstone projects. Restricted to music majors.

MUS 4199. Independent Research. 1-4 Credits.

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite.

MUS 4199W. Independent Research. 1-4 Credits.

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take MUS 4198 as a corequisite. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MUS 5099. Variable Topics. 1-99 Credits.

CORCORAN PHOTOJOURNALISM (CPJ)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPJ 2091. Photojournalism Studio Sequencing and Narrative Strategies. 3 Credits.

Techniques, practices, and ethics of photojournalism. Strategies for researching, photographing, editing, and interpreting stories and sequences; advancing technical skills; history and contemporary practices of visual journalism. Prerequisites: CSA 1501 or CSA 1502 or CPH 1091. Recommended background: prior completion of CSA 2090 or SMPA 2113.

CPJ 3090. Photojournalism Studio Visual Reportage. 3 Credits.

Similarities and differences in photojournalism in newspapers, magazines, television, the internet, and other media, including still and moving images, writing and editing needs in a variety of assignments, journalistic ethics, and communication laws. Prerequisites: One of the following: CSA 2090, CPJ 2090, or CPJ 2091.

CPJ 3091. Photojournalism Studio Multimedia Storytelling. 3 Credits.

Comparison of modes of practice, journalistic ethics, and communication laws with a focus on multimedia approaches to storytelling. Prerequisites: One of the following: CSA 2090, CPJ 2090, or CPJ 2091. Recommended background: Prior completion of CPJ 3090.

CPJ 3300. Speed of Sound. 3 Credits.

Great audio is a key component to compelling multimedia and video. Over the course of this class, audio reporting, collection, and postproduction techniques are explored and put into practice as a means to sharpen skills and advance understanding of the role and power of audio in visual journalism. Prerequisites: CPH 3050 and CPJ 2090 or CPJ 2091, or CPH 2090 and CPH 2091.

CPJ 4050. Picture Editing. 3 Credits.

CPJ 4090. Photojournalism Thesis I. 3 Credits.

In the final year of the Photojournalism curriculum, the emphasis is on developing individual strengths and style in the context of a sophisticated understanding of how photographic media shape and reflect public opinion. Students define, propose, research and initiate a longterm project that culminates in the Spring semester Senior Thesis exhibit. Intensive one-on-one and group critiques are integrated into the course as the students explore various approaches to their chosen subject matter. Prerequisites: CPJ 3091 and permission of the department.

CPJ 4091. Photojournalism Thesis II. 3 Credits.

This course continues the objectives of CPJ 4090 and focuses on the completion of the students' thesis work, which results in an exhibition at the Corcoran Gallery. Portfolio development and critique prepares students for the onset of their careers. Prerequisites: CPJ 4090 Photojournalism Thesis I and permission of the department.

CPJ 4170. Professional Practices for Photojournalism. 3 Credits.

This classroom complement to students' internship experiences examines the professional contexts in which today's photojournalism takes place and incorporates business practices, ethics, and economic realities. Practical approaches for working across multiple platforms are explored. Students meet with working professionals and experts during the semester and develop their portfolios, resumes and web identities for presentation in meeting the professional demands of the field. Restricted to photojournalism majors. Prerequisite: CPJ 3091.

CPJ 4340. Project-Driven Website Design. 3 Credits.

Technical and conceptual introduction to web design; visual design; fundamentals of website structure and navigation; accessibility and usability; writing HTML and CSS; content management systems; the web as a platform for both client-driven and self-published work. Prerequisites: CDM 1200 or CDM 2220 or CFN 1000.

CPJ 4600. Web Essay. 3 Credits.

This class teaches photographers to build essays with still photography images and audio files. Over the course of the semester students propose, research, edit and produce a series of audio/stills essays for web publication. Skills in developing and executing photo stories are addressed, in addition to effective audio gathering and editing. Audio gear and laptops required. Prerequisites: CPH 2090 or CPJ 2090 or permission of the department.

CPJ 6010. New Media Photojournalism Image and Impact. 3 Credits.

Traditional and nontraditional uses of photographic imagery in the media. Finding the elements within an image, sequence or mode of publication that are most effective in communicating a concept or representing human experience. Restricted to students in the MA in new media photojournalism program or with the permission of the instructor.

CPJ 6020. Topics in Photo Editing Studio Seminar. 3 Credits.

The function of editing in photojournalism as catalyst for public discourse through intentional audience engagement. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to students in the MA in new media photojournalism program or other graduate students with portfolio review and permission of the Director of Graduate Studies. Prerequisite: CPJ 6010.

CPJ 6024. Photojournalism Seminar II: Danish Embassy. 3 Credits.

To be announced.

CPJ 6025. Photojournalism Seminar II: Theories of Change/ New Forms of Radical Photography. 3 Credits.

In questioning how photographers collaborate with NGO's, policy makers, community activists and many others, this course examines if and how creative work can radicalize civic institutions like the press, citizenship and even government toward greater justice and equity. With a focus on three arenas examined through visual arts: violence, the environment and global equity; the class presents students with a comprehensive window into the discourse and practice(s) of socially engaged art, film, and photography. Through critical discussions, field trips, and visiting artists, the class creates a blueprint and staging ground for students to activate these ideas within their own areas of interest.

CPJ 6050. Advanced Multimedia Lab I. 3 Credits.

Technical production skills to support the development of complex new media photojournalism projects. Audio and video collection and post-production, integration of still images, and web-based project production. Restricted to students in the MA in new media photojournalism program or with the permission of the instructor.

CPJ 6060. Advanced Multimedia Lab II: Editing and Production. 3 Credits.

Continued development of technical production skills to support the development of complex new media photojournalism projects. Audio and video collection and post-production, integration of still images, and web-based project production. Restricted to students in the MA in new media photojournalism program or with the permission of the instructor.

CPJ 6100. Research, Reporting, and Writing: Contemporary Journalism Practice. 3 Credits.

Students go beyond the basics in story coverage exploring effective research techniques, interview techniques, and writing for breaking news as well as short and long term projects. Through lectures, writing assignments, intensive workshops as well as individual and team assignments, students develop and begin to hone the skills of effective story coverage for web and print publications. This course works closely with the Photojournalism Story and Narrative and Advanced New Media Lab courses. A critical reading of contemporary media is emphasized throughout the course.

CPJ 6110. Story and Narrative in Photojournalism. 3 Credits.

At the heart of photojournalism is the human condition and the day-day-lives of those around us. Through this course students analyze effective visual story telling with still images. Students develop an understanding of what makes a strong photo story and how to pursue compelling images. A series of student-generated projects is completed through the course of the semester.

CPJ 6225. Making Meaning Through the Photography Book. 3 Credits.

An advanced course that engages with the traditions and current practices of the photographic book to examine and explore narrative strategies useful to contemporary artists/ photographers. Students structure their own photographic books. Prerequisites: CPJ6110 or permission of instructor.

CPJ 6300. Speed of Sound. 3 Credits.

Great audio is a key component to compelling multimedia and video. Over the course of this class, audio reporting, collection, and postproduction techniques are explored and put into practice as a means to sharpen skills and advance understanding of the role and power of audio in visual journalism. Prerequisite: CPJ 6050.

CPJ 6400. Fine Printing Technique. 3 Credits.

Students refine approaches to editing and digital printing of photographs; develop an efficient workflow; and integrate advanced digital techniques and approaches to serve the content of the image and the intentions of the image-maker. Restricted to graduate students. Prerequisites: CPJ 6110. Recommended background: prior completion of new media photojournalism first-year curriculum.

CPJ 6401. El Salvador Travel: International Experience/Transnational Identity. 3 Credits.

The travel component of the course provides an opportunity for cultural exchange and for the application of an integrated model of art and social practice in a global/local context. By in situ exploration, conducting video interviews of artists and key cultural figures, and by leading educator workshops for youth, Corcoran students partner with students in El Salvador, empower young people, provide new models of engagement, and together construct a visual document of the artistic scene of the 1980s in El Salvador and its relevance to the current, transnational, cultural milieu. Travel expenses for CPH 3401 are additional. Pre-requisite: CPH 3400/6400 or permission by the instructor.

CPJ 6500. New Media Photojournalism Capstone Production Workshop. 3 Credits.

Workshop for research, pre-production, and production of a multimedia capstone project for the new media photojournalism program. Required of and restricted to anyone who is working on NMPJ capstone requirements and completion of the degree. Restricted to students in the MA in the new media photojournalism program. Prerequisites: CPJ 6010, CPJ 6050, CPJ 6060, CPJ 6100, and CPJ 6110. Corequisites: CPJ 6550.

CPJ 6501. New Media Photojournalism Capstone Post-Production Workshop. 3 Credits.

Multimedia post-production course designed to support completing capstone video and photo reporting projects, public and community engagement presentations and exhibits, and publication. Restricted to students in the MA in the new media photojournalism program. Prerequisites: CPJ 6500 and CPJ 6550.

CPJ 6540. Project-Driven Website Design. 3 Credits.

Technical and conceptual introduction to web design as part of the visual storytelling and publication. Explores visual design; fundamentals of website structure and navigation; accessibility and usability; writing HTML and CSS; and content management systems. Deadlines align with spring capstone. Recommended background: Intended for students working with a large body of work for capstone or thesis visual projects. Credit cannot be earned for this course and CPJ 4340.

CPJ 6550. New Media Photojournalism Capstone Research and Reporting. 3 Credits.

The essential elements of effective and ethical longer-form reporting and writing in both print and online media are addressed using case studies, reporting and writing assignments, and in-class exercises. Restricted to students in the MA in new media photojournalism program. Prerequisites: CPJ 6010, CPJ 6050, CPJ 6060, CPJ 6100, and CPJ 6110. Corequisites: CPJ 6500.

CPJ 6560. NMPJ Capstone Travel Project Production. 3-6 Credits.

Structured support of capstone production involving extensive travel outside of the Washington, DC, region. For detailed information concerning eligibility, approval, course structure, requirements, and costs consult the NMPJ program advisor. Restricted to students in the MA in new media photojournalism program. Prerequisites: CPJ 6010, CPJ 6050, CPJ 6060, CPJ 6100, and CPJ 6110; and CPJ 6020 or CPJ 6225; and CPJ 6550 or equivalent (permission of the program advisor is required).

CPJ 6570. Nuancing the Story: Advanced Video Post-Production. 3 Credits.

Examination and practical application of video post-production practices and techniques such as story design, motion graphics and visual effects. Students apply and master skills to edit existing projects and prepare a professional demo reel of work. Restricted to students in the MA in new media photojournalism program or with the permission of the program director or the instructor. Prerequisites: CPJ 6010, CPJ 6020, CPJ 6050, CPJ 6060, CPJ 6100, CPJ 6110, CPJ 6500, and CPJ 6550.

CPJ 6600. Web Essay: Effective Storytelling with Audio and Images. 3 Credits.

This class teaches photographers to build essays with still photography images and audio files. Over the course of the semester students propose, research, edit and produce a series of audio/stills essays for web publication. Skills in developing and executing photo stories are addressed as are effective audio gathering and editing. Audio gear and laptops required. Restricted to students with advanced level with still photography skills; advanced knowledge of Adobe Premiere or Final Cut required of graduate students. Prerequisites: CPH 2090 and CPJ 2090 or permission of department for BFA and BA students; CPJ 6110 and CPJ 6050 or portfolio review and permission of department for graduate students. Recommended background: Advanced abilities in still photography and/or photojournalism. (Same as CPJ 4600).

CPJ 6640. Advanced Studio Lighting: Commission Project. 3 Credits.

Students work collaboratively with two professional photographers to produce 5-10 photographic portraits and 5-10 short videos of Foreign Service employees for an exhibition at the U.S. Department of State's new U.S. Diplomacy Center. Through an immersive, hands-on approach, students learn the different aspects of commissions and exhibitions, including research, project management, collaboration and production. Students also learn about historical and contemporary aesthetic approaches to photographic portraiture and master technical issues such as lighting and interviewing skills. This course is aimed toward photography and photojournalism students who want to learn to work collaboratively in a real-life commission situation.

CPJ 6800. Independent Study: Photojournalism. 3 Credits.

This option is appropriate for degree students who want access to independent faculty supervision, lab areas, and supplies for independent projects, and do not need or desire extensive course instruction.

CPJ 6900. Internship: MA Photojournalism. 3 Credits.

For degree students only. Internships can help students develop marketable skills, establish professional contacts, and explore different career options.

CORCORAN STUDIO ARTS (CSA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CSA 1090. Fine Art Fundamentals I. 3 Credits.

Exploration of techniques in acrylic and oil painting through studio practice, personal development, and art historical contexts.

CSA 1091. Fine Art Fundamentals II. 3 Credits.

Foundational digital software and equipment, concepts, and techniques. Exploration of cultural and theoretical aspects of digital media: truth v. fiction, digital narratives, virtual boundaries, personae, and the social media landscape. Restricted to Students who have not taken CSA 1601.

CSA 1101. Introduction to Handbuilt Ceramics. 3 Credits.

Introduction to working with clay as an art form; fundamental hand-building techniques such as pinch, coil, and slab; basic surface, glaze, and firing techniques. Introductory history of ceramics. Credit cannot be earned for this course and FA 1014.

CSA 1102. Introduction to Wheelthrown Ceramics. 3 Credits.

Introduction to wheelthrowing in ceramics; the potter's wheel as a tool to make ceramic cylindrical, open forms, and vessels; slips, underglazes, and glazes; reduction and oxidation kiln firing; the role of wheel-thrown pottery in historic and contemporary cultures. Credit cannot be earned for this course and CCR 1253, FA 1015.

CSA 1201. Sculpture Fundamentals: Material Investigations. 3 Credits.

Beginning study of design and fabrication of sculpture. Introduction to sculptural techniques across multiple media, with a focus in hand-built processes including textile, wood, and found object techniques. Materials fee. Credit cannot be earned for this course and CFA 1092, CFN 1091.

CSA 1301. Drawing Fundamentals. 3 Credits.

Fundamentals of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life. Traditional and contemporary strategies and skills for developing technique, process, and meaning. Conceptual issues. Materials fee. Credit cannot be earned for this course and CFN 1090, FA 1301.

CSA 1401. Painting: Visual Thinking. 3 Credits.

Development of technical and perceptual skills that are the foundation of visual expression. Introduction to the mechanics of paint handling, including how to begin a painting, apply paint, and model form. Value, line, color, and abstraction. Credit cannot be earned for this course and CFA 1091.

CSA 1501. Black and White Photography Fundamentals. 3 Credits.

Materials and processes of black and white chemical photography; camera operations, film processing, printing, and presentation methods; the visual language of photography: historical antecedents, contemporary practices, and strategies of critical interpretation.

CSA 1502. Introduction to Digital Color Photography. 3 Credits.

Materials and processes of digital color photography; color theory, exposure techniques, film scanning, digital color correcting, and printing; the use of color as a means of visual communication and creative expression, historical antecedents, contemporary practices, and strategies of critical interpretation.

CSA 1601. New Media Digital Art. 3 Credits.

Introduction to the tools and processes of digital, electronic, and time-based arts; development of technical skills necessary for using the computer as a creative tool.; the history and current role of digital representation and distribution in art, ideas, and relationships.

CSA 1701. Printmaking Medium and Materials Workshop. 3 Credits.

Introduction to printmaking media and their use in historic and contemporary artistic practice. Multi-faceted relationships of printmaking with photography, sculpture, painting, and other media. Recommended background: Prior completion or simultaneous enrollment in CFN 1090, CSA 1301, or FA 1301.

CSA 1702. Screenprinting. 3 Credits.

Fundamental techniques required to produce hand-pulled screen prints and their context within printmaking and contemporary art. History of screen printing and its role as a fine art, mass media, and commercial tool. Same As: CSA 2702.

CSA 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

CSA 2001. Concept Lab. 3 Credits.

Connecting concept, materials, media, and audience; addressing challenges using materials and media. Cross-disciplinary thinking and individual and collaborative creative practices as well as historical, contemporary, and theoretical context of art works.

CSA 2090. Photography/Photojournalism Studio Documentary Modes and Constructed Realities. 3 Credits.

How photographic processes construct perception of truth and fiction; approaches to image making and interpretation, strategies for editing, and advancing technical skills while developing awareness of photographic traditions and contemporary practices, including photojournalism and documentary modes. Prerequisites: One of the following: CPH 1091, CSA 1501, or CSA 1502. (Same as CPJ 2090).

CSA 2092. Fine Art Studio Experimental Materiality. 3 Credits.

Investigation of materiality and investigation of the meanings and effects of material choices in creative practice. Focus on innovative and unusual materials along with experimental uses of traditional art materials. Restricted to students in the fine arts program or with the permission of the instructor. Prerequisites: At least two of the following courses: CFN 1090, CFN 1091, CFN 1092, CFN 1093.

CSA 2111. Ceramic Design in Handbuilt Forms. 3 Credits.

Further development of handbuilding techniques in ceramic sculpture; pinching, coiling, paddling, and hollowing; use of slabs and hump and press molds. Students produce clay and glazes and experiment with those materials in various reduction and oxidation firing ranges. Prerequisites: One of the following: CSA 1101, CSA, 2101, or FA 1101.

CSA 2112. Ceramic Wheelthrown Forms. 3 Credits.

Use of the wheel to create intricate elements and practices that accompany advanced functional and non-functional ceramic forms, including sculptural applications. Clay and glazes in various reduction and oxidation firing ranges; relationships between clay, surface, and fire. Prerequisites: One of the following: CSA 1102, CSA 2101, or FA 1102. Credit cannot be earned for this course and CCR 2253.

CSA 2113. Intermediate Sculpture in Clay. 3 Credits.

Methods of clay construction relating to sculptural form and aesthetic concerns of sculptural objects. Traditional hand building methods and innovative forming techniques; production of discreet objects and multiples; finishes and firing techniques. Prerequisites: One of the following: CFA 2126, CSA 1101, CSA 2101, or FA 1101. Credit cannot be earned for this course and CCR 2380.

CSA 2211. Sculpture Fabrication. 3 Credits.

Intermediate to advanced fabrication techniques including woodworking, metal fabrication, mold-making, and textiles; developing safe and creative uses of more advanced sculptural techniques and tools in the development of a body of work. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 2214. Metals and Metalworking. 3 Credits.

Introduction to a variety of processes for working with metal alone or with other materials, including forming, cutting, joining, casting, and 3D printing, and their application to contemporary sculpture. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 2215. Mold Making and Casting. 3 Credits.

Introduction to a variety of mold making and casting techniques and materials, discussion of the possibilities of the multiple, and their application to contemporary art. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 2216. Form in Wood. 3 Credits.

Applications of wood as a material for art and design practice; expanded techniques for milling, joining, bending, and shaping; exploration of the physical, historical, and conceptual properties of wood as a living material. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 2311. Intermediate Drawing: Perception and Mark Making. 3 Credits.

Conventional and unconventional materials, techniques, and prepared surfaces; perceptual and conceptual development; observational practice of drawing; and exploration of historical and contemporary developments in drawing. Prerequisites: One of the following: CFA 1090, CFA 1091, CFN 1090, CSA 1301, CSA 1401, or FA 1301. Credit cannot be earned for this course and CFA 2200.

CSA 2411. Painting: Watercolor. 3 Credits.

Introduction to the fundamental tools, materials, and methods of watercolor painting. Addresses line, shape, value, color relationships, and composition, and techniques such as color mixing, washes, and painting in layers. Prerequisites: One of the following: CFA 1091, CFA 2124, CSA 1401, CSA 2401, or FA 1401.

CSA 2412. Painting a Figure. 3 Credits.

Perceptual painting of the figure with a focus on developing visual analysis skills. Materials, construction processes, and formal language of painting. Narrative and symbolic language and political critiques of representation. Prerequisites: One of the following: CFA 1091, CFA 2124, FA 1401, CSA 1401, or CSA 2401.

CSA 2413. Intermediate Painting: Process and Materials Lab. 3 Credits.

Traditional and experimental contemporary materials, construction, and application processes used in fine art painting. Support structures, grounds, paints, application tools, and actions by the painter. Prerequisites: One of the following: CFA 1091, CFA 2124, CSA 1401, CSA 2401, or FA 1401.

CSA 2502. Time-based Media Lab. 3 Credits.

Video and audio production with a focus on the skills needed to be a technically proficient and thoughtful media maker. Basic techniques in recording, editing, and production management and conceptual and technical analyses in pop culture, art history, and documentary studies. Restricted to students in the BFA in fine art photography and in photojournalism programs or with the permission of the instructor. Prerequisites: CPH 1091 or CSA 1052.

CSA 2511. Photography: Abstraction Versus Representation. 3 Credits.

Theory and practice of abstract and representational photography in historical and contemporary contexts; chemical and digital photographic processes. Prerequisites: One of the following: CPH 1091, CSA 1501, CSA 1502, or FA 1502.

CSA 2512. Photography: Altered Landscapes. 3 Credits.

Investigation of images of place in contrast to conventions of landscape photography; historical and contemporary contexts; chemical and digital photographic processes. Prerequisites: One of the following: CPH 1091, CSA 1501, CSA 1502, or FA 1502.

CSA 2513. Photography: From Photograms to Scanograms. 3 Credits.

Low-tech methods of producing analogue photographs and generating digital images. Working in both the chemical darkroom and digital lab. Analyzing examples of photography from the earliest practitioners to work being produced by contemporary artists. Prerequisites: One of the following: CPH 1091, CSA 1501, CSA 1502, or FA 1502.

CSA 2570. Studio and Location Lighting. 3 Credits.

Introduction to studio and location lighting. Strobe and continuous lighting equipment; light modifiers and grip equipment; mixed sources light; and aesthetic approaches using artificial and ambient light. Prerequisites: CPH 1091, CSA 1501, CSA 1502, FA 1501, or FA 1502.

CSA 2611. Video Art. 3 Credits.

The skills needed to be a technically proficient and thoughtful video maker. History of video art since 1965; avant-garde moving image languages; and theoretical and social contexts that have informed the development and use of the medium. Prerequisites: CFN 1092, FA 1502, or FA 1601.

CSA 2701. Printmaking Medium and Materials Workshop. 3 Credits.

Introduction to printmaking media and their use in historic and contemporary artistic practice; multi-faceted relationships of printmaking with photography, sculpture, painting, and other media. Materials fee. Recommended background: CFN 1090, CSA 1301, or FA 1301.

CSA 2702. Screenprinting. 3 Credits.

Fundamental techniques required to produce hand-pulled screen prints and their context within printmaking and contemporary art; history of screen printing and its role as a fine art, mass media, and commercial tool. Materials fee. Same As: CSA 1702.

CSA 2703. Wood Block Print. 3 Credits.

Traditional and contemporary methods of wood block printing; techniques for incorporating wood block and other media in the creation of individual and multiple prints and objects; uses of woodblock printing in historical contexts and in contemporary art. Materials fee.

CSA 2705. Collagraph and Mixed-Media Printmaking. 3 Credits.

Production of multiple print editions using collaged and mixed-media printmaking techniques, including including, sandographs for the Vandercook press, silk organza, traditional collaged plates and paper prints; historical and contemporary examples and development of critical language for analyzing print media. Materials fee.

CSA 2706. Lithography. 3 Credits.

Introduction to lithographic printmaking as a versatile tool for manipulating photographic images and as an expressive drawing medium. Materials fee. Recommended background: CFN 1090 or CSA 1301 or FA 1301.

CSA 2760. Book Arts: Concept and Content. 3 Credits.

Fundamentals of developing book art structures and artist's books; construction and bindings, text and image-making techniques, and utilizing design, photography, and writing as source materials for book projects. Materials fee.

CSA 3020. Topics in Photography and Photojournalism. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CPJ 2090, CPH 2090, CSA 2090, or CSA 2091. (Same as CPJ 3120).

CSA 3020W. Topics in Photography and Photojournalism. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CPJ 2090, CPH 2090, CSA 2090, or CSA 2091. Credit cannot be earned for this course and CSA 3020.

CSA 3021. Topics in Fine Art Seminar. 3 Credits.

Theoretical, historical, material, political and poetic context of topics in contemporary art and culture. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Restricted to juniors and seniors.

CSA 3021W. Topics in Fine Art Seminar. 3 Credits.

Theoretical, historical, material, political, and poetic context of topics in contemporary art and culture. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to junior and seniors in the BA in fine arts program; in the BFA in fine art, graphic design, interaction design, and photojournalism programs; or with the permission of the instructor.

CSA 3092. Fine Art Studio Critical Practices in Making. 3 Credits.

Students create work in response to conceptually oriented questions in media with focus on the structure and rhythm of their creative practice, consideration of the lives and politics of objects, and processes of individual and collective action. Emphasis on technical, conceptual, and aesthetic development. Materials fee. Restricted to BFA in fine art majors; BA in fine arts majors with the permission of the instructor. Prerequisites: CFA 2090 and CSA 2092. Recommended background: Prior completion of CSA 2093.

CSA 3101. Special Topics: Ceramics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CFA 2126, CSA 1101, CSA 2101, or FA 1101.

CSA 3120W. Topics in Photography and Photojournalism. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CPJ 2090, CPH 2090, CSA 2090, or CSA 2091. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and CSA 3020.

CSA 3201. Special Topics: Sculpture. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 3202. Sculpture Digital Forms. 3 Credits.

Applications of digital fabrication to a multi-media contemporary art practice. The intersection between digital and physical methods of fabrication. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201. Credit cannot be earned for this course and FA 2213.

CSA 3240. Wear, Strut, Occupy. 3 Credits.

Costume, adornment and the relationship between individual, material, and context, including wearable sculpture, fashion, performance, and wearer/performer identity. Practical experience with clothing design and interpretation through a variety of costume design projects. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 3241. Installation Art. 3 Credits.

Installation and sculpture through the lens of site specificity, architecture, media, and landscape. Theoretical dialogue of context and material as well as the practical issues of fabrication and implementation. Prerequisites: One of the following: CFA 1092, CFN 1091, CSA 1201, or FA 1201.

CSA 3301. Special Topics: Drawing. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CFA 1090, CFA 1091, CFN 1090, CSA 1301, CSA 1401, or FA 1301.

CSA 3401. Special Topics: Painting. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: CFA 1091, CFA 2124, CSA 1401, CSA 2401, or FA 1401.

CSA 3501. Special Topics in Photography. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: One of the following: FA 1501, FA 1502, CPH 1091, CSA 1502, or CSA 1501.

CSA 3510. Pre-Digital Alternative Process. 3 Credits.

Investigation of alternative photographic processes such as albumen, salted paper, gum bichromate, platinum/ palladium, and mordantage, leading to a fully realized portfolio, book, or other independent project. Prerequisites: One of the following: CPH 1091, CSA 1501, or FA 1501. Recommended background: prior completion of CPH 2090 or CSA 2090. Credit cannot be earned for this course and CPH 3450.

CSA 3535. Advanced Digital Photography. 3 Credits.

Enhancement of digital camera, editing, and printing techniques through advanced approaches. Connecting process with content of the image and intentions of the image-maker. Development of individual image-making abilities and personal approach. Prerequisites: CPH 2100 or CSA 1502. Recommended background: Prior completion of CSA 2090.

CSA 3536. Making Meaning in the Photography Book. 3 Credits.

Methods of developing narrative and non-narrative photo books, including assembly of individual photographs and texts into sequential form. Historical and contemporary strategies of making meaning. Prerequisites: One of the following: CPH 1091, CSA 1501, CSA 1502, FA 1501, or FA 1502. Recommended background: CSA 2091.

CSA 3540. Advanced Lens-Based Commissions Project. 3 Credits.

Through a real-world collaborative project students learn the aspects of commission and exhibition work including research, project management, and production. Advanced lighting and interviewing skills, problems in historical and contemporary portraiture. Commissions vary by semester. Prerequisites: CSA 2570 or SMPA 2113. Credit cannot be earned for this course and CPH 3640.

CSA 3601. Special Topics: Time-Based and Electronic Media. 3 Credits.

Issues in contemporary time-based and electronic media. Topics vary by semester. May be repeated provided the topic differs. See the schedule of classes for more details. Prerequisites: CDE 1091, CSA 1502, CSA 1601, or SMPA 2012.

CSA 3606. Performative Media. 3 Credits.

Development and production of performance-based art works. Elements of performance (text, movement, sound, video, ritual, social practice). Narrative and theoretical approaches to performance art and works for stage, video, or installation.

CSA 3612. Video: Remixing the Archive. 3 Credits.

Use of existing moving image and sound in video, live remix or sources for performance in arts and documentary contexts. Narrative and theoretical approaches to mediated memory. Introduces students to the substantial archival resources in Washington, DC, and online collections. Prerequisites: CSA 2502, CSA 2601 and SMPA 2112 or related coursework with the permission of the instructor.

CSA 3613. Site and Sound. 3 Credits.

Contemporary sonic art practice and audio production; audio storytelling, spatialized sound, and site-based sonic artwork; critical perspectives on sound and audio practice. Prerequisites: CFN 1093 or CSA 1502 or CSA 1601 or SMPA 2112.

CSA 3710. Special Topics in Print Media. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Permission of the instructor may substitute for prerequisites. Prerequisites: CFA 2125, CPR 2300, CPR 2423, CPR 2403, CSA 2701, CSA 2702, CSA 2703, CSA 2705, CSA 2708 and CSA 2760.

CSA 3712. Letterpress From the 1400s to the Digital Age. 3 Credits.

Traditional and contemporary letterpress and relief printing applications; typesetting; presswork, inking, editioning, and Vandercook press operation; black and white relief printing, reduction printing; and experimental collagraph techniques. Materials fee.

CSA 3716. Advanced Printmaking: Screenprinting and Woodblock. 3 Credits.

Exploration of woodblock as discrete practice and in combination with screenprinting, painting, sculpture, and photography. Historical examples examined. Contemporary artists introduced through site visits and field research. Recommended background: CSA 1701, CSA 1702, and CSA 1703.

CSA 3901. Special Topics: Cross-Disciplinary Studio Arts. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Recommended background: Prior coursework in the media or topics covered.

CSA 3912. The Cinematic in Contemporary Art. 3 Credits.

The influence of cinema on contemporary art in historical, conceptual, and aesthetic contexts. Students employ cinematic strategies through projects that explore setting, sequencing, camera angle, point of view, tracking, lighting, performance, narrative, and sound. Prerequisites: CFN 1092 or CSA 1502 or CSA 2502 or CSA 2601.

CSA 3913. Painting Off the Wall. 3 Credits.

Nontraditional approaches to painting, including manipulation of its structural aspects. Painting combined with other creative fields such as architecture, sculpture, social practice, performance, and film/video. Prerequisites: One of the following: CSA 2401, CSA 1401, TRDA 4338, FA 1401, CFA 2124, or CFA 1091. Credit cannot be earned for this course and FA 3913.

CSA 3914. Art Outside the Gallery. 3 Credits.

Site-specific art practices emphasizing a variety of forms of public art, artist-run spaces, and practices that engage places and audiences outside of formal art spaces. Prerequisites: CFN 1093, CSA 2201 and CFA 2123.

CSA 3915. Public Spectacle in Socially Engaged Art. 3 Credits.

Ethical, cultural, and political implications of using art in the public sphere and the philosophical, theoretical, and historical background of these practices. Students create collaborative artworks that address real-life problems and seek solutions in actual and virtual communities, from inventing a persona to creating a social movement. May be repeated for credit. Recommended background: Prior completion of any two 2000-level courses in one or more of the subject areas CDE, CGD, CDM, CMUS, CPJ, CSA, and CTAD.

CSA 3951. Creative Photovoltaics. 3 Credits.

The fabrication process of solar devices and the parameters of solar cells in design and art applications. Students build a small solar device and conceptualize innovative proposals for new solar technology solutions. Prerequisites: CSA 1201 or CFN 1093.

CSA 4020. Photography and Photojournalism Studio Seminar. 3 Credits.

Critical issues in contemporary photography, photojournalism, and related lens-based media including photographic voice, precedent and impact in the art world and publishing worlds. Research and writing in support of the development of thesis and independent projects. Prerequisites: One of the following: CPH 3020, CPJ 3020, or CSA 3020.

CSA 4021. Fine Art Studio Seminar. 3 Credits.

Critical issues in the production, contextualization, presentation, documentation, and distribution of contemporary art works. Research and writing in support of the development of thesis or capstone projects in contemporary art. Restricted to juniors and seniors.

CSA 4070. Professional Practices for Lens-Based Media. 3 Credits.

Ideas and strategies for career success in photography and related lens-based media; establishing practical modes of promotion, fundraising and entrepreneurship, preparing packages or work, and writing grants and press releases. Business practices including model releases, contracts, copyright law, managing budgets. Restricted to students in the BFA programs in fine art photography and photojournalism. Prerequisites: One of the following: CPH 3090, CPJ 3090, or CSA 3090. Credit cannot be earned for this course and CPJ 4170.

CSA 4085. Directed Studies: Studio Arts. 1-3 Credits.

Directed research and study in a specific area of studio art practice to be approved and supervised by a faculty member. Students must have their plan of study approved by the faculty supervisor and the Director of Undergraduate Studies prior to enrollment. Restricted to fine art photography, fine art, and photojournalism majors.

CSA 4092. Fine Art Thesis I. 3 Credits.

The development of a senior thesis project and accompanying research. Individual and group critiques, readings and discussions. Planning and execution of a body of work that extends visual language and conceptual development. Restricted to students in the BFA in fine art program and those in the BA in fine arts program with the permission of the instructor.

CSA 4093. Fine Art Thesis II. 3 Credits.

Completion and exhibition of a senior thesis project and accompanying research. Individual and group critiques, readings and discussions. Planning and execution of a body of work that extends visual language and conceptual development. Restricted to students in the BFA in fine art program; BA in fine arts students with the permission of the instructor.

CSA 4095. Critical Practices. 3 Credits.

Development and execution of an independent body of work; connecting project ideas with choices of material, action, and site. Technical, conceptual, and aesthetic development emphasized; supported by study of theory and criticism and individual and group critiques. Restricted to students in the BA in fine art program or with the permission of the instructor based on portfolio review. Prerequisites: One of the following: CSA 2001, CSA 2092, or FA 2001.

CSA 4098. Studio Arts Internship. 3 Credits.

Open to students pursuing an internship directly relevant to their major themes and goals. Permission of the Director of Undergraduate Studies required prior to enrollment. Graded exclusively on a Pass/No Pass basis. Restricted to students in the fine art photography, fine art, and photojournalism programs. Credit cannot be earned for this course and CPH 3900, FA 4199.

CSA 4170. Professional Practices for Artists. 3 Credits.

Infrastructure of the art world through analysis of various sustainable models of contemporary art practice for young artists. Establishing practical modes of criticism, promotion, fundraising and entrepreneurship in relation to exhibiting one's work, seeking venues, conducting studio visits, managing budgets, and writing grants, press releases, and artist statements. Restricted to juniors and seniors in the BFA and BA in fine arts programs. Prerequisites: CSA 2001 and CSA 3092.

CSA 6010. Social Practice Workshop. 4 Credits.

Core studio for students in the MFA in social practice program. Intensive studio critique supported by an equally rigorous investigation of the interdisciplinary tools, strategies, cultural and technological innovations for socially engaged creative practice. Restricted to students in the MFA in social practice program.

CSA 6015. History and Theory of Art in the Public Realm. 3 Credits.

Contemporary and historical theories of social relations and public space and foundational questions relevant to a creative practice in the public sphere. Topics vary by semester. Consult the Schedule of Classes for more details. Restricted to graduate students in Corcoran School programs.

CSA 6016. Field and Research Methodologies for Artists. 3 Credits.

Research and other professional methodologies for artists working on cross-disciplinary projects in the public realm. Theoretical and practical tools for developing hybridized models for inquiry. Restricted to students in the MFA in social practice and public policy program.

CSA 6080. Social Practice Field Studio. 3 Credits.

Socially engaged practice lab with a focus on social, environmental, and community impact. Students collaborate with a local partner to identify and respond to local challenges. Restricted to students in the MFA in social practice and public policy program.

CSA 6085. Directed Studies. 1-3 Credits.

Directed research and study in a specific area of studio art practice to be supervised by a faculty member. Students must have a written plan of study proposal approved by the supervising faculty member and Director of Graduate Studies prior to enrollment. Restricted to students in the MFA in fine arts and MA in new media photojournalism programs.

CSA 6091. Contemporary Art and Theory for Artists I. 3 Credits.

Thematic history of contemporary art since the late 1960s. Key theoretical ideas shaping contemporary philosophy, art practices, and art history. Restricted to graduate students.

CSA 6092. Contemporary Art and Theory for Artists II. 3 Credits.

Continuation of CSA 6091. Thematic history of contemporary art since the late 1960s. Key theoretical ideas shaping contemporary philosophy, art practices, and art history. Restricted to graduate students. Recommended background: CSA 6091.

CSA 6093. Professional Practices. 3 Credits.

Infrastructure of the art world through analysis of various sustainable models of contemporary art practice for young artists. Establishing practical modes of criticism, promotion, fundraising and entrepreneurship in relation to exhibiting one's work; seeking venues; conducting studio visits; managing budgets; and writing grants, press releases, and artist statements. Restricted to students in the MFA in fine arts program.

CSA 6094. Writing in Practice. 3 Credits.

Key artists' writings and the ways in which artists incorporate writing into their overall artistic practices. Questions of intention, the reciprocity of an artwork, agency and locational identity, defining a public/audience, and perceptions of care and engagement. Restricted to graduate students.

CSA 6095. Critical Practices. 3-9 Credits.

Interdisciplinary studio that supports the production and analysis of creative work. Critiques and discussions challenge students to develop and articulate their creative practice. Emphasis on conceptual, aesthetic, and theoretical development. Restricted to students in the MFA in fine arts program.

CSA 6096. Studio Visits. 1-3 Credits.

Ongoing critical discourse about each student's creative work through regular studio visits with the instructor, as well as one-time visits by international, national, and regional artists. Restricted to students in the MFA in fine arts program and other Corcoran students with the permission of the instructor.

CSA 6097. Topics in Public Strategies. 2 Credits.

Connection of artists, designers, organizers, researchers, and policy makers whose work expands the role of creative practice in the public sphere. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students in Corcoran School programs.

CSA 6098. Studio Arts Internship. 3 Credits.

Open to graduate students pursuing an internship directly relevant to their studio arts program themes and goals. Permission of the Director of Graduate Studies is required prior to enrollment. May be repeated for credit. Restricted to students in the MFA in fine arts and MA in new media photojournalism programs.

CSA 6101. Special Topics: Ceramics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6111. Ceramic Design in Handbuilt Forms. 3 Credits.

Further development of handbuilding techniques in ceramic sculpture; pinching, coiling, paddling, and hollowing; use of slabs and hump and press molds. Students produce clay and glazes and experiment with those materials in various reduction and oxidation firing ranges. Restricted to graduate students.

CSA 6113. Sculpture in Clay. 3 Credits.

Methods of clay construction relating to sculptural form and the aesthetic concerns of the sculptural object. Traditional hand building methods and innovative forming techniques; production of discreet objects, multiples, and issues dealing with the installation of each; and finishes and firing techniques to connect ceramic surface and form. Restricted to graduate students. Same As: CCR 5380. Credit cannot be earned for this course and FA 6113.

CSA 6201. Special Topics: Sculpture. 3 Credits.

Rotating issues in contemporary sculptural practices. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6202. Sculpture Digital Forms. 3 Credits.

Applications of digital fabrication to a multi-media contemporary art practice. The intersection between digital and physical methods of fabrication. Restricted to graduate students.

CSA 6214. Metals and Metalworking. 3 Credits.

Introduction to a variety of processes for working with metal alone or with other materials, including forming, cutting, joining, casting, and 3D printing, and their application to contemporary sculpture. Restricted to graduate students.

CSA 6240. Wear, Strut, Occupy. 3 Credits.

Costume and adornment as a vehicle to explore the relationship between individual, material, and environment, including costuming, fashion, sculpture, performance, and wearer/performer identity. Hands-on experience with clothing design and interpretation through a variety of costume design projects. May be repeated for credit. Restricted to graduate students.

CSA 6241. Installation Art. 3 Credits.

Installation and sculpture through the lens of site specificity, architecture, media, and landscape. Emphasis on theoretical dialogue of context and material and the practical issues of fabrication and implementation. May be repeated for credit. Restricted to graduate students.

CSA 6301. Special Topics: Drawing. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6401. Special Topics in Painting. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6501. Special Topics in Photography. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6510. Pre-Digital Alternative Process. 3 Credits.

Investigation of alternative photographic processes such as albumen, salted paper, gum bichromate, platinum/ palladium, and mordantage, leading to a fully realized portfolio, book, or other independent project. Restricted to graduate students. (Same as CPH 3450).

CSA 6511. Photography: Abstraction Versus Representation. 3 Credits.

Theory and practice of abstract and representational photography in historical and contemporary contexts. Chemical and digital photographic processes. Restricted to graduate students.

CSA 6512. Photography: Altered Landscapes. 3 Credits.

Investigation of images of place in contrast to conventions of landscape photography; historical and contemporary contexts; chemical and digital photographic processes. Restricted to graduate students.

CSA 6513. Photography: From Photograms to Scanograms. 3 Credits.

Low-tech means of producing analogue photographs and generating digital images; moving between the chemical darkroom to the digital lab. Review of images captured by the earliest practitioners to work being produced by contemporary artists. Restricted to graduate students.

CSA 6540. Advanced Lens-based Commissions Project. 3 Credits.

Through a real-world collaborative project students learn the aspects of commission and exhibition work, including research, project management, and production. Advanced lighting and interviewing skills, problems in historical and contemporary portraiture. Commission varies by semester. May be repeated for credit. Restricted to students in the MA in new media photojournalism program. (Same as CSA 3540).

CSA 6570. Studio and Location Lighting. 3 Credits.

Introduction to studio and location lighting for photography and lens-based media. Strobe and continuous lighting equipment, light modifiers and grip equipment, mixed sources light, and aesthetic approaches using artificial and ambient light. Restricted to graduate students.

CSA 6601. Special Topics: Time-Based and Electronic Media. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6606. Performative Media. 3 Credits.

Development and production of performance-based art works. Elements of performance (text, movement, sound, video, ritual, social practice). Narrative and theoretical approaches to performance art and works for stage, video, or installation. May be repeated for credit. Restricted to graduate students.

CSA 6612. Video: Remixing the Archive. 3 Credits.

Use of existing moving image and sound in video, live remix or sources for performance in arts and documentary contexts. Narrative and theoretical approaches to mediated memory. Introduces students to the substantial archival resources in Washington, DC, and online collections. Restricted to graduate students.

CSA 6613. Site and Sound. 3 Credits.

Overview of contemporary sonic art practice and audio production. Audio storytelling, spatialized sound, and site-based sonic artwork. Critical perspectives on sound and audio practice. Restricted to graduate students.

CSA 6701. Special Topics in Print Media. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6702. Screenprinting. 3 Credits.

Production of hand-pulled screen prints and their context within printmaking and contemporary art. History of screen printing and its role as a fine art, mass media, and commercial tool. Restricted to graduate students.

CSA 6703. Wood Block Print. 3 Credits.

Traditional and contemporary methods of wood block printing; techniques for incorporating wood block and other media in the creation of individual and multiple prints and objects; uses of woodblock printing in historical contexts and in contemporary art. Restricted to graduate students.

CSA 6705. Collagraph and Mixed-Media Printmaking. 3 Credits.

Production of multiple print editions using collaged and mixed-media printmaking techniques. Exploration of historical and contemporary examples of collagraph prints and development of critical language for analyzing print media.

CSA 6706. Lithography. 3 Credits.

Lithographic printmaking as a versatile tool for manipulating photographic images and as an expressive drawing medium. May be repeated for credit. Restricted to graduate students.

CSA 6710. Special Topics: Print Media. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students.

CSA 6712. Letterpress From the 1400's to the Digital Age. 3 Credits.

Traditional and contemporary letterpress and relief printing applications; typesetting; presswork, inking, editioning, and Vandercook press operation; black and white relief printing, reduction printing; and experimental collagraph techniques. May be repeated for credit.

CSA 6716. Advanced Printmaking: Screenprint/ Woodblock. 3 Credits.

Traditional methods of wood block printing. Contemporary artists working in this medium are introduced through site visits and field research. Restricted to graduate students.

CSA 6760. Book Arts Concept and Content. 3 Credits.

Development and construction of artist's books. Emphasizes structures and bindings, text and image-making techniques, and utilizing design, photography, and writing as source materials for book projects. Restricted to graduate students.

CSA 6901. Special Topics in Cross-Disciplinary Studio Arts. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to graduate students. Recommended background: Prior completion of coursework in the media or topics covered. (Same as CSA 3901).

CSA 6912. The Cinematic in Contemporary Art. 3 Credits.

The influence of cinema on contemporary art in historical, conceptual, and aesthetic contexts. Students employ cinematic strategies through projects that explore setting, sequencing, camera angle, point of view, tracking, lighting, performance, narrative, and sound. Restricted to graduate students.

CSA 6913. Painting Off the Wall. 3 Credits.

Nontraditional approaches to painting, including manipulation of the structural aspects of paintings; painting combined with other creative fields such as architecture, sculpture, social practice, performance, and film/video. Restricted to graduate students. Prerequisite: . Credit cannot be earned for this course and FA 6913.

CSA 6914. Art Outside the Gallery. 3 Credits.

Site-specific art practices emphasizing a variety of forms of public art, artist-run spaces, and practices that engage places and audiences outside of formal art spaces. May be repeated for credit. Restricted to graduate students.

CSA 6915. Public Spectacle in Socially Engaged Art. 3 Credits.

Ethical, cultural, and political implications of using art in the public sphere; the philosophical, theoretical, and historical background of these practices. Students create collaborative artworks that address real-life problems and seek solutions in actual and virtual communities, from inventing a persona to creating a social movement. May be repeated for credit. Restricted to graduate students.

CSA 6951. Creative Photovoltaics. 3 Credits.

The fabrication process of solar devices and the parameters of solar cells in design and art applications. Students build a small solar device and conceptualize innovative proposals for new solar technology solutions. May be repeated for credit. Restricted to graduate students. (Same as CSA 3951).

CSA 6998. Thesis Research. 3 Credits.

Development of a thesis project and accompanying research. Permission of the Director of Graduate Studies required prior to enrollment. Graded on a Credit/No Credit basis only. Restricted to Corcoran MFA students.

CSA 6999. Thesis Research. 3 Credits.

Development of a thesis project and accompanying research. Permission of the Director of Graduate Studies required prior to enrollment. Graded on a Credit/No Credit basis only. Restricted to Corcoran MFA students.

CORRECTIONAL HEALTH ADMINISTRATION (CHA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CHA 6210. Correctional Health Administration for Behavioral Health Populations. 3 Credits.

Correctional health care administration of incarcerated patient populations with serious mental illnesses and substance use disorders; classification, health care delivery, risk management, and accreditation requirements for managing these medically complicated patients. Recommended background: correctional health administration students.

CHA 6275. Correctional Health Care Administration Practicum. 6 Credits.

Supervised field work in correctional health administration, arranged in consultation with the program director. Prerequisites: CML 5023, CML 6020, CML 6021, CML 6025 and CML 6050.

CORCORAN THEATRE AND DANCE (TRDA)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TRDA 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details.

TRDA 1015. Understanding the Dance. 3 Credits.

The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society. Attendance at performances and presentations, and viewing video. Laboratory fee.

TRDA 1020. Women and the Creative Process. 3 Credits.

Consideration of questions of aesthetics and creativity through the study of art produced by women since the mid-twentieth century. The creation, meaning, and impact of work across the fields of visual art, dance, theatre, and music.

TRDA 1021W. The Artist-Activist. 3 Credits.

The modern and contemporary history of work by seminal artists who challenge political and societal structures and advocate for social change. Restricted to students enrolled in the women's leadership program. Prerequisites: TRDA 1020 or CTAD 1020. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 1025. Understanding the Theatre. 3 Credits.

The art of the theatre; its literature, history, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at assigned theatrical performances.

TRDA 1035. Theatre Production. 3 Credits.

Understanding of the basic elements of theatrical production and the collaborative artist/artisan process through discussion, observation, and practical application. Same As: CTAD 1035.

TRDA 1099. Variable Topics. 1-36 Credits.**TRDA 1151. Beginning/Intermediate Ballet. 1 Credit.**

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1152. Beginning Modern/Postmodern Dance. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1153. Beginning/Intermediate Modern/Postmodern Dance. 1 Credit.

Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality. Laboratory fee.

TRDA 1170. Intermediate Modern/Postmodern Dance I. 2-3 Credits.

Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee.

TRDA 1171. Intermediate Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 1170. Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Laboratory fee. Prerequisites: TRDA 1170 or permission of the instructor.

TRDA 1214. Beginning Acting. 3 Credits.

An introduction to the process of acting. Students learn to make choices using various acting techniques to create characters and learn about the process.

TRDA 1240. Performance Theory. 3 Credits.

Examination of the ways in which the practices and heuristics of performance have been used to understand a wide range of cultural activities; expansion of the notion of aesthetic performance proper to include sources, subjects, and forms historically considered non-dramatic; and underlying questions concerning what performance is, what it does, and what value it holds.

TRDA 1330. Basics of Production Design. 3 Credits.

Basic elements of production design and execution explored through discussion, observation, and practical application. Same As: CTAD 1330.

TRDA 2160. Intermediate Ballet. 2-3 Credits.

Training in movements and steps within the intermediate level ballet lexicon, emphasizing technical skills, stamina, mastery of longer dance sequences, presentation, musicality, and artistry. Permission of the instructor required prior to enrollment. May be repeated for credit. Laboratory fee. Recommended background: mastery of low intermediate level ballet steps and vocabulary, ability to perform short combinations of dance steps, and competence in basic elements of ballet technique.

TRDA 2172. Intermediate/Advanced Modern/Postmodern Dance I. 2-3 Credits.

May be repeated for credit. Laboratory fee. Prerequisites: TRDA 1171 or permission of the instructor.

TRDA 2173. Intermediate/Advanced Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 2172. May be repeated for credit. Laboratory fee. Prerequisites: TRDA 2172 or permission of the instructor.

TRDA 2179. Contact Improvisation. 2 Credits.

A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play. Laboratory fee.

TRDA 2180. Movement Improvisation/Performance. 3 Credits.

Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit. Laboratory fee.

TRDA 2185. Trends in Performance. 3 Credits.

Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. Laboratory fee. Credit cannot be earned for this course and MUS 3175.

TRDA 2188. African Dance. 1 Credit.

African/Caribbean dance styles and techniques, with warm-ups and center floor work of long and short movement phrases. Basic/modern/jazz terminology and definitions appropriate to intermediate/advanced/African dance are used. Emphasis on alignment, execution, musical phrasing, and the importance of rhythmic timing and nuance.

TRDA 2189. World Dance. 3 Credits.**TRDA 2190. Gender/Indian Classical Dance. 3 Credits.****TRDA 2191. Dance History. 3 Credits.**

The history of Western theatrical dance from the late eighteenth century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion.

TRDA 2191W. Dance History. 3 Credits.

The history of Western theatrical dance from the late eighteenth century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 2192. Repertory/Performance. 1,2 Credit.

Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit. Laboratory fee.

TRDA 2193. Dance Styles I. 1-12 Credits.

Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2194. Dance Styles II. 1-12 Credits.

Continuation of TRDA 2193. Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, music theatre, Spanish dance, world dance, Middle Eastern dance, and others. May be repeated for credit provided the topic differs. Laboratory fee.

TRDA 2195. Global Dance History. 3 Credits.

The role of dance globally in relation to socio-cultural and artistic histories. Importance of certain artists and dance forms contextualized by major world events as seen through the geography of immigration. Perspectives from the Americas, Africa, the Middle East, and Asia.

TRDA 2215. Intermediate Acting. 3 Credits.

Students continue to develop acting techniques introduced in TRDA 1214 through scripted scene work. Students learn to make choices through text exploration, use various acting techniques to create characters and develop clear character relationships, and stage completed scenes. Prerequisite: TRDA 1214.

TRDA 2240. Play Analysis. 3 Credits.

Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. Same as ENGL 2240.

TRDA 2250. Dramatic Writing. 3 Credits.

A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Same as ENGL 2250. Recommended preparation: Engl 1210 and two semesters of literature courses.

TRDA 2339. Theatre Practicum. 1 Credit.

Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TRDA 1330. After two practicums have been completed, participation may also include performance positions, for which TRDA 1214 is prerequisite. May be repeated for a total of 6 credits. Laboratory fee.

TRDA 3099. Variable Topics. 1-12 Credits.**TRDA 3131W. Theatre of Social Change. 3 Credits.**

Focuses on theatre of social change as practiced in the second half of the twentieth century and in the early twenty-first century; exploring additional case studies from South Africa, Europe, and the United States. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 3157. Career Strategies for the Dance Artist. 3 Credits.

Introduction to career opportunities in the performing arts, from performance to arts management. Students undertake a short-term, unpaid internship with a dance artist or dance organization in the greater Washington metropolitan area and design a project that supports advancement of their career goals.

TRDA 3174. Advanced Modern/Postmodern Dance I. 2-3 Credits.

May be repeated for credit. Laboratory fee. Prerequisites: TRDA 2173 or permission of the instructor.

TRDA 3175. Advanced Modern/Postmodern Dance II. 2-3 Credits.

Continuation of TRDA 3174. May be repeated for credit. Laboratory fee. Prerequisites: TRDA 3174 or permission of the instructor.

TRDA 3182. Dance Composition I. 3 Credits.

Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. Laboratory fee. Prerequisite: TRDA 2180. Recommended background: TRDA 2185.

TRDA 3183. Dance Composition II. 3 Credits.

Continuation of TRDA 3182. Emphasis on intention and content in making dances. Prerequisite: TRDA 2180; recommended: TRDA 2185. Laboratory fee.

TRDA 3186. Embodied Kinesis for Dance. 3 Credits.

Exploration of bodies in movement through theoretical, experimental, and personal research; techniques for embodiment in the somatic arts. Laboratory fee.

TRDA 3222. Topics in Advanced Acting. 3 Credits.

The actor's approach to various styles and genres and to non-literary theatrical forms. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Studio fee. Prerequisite: TRDA 2215.

TRDA 3240. Introduction to Dramaturgy. 3 Credits.

Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as ENGL 3240.

TRDA 3245. History of the Theatre I. 3 Credits.

A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the seventeenth century.

TRDA 3245W. History of the Theatre I. 3 Credits.

A dramaturg's approach to case studies of theatre in historical context. Ancient Greece through the seventeenth century. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 3246. History of the Theatre II. 3 Credits.

Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The eighteenth century through the present.

TRDA 3246W. History of the Theatre II. 3 Credits.

Continuation of TRDA 3245. A dramaturg's approach to case studies of theatre in historical context. The eighteenth century through the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 3250. Intermediate Dramatic Writing. 3 Credits.

A workshop developing scripts for both theatre and film. Same as ENGL 3250. Prerequisite: ENGL 2250 or equivalent. May be repeated for credit with departmental approval.

TRDA 3331. Introduction to Lighting. 3 Credits.

Theories and practical application of lighting for theatre and dance. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3332. Theatrical Makeup Design. 3 Credits.

Theory and practice in the art of stage makeup design, including latex and crepe hair. Materials fee. Prerequisite: TRDA 1330.

TRDA 3333. Stage Management. 3 Credits.

The role and function of the stage manager in theatrical production. The basic skills needed to begin work in stage management. Emphasis on organization, documentation, and dissemination of information. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 3334. Introduction to Audio Design. 3 Credits.

The basic elements of audio design and production through discussion, observation, and practical application. Laboratory required. Laboratory fee. Prerequisites: TRDA 1330.

TRDA 3335. Introduction to Scene Design. 3 Credits.

Fundamental study of scenic design, including historic overview, basic drawing, and rendering techniques, through the use of various mediums and script analysis. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3336. Introduction to Costuming. 3 Credits.

History of fashion in Western civilization from ancient Greece to the twentieth century. Fundamental study of costume construction through specific projects. Costume construction. Laboratory fee. Prerequisite: TRDA 1330.

TRDA 3710W. Contemporary Drama. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TRDA 4184. Choreography and Performance. 1-3 Credits.

Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TRDA 3182; recommended: TRDA 1330, TRDA 2185. May be repeated for credit. Laboratory fee.

TRDA 4204. Personal Aesthetics II: The Environment. 3 Credits.

This course fosters individual investigation of movement research and studio practice in order to develop an individual dance aesthetic. TRDA 6204 Personal Aesthetics – Environment (2-3) engages the artist/student in creative activities general related to alternative spaces and events related to "live" art, performance art, dance and related arts with less formal production/presentation elements. Prerequisites: M.F.A. candidacy or permission of instructor. (Same as TRDA 6204).

TRDA 4275. Directing for the Theatre. 3 Credits.

Fundamentals of script analysis, staging, casting, and rehearsal techniques. Laboratory fee. Prerequisites: TRDA 1214 and TRDA 1330; and TRDA 2240/ ENGL 2240 or TRDA 3240/ ENGL 3240.

TRDA 4338. Scene Painting. 3 Credits.

The techniques and materials used in creating character in the various elements of set design. Methods include set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wallpapering. Prerequisite: TRDA 1330. Laboratory fee.

TRDA 4595. Selected Topics. 1-3 Credits.

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

TRDA 4595W. Selected Topics. 1-3 Credits.

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee.

TRDA 4596. Independent Study. 1-6 Credits.

Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TRDA 4596, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

TRDA 4597. Senior Project. 3 Credits.

A capstone project related to the student's particular concentration. The project may be in the form of a performance, theoretical or realized design for the theatre, directorial project, playscript, stage management experience, dramaturgical project, choreographic project, or other approved area. Restricted to TRDA majors with senior standing.

TRDA 4598. Internship. 3-6 Credits.

Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved number of hours per week. May be taken for a maximum of 6 credits. Restricted to permission from the department.

TRDA 4599. Honors Thesis. 3 Credits.

Directed research and/or creative project. Open to qualified seniors by permission. Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year.

TRDA 5099. Variable Topics. 1-99 Credits.**TRDA 6200. Portfolio I: Performance. 1-5 Credits.**

Portfolio I: Performance Prerequisites: M.F.A. candidacy and permission of instructor.

TRDA 6201. Personal Aesthetics I: The Body. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6202. Contemporary Dance History and Criticism. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6203. Portfolio II: Choreography/Creativity. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6204. Personal Aesthetics II: The Environment. 2 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6205. Choreography. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6206. Dance Pedagogy. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6207. Portfolio III: Artistic Initiative. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6208. New Media and Dance. 5 Credits.

. Prerequisites: M.F.A. candidacy and permission of instructor.

TRDA 6209. Cultural Communities of Dance. 4 Credits.

Cultural Communities of Dance Prerequisites: M.F.A. candidacy and permission of instructor.

TRDA 6210. Personal Aesthetics III: Integration. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6211. Career Networks in Dance. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6212. Portfolio Review I: Performance. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6213. Portfolio Review II: Choreography/Creativity. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6214. Portfolio Review III: Artistic Initiatives. 1-5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6296. Research Project I. 4 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6299. Research Project II. 5 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6330. Materials and Methods. 3 Credits.

Fundamentals of building materials, tools, fabrication techniques, and methodology used in modern stagecraft. Restricted to students in the MFA in production design program or with the permission of the instructor. Recommended background: basic knowledge of theatre production; TRDA1330.

TRDA 6331. Intermediate Lighting Design. 3 Credits.

Theory and execution of lighting design for theatre and dance. May be repeated for credit. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6335. Intermediate Scene Design. 3 Credits.

Development of advanced skills of scenic design, including script analysis, needs assessment, research techniques, conceptual design development, drawing and rendering techniques, preparation of construction documentation and fabrication management. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6336. Intermediate Costume. 3 Credits.

Basic techniques of costume design through specific projects. Various rendering techniques consistent with the historical period concerned. Laboratory fee. Restricted to MFA candidates; permission of the instructor may be substituted.

TRDA 6338. Scene Painting. 3 Credits.

Development the painting skills needed for the reproductive craft of theatrical painting. Restricted to MFA candidacy or permission of instructor.

TRDA 6340. Period Styles. 3 Credits.

A broad perspective of major European and American cultures through analysis of the interiors, furniture, textiles, fashion, and architecture of major civilizations and historical periods from Egypt to the present. Laboratory fee. Restricted to MFA candidates except by permission of the instructor.

TRDA 6342. Pattern Making. 3 Credits.

Pattern drafting and draping methods based on contemporary and historical clothing. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6344. Production Drafting. 3 Credits.

Development of drafting skills for production. Ground plans and shop documents. Traditional hand drafting and computer assisted design. Laboratory fee. Restricted to MFA candidacy or permission of instructor.

TRDA 6346. Advanced Studies in Design: Collaborative Studies. 3 Credits.

Development of the skills needed to design and work within a collaborative or team-based environment through visual and verbal communication, script analysis, concept development, and research techniques. Laboratory fee. Restricted to MFA candidates or instructor's permission.

TRDA 6348. Techniques in Design Presentation. 3 Credits.

The various techniques used in costume and scenic design presentations, such as rendering with paint, pencil, ink, and electronic media. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6595. Selected Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details. Restricted to MFA candidates; permission of instructor may be substituted.

TRDA 6596. Independent Research in TRDA. 1-12 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor. May be repeated for credit.

TRDA 6598. Internship. 1-12 Credits.

Internships with theatre companies or arts organizations, including conference and/or seminar. May be taken for a total of 9 credits. Prerequisites: M.F.A. candidacy and permission of the instructor.

TRDA 6997. Production Design Practicum. 1 Credit.

Guided advanced individual laboratory training and experience; planning and executing complex production assignments with an emphasis on the management of subordinate crew. MFA production design candidates enroll in this course each semester of their program. Restricted to MFA production design students or permission of the instructor.

TRDA 6998. Thesis Research. 3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

TRDA 6999. Thesis Research. 3 Credits.

Prerequisite: M.F.A. candidacy and permission of instructor.

COUNSELING (CNSL)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CNSL 0920. Continuing Research - Master's. 1 Credit.

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CNSL 0940. Continuing Research - Doctoral. 1 Credit.

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CNSL 2102. Foundations of Counseling. 3 Credits.**CNSL 2162. Professional and Ethical Orientation to Counseling. 3 Credits.**

The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 2163. Psychosocial Adjustment. 3 Credits.

Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents.

CNSL 2376. Introduction to Rehabilitation Counseling. 3 Credits.

Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice.

CNSL 2378. Disability Management and Psychosocial Rehabilitation. 3 Credits.

Case management services for persons with physical, mental, and emotional disabilities.

CNSL 2381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.

Chronic and traumatic disorders; rehabilitation and psychosocial implications.

CNSL 5099. Variable Topics. 1-99 Credits.**CNSL 6100. Special Workshop. 1-12 Credits.**

Topics to be announced in the Schedule of Classes. May be repeated for credit. Credit cannot be earned for this course and CPED 6100, CPED 6199, SPED 6100, SPED 6299.

CNSL 6101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with an instructor.

CNSL 6103. Thesis Research. 3 Credits.

CNSL 6104. Thesis Research. 3 Credits.

CNSL 6114. Introduction to Research and Evaluation in Counselor Education. 3 Credits.

Conceptual understanding of research design and analysis of quantitative, qualitative, and mixed methods designs for the consumer and future producer of research. Restricted to students in master's and doctoral counseling programs.

CNSL 6130. Vocational Assessment of Individuals with Disabilities. 3 Credits.

Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as SPED 6230.

CNSL 6151. Professional and Ethical Orientation to Counseling. 3 Credits.

The roles and functions of a professional counselor and the ethical standards that govern the profession.

CNSL 6153. Counseling Interview Skills. 3 Credits.

Acquisition of counseling skills common to all theories through lectures, demonstrations by faculty, role playing, and videotaping. Permission of the instructor required for non-counseling majors. CNSL 6151 may be taken as a corequisite. Material fee. Prerequisites: CNSL 6151 for counseling majors.

CNSL 6154. Theories and Techniques of Counseling. 3 Credits.

An introduction to basic counseling and psychotherapeutic theories and associated techniques. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6155. Career Counseling. 3 Credits.

A consideration of theory, practice, and the body of information related to career counseling, choice, and development over the life span. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6157. Individual Assessment in Counseling. 3 Credits.

Detailed study of individual analysis and appraisal techniques. Development of systematic case study. Prerequisite: CNSL 6153, EDUC 6114 for counseling majors; permission of instructor is required for others. Material fee.

CNSL 6159. Psychosocial Adaptation. 3 Credits.

Mental health problems; emphasis on needs of counselors, teachers, and others working with children, adolescents, and adults.

CNSL 6161. Group Counseling. 3 Credits.

Principles of group dynamics as related to interaction within groups. Techniques and practice in group counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6163. Social and Cultural Dimensions - CNS. 3 Credits.

Basic sociocultural concepts in counseling theory and how they apply to the practice of the counseling profession. CNSL 6153 may be taken as a corequisite. Permission of the instructor required for non-counseling majors. Prerequisites: CNSL 6153 for counseling majors.

CNSL 6164. Values, Spiritual, and Religious Issues in Counseling. 3 Credits.

The theoretical and practical intersection of counseling, psychotherapy, and mental health considerations with religion and spirituality. The clinically effective and ethically responsible integration of religion and spirituality into counseling. Prerequisite or concurrent registration: CNSL 6151 (for counseling majors); permission of instructor is required for others.

CNSL 6169. Counseling Substance Abusers. 3 Credits.

Individual, group, family, and self-help counseling applied to substance abusers. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6170. Grief and Loss. 3 Credits.

Exploration and discussion of grief and loss from theoretical, practical, cross-cultural, and personal perspectives; implications for counselors within a multidisciplinary environment.

CNSL 6171. Family Counseling. 3 Credits.

The family as a system: how it affects the client and how the client affects it. Didactic presentations, role playing, and work with simulated families. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6172. Human Sexuality for Counselors. 3 Credits.

Issues of sexuality as related to counseling in contemporary society. Prerequisite or concurrent registration: CNSL 6153 (for counseling majors); permission of instructor is required for others.

CNSL 6173. Diagnosis and Treatment Planning. 3 Credits.

For counselors and mental health practitioners. Symptoms and treatment of various mental disorders. The process of making psychiatric diagnoses. A variety of treatment strategies are covered, along with their application to various disorders. Prerequisite: CNSL 6153.

CNSL 6174. Trauma and Crisis Intervention. 3 Credits.

This course provides the counseling student with an introduction to research, theory, and practices within the field of traumatology. The course covers the historical evolution of the field; biopsychosocial underpinnings of trauma and trauma spectrum disorders; issues in diagnosis, assessment, and intervention from a culturally diverse framework; and a synthesis of best practices as they are currently evolving. Using a developmental and systemic approach, the course provides a counseling perspective on the knowledge base from the multiple disciplines that contribute to the field of traumatology.

CNSL 6175. Living and Dying: A Counseling Perspective. 3 Credits.

Survey of fundamental psychosocial issues surrounding grief, loss, and life-threatening illness. Topics include AIDS, suicide, multiple loss, caregiver's grief, spirituality, and cross-cultural issues.

CNSL 6177. Spirituality and Loss. 3 Credits.

Exploration of how spiritual beliefs, faith traditions, and life philosophy affect the process of dying, bereavement, and grieving. Effective counseling approaches.

CNSL 6179. Children and Loss. 3 Credits.

The process of grief, loss, and death as experienced by children and adolescents from theoretical, moral, spiritual, and developmental perspectives. Development of effective and sensitive skills and competencies to meet the needs of children and their families as they face life-challenging transitions.

CNSL 6185. Internship in Counseling. 3 Credits.

First part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 100 hours of supervised practicum in a counseling setting.

CNSL 6186. Advanced Internship in Counseling. 3 Credits.

Second part of a two-semester clinical experience for degree and certificate candidates in counseling. Includes 600 hours of supervised counseling experience in a counseling setting. Prerequisite: CNSL 6185.

CNSL 6188. Systems in Career Counseling Development. 3 Credits.

The complex role of systems in career counseling and development. Class and work experience in the areas of career assessment, computerized career planning, and the design and evaluation of career counseling systems.

CNSL 6189. Career Development and the Contemporary Workforce. 3 Credits.

Through case studies, simulations, and group work, the demographics and challenges of the workforce in the United States are examined. The knowledge, skills, and competencies necessary to respond to current trends and projected changes in the global workforce.

CNSL 6190. Advanced Career Counseling. 3 Credits.

Expansion of career development theory, concepts, and practice: the helping relationship, delivery systems, current market and economic information, and available resources. Prerequisite: CNSL 6155 (for counseling majors); permission of instructor is required for others. Material fee.

CNSL 6268. Foundations of Clinical Mental Health Counseling. 3 Credits.

Description of community counseling settings, problems clients present, and a consideration of appropriate intervention strategies.

CNSL 6269. Practicum I in Counseling. 3 Credits.

First in a two-semester clinical experience. Working with clients in the practicum clinic, agency, or school setting under intensive supervision from faculty, developing the therapeutic relationship and basic counseling competencies. Six to eight hours of work per week are required for a minimum of 100 hours total over two practica. Prerequisites: CNSL 6151, CNSL 6153, CNSL 6154, CNSL 6157, CNSL 6163, CNSL 6173, CNSL 6174, CNSL 6268, EDUC 6115 and HDEV 6108.

CNSL 6270. Practicum II in Counseling. 3 Credits.

Second in a two-semester clinical experience. Working with clients in the practicum clinic, agency, or school setting under intensive supervision, developing therapeutic relationship and basic counseling competencies. Six to eight hours of work per week are required for a minimum of 100 hours total over two practica. Prerequisite: CNSL 6269.

CNSL 6271. Advanced Clinical Skills. 3 Credits.

The practice of empirically supported counseling practice; essential interviewing and case conceptualization skills; developmentally relevant assessment, diagnosis, and treatment; and multicultural and social justice counseling. Restricted to students in master's and doctoral counseling programs. Prerequisites: CNSL 6269.

CNSL 6376. Foundations of Rehabilitation Counseling. 3 Credits.

Introduction to the field of rehabilitation counseling. History, development, and current practices. Key concepts, including vocational rehabilitation, roles and functions of the rehabilitation counselor, and independent living rehabilitation.

CNSL 6378. Disability Management and Psychosocial Rehabilitation. 3 Credits.

Disability management services; psychosocial aspects of disability; rehabilitation services for persons with psychiatric disabilities.

CNSL 6380. Job Placement and Supported Employment. 3 Credits.

Job development and modification: placement of persons with disabilities.

CNSL 6381. Medical and Psychosocial Aspects of Disabilities. 3 Credits.

Chronic and traumatic disorders with rehabilitation and psychosocial implications.

CNSL 6395. Foundations of Forensic Rehabilitation Counseling I. 3 Credits.

Overview of the roles and functions of professionals who provide forensic rehabilitation services in matters of litigation. Vocational assessments, labor market issues, transferable skills analysis, job analyses. Instruments utilized in forensic rehabilitation.

CNSL 6396. Foundations of Forensic Rehabilitation Counseling II. 3 Credits.

Workers' compensation, personal injury, medical/professional malpractice, catastrophic injury, loss of earnings capacity, and life care planning. Ethical standards, practices, federal court rules, and common situations found in the litigation process.

CNSL 6397. Law and the Rehabilitation Consultant. 3 Credits.

Overview of law and court procedures for forensic rehabilitation professionals. Qualification of forensic experts, roles and functions of expert witnesses, discovery, work product, hearsay, direct and cross-examination, admissibility of evidence, and opinions in state and federal venues.

CNSL 6398. Psychopharmacology. 3 Credits.

CNSL 6466. Foundations of School Counseling K-12. 3 Credits.

Study of the environmental and specialty elements for school counseling, with special attention to the principles and practices of school counseling.

CNSL 6467. Coordination of Comprehensive School Counseling Services. 3 Credits.

Theory and practice of classroom management for school counselors; creation and implementation of guidance programming, school system support; designation, coordination of services, systemic and student support for special education students Restricted to students in the school counseling program. Prerequisites: CNSL 6466 and CNSL 6269.

CNSL 8100. Special Workshop. 1-12 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

CNSL 8101. Research and Independent Study. 1-3 Credits.

Guided individual research. Program and conferences arranged with an instructor.

CNSL 8244. Advanced Group Counseling. 3-6 Credits.

A post-master's course on interpersonal process groups, with didactic, experiential, and supervisory components. Prerequisites: CNSL 6161 and permission of the instructor.

CNSL 8251. Advanced Psychopathology and Pharmacology. 3 Credits.

In-depth study of psychopathology and standard pharmacological intervention to psychological dysfunction associated with distress or impaired functioning; the range of child, adolescent, and adult presentations of psychological disorders seen in clinical practice.

CNSL 8252. Leadership and Advocacy in Counseling. 3 Credits.

Exploration of leadership styles as they apply to counseling professionals. Ethical and multicultural issues associated with leadership and advocacy will be presented, consultation models will be introduced.

CNSL 8253. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as HDEV 8253/HOL 8742.

CNSL 8254. Advanced Multicultural Counseling. 3 Credits.

Recent research addressing key aspects of multicultural counseling. Practical knowledge about effective skills practice in the provision of services to clients from different cultural backgrounds, with emphasis on experiential and cognitive/behavioral approaches. Permission of the instructor required prior to enrollment. Prerequisite: CNSL 6163. Recommended background: PhD degree student in the field of counseling; completed a master's degree in counseling.

CNSL 8255. Supervision in Counseling. 3 Credits.

Theory and practice of clinical supervision and consultation for preparation to enter supervisory positions in the field of counselor education. Current thinking regarding supervisory theory/models, practice, research, and ethics. Permission of the instructor required prior to enrollment. Restricted to students in the PhD in counseling program.

CNSL 8256. Doctoral Practicum in Counseling. 3 Credits.

Supervised clinical experiences in applied settings. Students receive University-based supervision related to their cases through group supervision and case presentations.

CNSL 8257. Doctoral Internship in Teaching. 3 Credits.

Minimum 300 clock hours of supervised didactic and experiential learning activities relevant to instructional roles and responsibilities in counselor education.

CNSL 8258. Advanced Theories of Counseling. 3 Credits.

Current research on counseling and psychotherapy process and outcome; critical analysis of theory with applications for practice and research. For EdS and PhD degree candidates in the field of counseling. Permission of the instructor required prior to enrollment.

CNSL 8259. Doctoral Internship in Supervision I. 3 Credits.

Doctoral internship.

CNSL 8260. Doctoral Internship in Supervision II. 3 Credits.

Doctoral internship. Prerequisite: CNSL 8259.

CNSL 8961. Doctoral Internship in Research. 3 Credits.

Critical approach to reading research; practical experience in applied research design; integration of theoretical, research, and applied elements of the profession of counseling.

CNSL 8998. Predissertation Seminar. 3 Credits.

Required of all doctor of philosophy in the field of counseling degree candidates.

CNSL 8999. Dissertation Research. 3,6 Credits.

. Prerequisites: CNSL 8998 or EDUC 8998.

CURRICULUM AND PEDAGOGY (CPED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

CPED 0920. Continuing Research - Masters. 1 Credit.

CPED 0940. Continuing Research - Doctoral. 1 Credit.

CPED 5099. Variable Topics. 1-99 Credits.

CPED 6100. Special Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes. Credit cannot be earned for this course and CNSL 6100, SPED 6100.

CPED 6100W. Special Topics. 1-12 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

CPED 6101. Research and Independent Study. 1-3 Credits.

Individual research under the guidance of a staff member; program and conferences arranged with an instructor.

CPED 6131. Teaching Jewish History to Middle and High School Students. 3 Credits.

Concepts for educators surrounding the ways in which Jewish historians interpret primary sources and analyze historiographic debates.

CPED 6132. Strategies for Teaching Biblical Texts. 3 Credits.

Analysis of major biblical narratives using study methods ranging from the historical to the literary; key aspects of biblical interpretation and strategies for teaching Bible effectively.

CPED 6133. Rabbinic Judaism and the Teaching of Rabbinic Texts. 3 Credits.

The development of rabbinic Judaism through a study of its thought and literature using primary texts from 100 to 500 C.E.; best practices for teaching rabbinic texts using different pedagogical approaches; distinctions between a historically-based academic approach and a more imaginative, theological approach.

CPED 6134. Practicum in Jewish Education. 2 Credits.

Field-based experiences and weekly seminar for students seeking to teach in classrooms dedicated to Jewish education; honing disciplinary expertise in the curriculum; lesson planning, instructional strategies, classroom management and intervention, and new methods and tools.

CPED 6172. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.

Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as SPED 6272.

CPED 6175. The Culturally and Linguistically Diverse Student with Special Needs: Policy, Research, and Trends. 3 Credits.

Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Material fee. Same as SPED 6275.

CPED 6176. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.

Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Material fee. Same as SPED 6276.

CPED 6199. Federal Education Policy Institute. 3 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as SPED 6299.

CPED 6221. Developmental Reading: Emergent Literacy. 3 Credits.

The components of a balanced literacy program for emergent, beginning, and early-instructional-level readers. Incorporation of phonological awareness, phonics, fluency, reading comprehension, and writing lessons into a balanced reading-literacy program.

CPED 6223. Interdisciplinary Elementary School Literacies. 3 Credits.

Theory and practice of interdisciplinary elementary school studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6224. Diagnostic Teaching of Reading: K-6. 3 Credits.

Collection of diagnostic data; construction of informal traditional and non-traditional reading and writing tests; other instruments of evaluation; selecting and planning activities suitable to specific problems. Prerequisite: at least one previous course in reading.

CPED 6225. Introduction to International Curricula. 3 Credits.

CPED 6229. Current Issues in Elementary Education. 3 Credits.

Identification, definition, and analysis of some of the most important problems facing the contemporary American elementary school.

CPED 6236. Analysis of Teaching. 3 Credits.

Teaching viewed as a system; component aspects are examined with a view toward developing a critical method of analysis. Material fee.

CPED 6239. Practicum in Curriculum and Instruction. 3-6 Credits.

Supervised field experience in curriculum and instruction. Permission of the instructor required prior to enrollment.

CPED 6289. New Literacies Coach and Reading Specialist. 3 Credits.

Contemporary issues and conditions influencing literacy/reading leadership roles and the expanded roles of the new literacy reading coach and reading specialist. Topics include designing and evaluating interdisciplinary literacy education environments. Students work with educators on instructional and professional development activities to meet the literacy education needs of children. Prerequisites: CPED 6224 and permission of the department.

CPED 6292. Practicum 2: Leadership in Interdisciplinary Literacies. 3-6 Credits.

Drawing on prior program experiences in leadership and interdisciplinary literacies, students develop and refine effective interdisciplinary literacy education leadership qualities and skills, facilitate change in school communities, and foster teacher growth and student achievement. Students demonstrate lessons and provide assistance with lesson planning to teachers in, across, and between subject area disciplines and conduct professional development workshops in school settings. Prerequisite: CPED 6289.

CPED 6305. Foundations of Curriculum Theory. 3 Credits.

Examination of the educational ideas of individuals and groups that have influenced American and international curriculum development and practice during the 20th and 21st centuries. Comparisons of the issues, models, and principles that have guided curricular thought, development, and innovation.

CPED 6339. Teachers as Researchers. 3 Credits.

Qualitative and quantitative methods of research in teaching and learning with a focus on practitioner-based research. Prepares teachers to develop an inquiry stance towards their practice and provides them with the knowledge, experiences, and skills to systematically examine their own practice and student learning.

CPED 6340. Teacher Leadership in Education. 3 Credits.

From the perspectives of educational theory and practice, the ideals and realities of contemporary public school teaching are viewed within a system of local, state, and federal organizations, with the goal of enhancing the role of teachers as knowledgeable and effective leaders in their profession. Material fee.

CPED 6353. Post-Master's Internship in Curriculum and Instruction. 3-6 Credits.

Supervised professional internship in curriculum, instruction, teaching, research, or policymaking. Internships are individually arranged. (Same as SPED 8353).

CPED 6365. Perspectives and Research in Teaching Computer Science. 3 Credits.

CPED 6366. Perspectives and Research in Teaching English. 3 Credits.

The teaching of English in the context of the social and historical foundations of education and through conceptual frameworks from contemporary curriculum theory.

CPED 6367. Perspectives and Research in Teaching Science. 3 Credits.

Significant trends, findings, and perspectives in science education in the United States from the early nineteenth century to the present.

CPED 6368. Perspectives and Research in Teaching Social Studies. 3 Credits.

Deepens students' understanding of the social studies curriculum through analysis of current research, theory, and practice, and application of this knowledge to instructional planning.

CPED 6370. Perspectives and Research in Teaching Mathematics. 3 Credits.

Survey of the history of mathematics, mathematics education research, instructional design, and the teaching of science, technology, engineering, and mathematics (STEM) curriculum standards. The impact of history in the field and research on teaching.

CPED 6410. Reading Children's Literature across the Curriculum. 2,3 Credits.

Participants read and analyze multicultural children's literature (from folktale to nonfiction) while simultaneously practicing discussion, dramatization, art, and writing response strategies suitable for involving all students and integrating literature across the school curriculum.

CPED 6412. Elementary School Curriculum and Methods. 2 Credits.

A comprehensive block course with sections in mathematics, science, language arts, and social studies. Integrated with CPED 6635. Pre-service teachers taking the four sections learn to be successful teachers of elementary methods in all content areas, including how to incorporate content and pedagogy into practice at their internships. May be repeated for up to 8 credits; with permission, up to four blocks (to a total of 8 credits) may be taken in one semester. Permission of the advisor required prior to enrollment.

CPED 6507. Instructional Models and Classroom Management. 3 Credits.

The interconnections between effective instruction and positive classroom management. Through planning, implementing, and evaluating learning activities that apply research-based practices, students link instructional and management strategies to specific content and thinking goals. Microteaching lab. Material fee.

CPED 6530. Assessment in the Secondary Classroom. 3 Credits.

Key concepts and principles in the field of educational assessment, with emphasis on practical applications for classroom teachers. Students design and evaluate a range of assessment tools in their content areas.

CPED 6532. Professional Internship in Middle School Education. 3-6 Credits.

Supervised internship in middle schools; required seminar. Restricted to permission from instructor.

CPED 6534. Professional Internship in Secondary Education. 6 Credits.

Internship seminar providing various means of support related to the field placement and program portfolio, as well as a forum for engaging in academic conversation around the field experiences. Fee applies.

CPED 6544. Educational Technology and Computer Literacy Methods. 3 Credits.

Computers and related technologies in educational settings. Using national technology standards for teachers as a framework, the course combines discussion of key issues related to technology in education, demonstration of technology-related instructional methods, and hands-on computer use and materials development. Material fee.

CPED 6545. Teaching Computer Science in Secondary Schools. 3 Credits.

Theoretical, curricular, and practical considerations. Thirty hours of field experience in a secondary classroom is required. Material fee.

CPED 6546. Teaching English in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Material fee. Prerequisites: CPED 6606 and CPED 6507 and the approved certification coursework in the content area.

CPED 6547. Teaching Science in Secondary Schools. 3 Credits.

Offers theoretical, curricular, and practical considerations for teaching the content area concerned. Requires a 30-hour field experience in a secondary classroom. Material fee. Prerequisites: CPED 6606 and CPED 6507 and the approved certification coursework in the content area.

CPED 6548. Teaching Social Studies in Secondary Schools. 3 Credits.

Theoretical, curricular, and practical considerations. 30-hour field experience in a secondary classroom is required. Material fee. Prerequisites: CPED 6507 and CPED 6606.

CPED 6549. Teaching Art in Secondary Schools. 3 Credits.

Theoretical, curricular, and practical considerations. Material fee.

CPED 6550. Teaching Mathematics in Secondary Schools. 3 Credits.

Introductory course in mathematics teaching that derives its goals from pedagogy standards for secondary mathematics developed in collaboration with the National Council of Teachers of Mathematics (NCTM). Focus on developing and understanding middle and high school curriculum standards. Material fee.

CPED 6551. Second Language Instructional Methods. 3 Credits.

Knowledge and skills related to the instruction and assessment of language students in English and foreign language settings; past second language teaching methods, contemporary instructional approaches and materials, and other considerations in developing academic and social language proficiency. Requires field experience in a classroom. Materials fee. Prerequisites: CPED 6507 and CPED 6606.

CPED 6554. Issues, Study, and Practices - ESL. 3 Credits.

A critical review of scholarship and research findings in English as a second language. Major policy issues and implications that relate to ESL practice.

CPED 6555. Educating Language Minorities. 3 Credits.

A study of federal, state, and local policies and issues affecting the education of linguistically diverse populations. Resources for use with specific linguistically diverse groups.

CPED 6556. Linguistic Applications in English as a Second Language. 3 Credits.

The science of language and how its different branches may be used for English as a Second Language (ESL) teacher training, classroom instruction, material development, evaluation, research, and policy development.

CPED 6557. Second Language Acquisition. 3 Credits.

The nature of first and second language acquisition and development; social, psychological, and linguistic factors affecting language acquisition; implications of language acquisition research and theory on English and foreign language classroom instruction.

CPED 6604. Perspectives in American Education. 3 Credits.

Historical and social development of education in the United States; evolution of American education related to the growth of the nation and the changing social order; examination of selected issues in contemporary education.

CPED 6606. Theories of Learning and Development. 3 Credits.

A comprehensive investigation of the complex relationship between teaching and learning. How learning takes place, how it is motivated, and how it is influenced. Material fee.

CPED 6608. Development and Diversity. 3 Credits.

Student diversity in relation to theories of human growth and development. Diverse student strengths and needs; the special needs population; dynamics of inclusion; and intercultural issues related to the teaching/learning process. Material fee.

CPED 6622. Foundations of Reading Development. 3 Credits.

Theories of printed text reading acquisition and development; strategic processes of teaching and learning from printed texts; linguistic, cognitive, developmental, sociocultural, and affective dimensions and models of reading; design and implementation of meaningful reading instruction.

CPED 6623. Foundations of Reading Development. 2 Credits.

Basic theories and processes of reading acquisition and assessment; linguistic, cognitive, developmental, social, and affective bases of reading; influences of media, instructional strategies, including formal and informal assessment. Design and implementation of instruction in critical literacy.

CPED 6624. Foundations and Research of Literacy and Reading Education. 3 Credits.

Study of the scholarship on foundational and new literacy knowledge, concepts, and practices. Topics include models of literacy, theories and relations of multimodal and printed text reading (e.g., linguistic, psychological, and sociocultural), and the uses of these theories for the teaching and learning of literacies.

CPED 6626. Practicum 1: Reading Diagnosis, Assessment, and Solutions. 3 Credits.

Candidates learn advanced diagnostic and assessment procedures to determine specific difficulties associated with printed-text reading, generate diagnostic profiles, and make instructional recommendations. Data are collected from children who struggle with printed texts; and, from those data, case studies are developed with implications for instruction.

CPED 6627. Teaching Second Language Reading and Writing. 3 Credits.

Literacy development for language learners; theories of literacy development in a second or foreign language, strengths and needs of language learners, reading and writing instructional strategies for language and content classrooms. Appropriate for students interested in teaching ESL, foreign languages, or content areas in elementary or secondary schools. Materials fee.

CPED 6628. Literacies in Informal Learning Environments. 3 Credits.

How culture, language, and out-of-school literacy experiences, particularly those in museums, influence attitude, learning, affective and interdisciplinary knowledge, and teaching practices. New literacy research, curriculum, and literature, and how social and cultural factors contribute to the literacies of everyday life.

CPED 6635. Professional Internship in Elementary Education. 3-6 Credits.

Supervised internship; required seminar. Permission of the instructor required prior to enrollment. Material fee.

CPED 6691. Interdisciplinary Adolescent Literacies. 3 Credits.

Theory and practice of interdisciplinary adolescent literacies studied in the context of the interactions between the domain-specific and strategic processes involved in teaching and learning from printed text and other media in science, literature, mathematics, social studies, and the arts.

CPED 6701. Arts in the STEM Curriculum. 3 Credits.

In-depth coverage of approaches to integrating arts and design into STEM curricula ("STEAM") for student learning; criteria and approaches for assessing student learning in arts-integrated STEM curricula; building a culture of craftsmanship; and collaborating with arts and design professionals.

CPED 6702. Integrating Engineering in the Math and Science Classroom. 3 Credits.

Approaches to integrating engineering and design into K-12 math and science classrooms. Students develop competencies by engaging in various forms of engineering and design, from small "design challenges" to more complex, semester-long engineering projects.

CPED 6703. Advanced STEM Teaching Methods. 3 Credits.

Advanced approaches for integrating science, technology, engineering, and mathematics into the K-12 classroom.

CPED 8100. Special Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

CPED 8101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a faculty member. Program and conferences arranged with an instructor.

CPED 8199. Federal Education Policy Institute. 3 Credits.

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CPED 8309. Supervising Preservice Clinical Experience. 1-3 Credits.

CPED 8325. Curriculum Theory. 3 Credits.

History and development of the field of curriculum studies; theoretical perspectives on curriculum and the nature and purposes of curriculum research, development, and theorizing.

CPED 8330. Foundations of Education Research in Curriculum and Instruction. 3 Credits.

Works that have influenced twenty-first century curriculum and instruction: post-positivism, constructivism, critical theory, and post-structuralism/new materialism.

CPED 8331. Seminar in Teaching. 3 Credits.

Key issues that define the complexities of teaching; the connections between advanced teaching and learning.

CPED 8332. Search of the Literature in Curriculum and Instruction. 3 Credits.

Analysis of types of literature reviews in the field of curriculum and instruction and development of a literature review; the relationship of theory building to review of literature, and how research questions arise from extant theory and related literature. For doctoral students in curriculum and instruction, to precede CPED 8998. Material fee.

CPED 8333. School Reform through Professional Development. 3 Credits.

Fundamental perspectives of school reform through professional development of educators (K-12); evolution of contemporary professional development models and trends; examination of interactive modules using selected professional development activities. Material fee.

CPED 8334. Seminar in Learning. 3 Credits.

Theories and processes for making claims about learning.

CPED 8335. Seminar in Research in Curriculum and Instruction II. 3 Credits.

Students develop research skills in curriculum and instruction; create an individual, unique, and focused research study that is feasible for a doctoral student to accomplish; and learn skills and strategies for writing a research proposal. Prerequisite: CPED 8334.

CPED 8340. Education Policy, Reform, and Teacher Leadership. 3 Credits.

This online course engages students in the study of education policies and reforms that specifically focus on teaching and teachers. Further, this course examines teacher leadership as it impacts school reform through professional development initiatives that sustain change efforts. Four areas of study ground the focus of this course: education policy, change theories and school reform, teacher leadership, and professional development. Restricted to doctoral students; permission of the instructor required for master's students.

CPED 8341. Evaluation in Curriculum and Instruction. 3 Credits.

This course teaches doctoral and master's students about evaluating curriculum and instruction related programs, projects, or policies. This course provides students with the theoretical grounding and practical experiences they need to develop and implement evaluation research. Students in the course are required to: 1) read current literature that covers the breadth of theories and models applied in the field of evaluation, 2) participate in live online discussions and instructor presentations and, 3) design, implement and report on a targeted evaluation of a curriculum and instruction related program, project or policy. Restricted to doctoral students; master's students with approval of instructor.

CPED 8354. Doctoral Internship: Teacher Education. 3-6 Credits.

Supervised professional internship in college teaching, administration, supervision, research, policymaking, or private agency function. Permission of the advisor required prior to enrollment.

CPED 8998. Doctoral Seminar in Curriculum and Instruction. 3-6 Credits.

Review of literature; preparation of a dissertation proposal and a manuscript of publishable quality. Permission of the instructor and major advisor required prior to enrollment. Material fee.

CPED 8999. Dissertation Research. 3-6 Credits.

Prerequisite: CPED 8998.

DATA SCIENCE (DATS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DATS 1001. Data Science for All. 3 Credits.

Cross-disciplinary perspective on topics ranging from an introduction and overview of standard data science tools through to frontier research topics in real-world systems. R is introduced.

DATS 2101. Ethical Life in a Digital World. 3 Credits.

Introduction to ethical perspectives and policies in an increasingly digital world. Topics include generation, recording, curation, processing, sharing, and use of data; algorithms; programming; hacking; and professional codes.

DATS 2102. Data Visualization for Data Science. 3 Credits.

Working with data and code to engage data science questions. Students develop coding, data visualization, and data presentation skills. Prerequisites: DATS 1001; and STAT 1051 or STAT 1053 or STAT 1111 or STAT 1127.

DATS 2103. Data Mining for Data Science. 3 Credits.

Basic concepts, principles, methods, implementation techniques, and applications of data mining, with a focus on Python and data mining algorithms. Overview of data mining techniques and skills to explore and analyze data. Prerequisites: CSCI 1012, DATS 1001, MATH 1232, and STAT 1053.

DATS 2104. Data Warehousing for Data Science. 3 Credits.

Fundamental concepts of databases and data warehousing. Database management; extract, transform, load (ETL) processes; and SQL. Ethical considerations, including privacy, data stewardship, and database security Prerequisites: CSCI 1012 and DATS 1001.

DATS 4001. Data Science Capstone. 3 Credits.

Capstone experience for data science majors. Application of theoretical knowledge and practical skills gained in major courses to a real-world problem. Review of ethical issues and current topics in data science. Restricted to data science majors. Prerequisites: DATS 1001, DATS 2101W, DATS 2102, DATS 2103, and DATS 2104.

DATS 6001. Algorithm Design for Data Science. 3 Credits.

Theory and implementation of the most important problems in algorithm design. Tailored to the needs of non-computer science students.

DATS 6101. Introduction to Data Science. 3 Credits.

Basic techniques of data science. Algorithms for data mining, basics of statistical modeling, and concepts, abstractions, and practical techniques.

DATS 6102. Data Warehousing. 3 Credits.

Fundamentals and practical applications of data warehousing, including planning requirements, infrastructure, design, and maintenance. Prerequisites: STAT 2118 or permission of the instructor. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics.

DATS 6103. Introduction to Data Mining. 3 Credits.

Concepts, principles, and techniques related to data mining; strengths and limitations of various data mining techniques, including classification, association analysis, and cluster analysis.

DATS 6201. Numerical Linear Algebra and Optimization. 3 Credits.

Linear and quadratic programming, nonlinear equations, global and unconstrained optimization, and general linearly and nonlinearly constrained optimization as used in data science. Restricted to students in the MS in data science program or with the permission of the instructor. Prerequisites: MATH 2184 or MATH 2185. Recommended background: An undergraduate degree with a strong foundation in science, mathematics, or statistics.

DATS 6202. Machine Learning I: Algorithm Analysis. 3 Credits.

Practical approach to fundamentals of algorithm design associated with machine learning; techniques of statistical and probability theory, combinatorial optimization, and factor graph and graph ensemble as used in machine learning. Prerequisites: DATS 6101 and DATS 6103. Credit cannot be earned for this course and PHYS 6620.

DATS 6203. Machine Learning II: Data Analysis. 3 Credits.

This course is a practical approach to fundamentals of machine learning with an emphasis on data analysis; i.e., how to extract useful information from different datasets Topics include linear models, error and noise, training and testing methods, and generalization as used in machine learning. Restricted to Designed primarily for students in the Data Science program, however other students with appropriate backgrounds can register for the course with permission of the instructor. Prerequisite: DATS 6101. Recommended background: An undergraduate degree with a strong background in science, mathematics, or statistics. Credit cannot be earned for this course and PHYS 6720.

DATS 6311. Bayesian Methods in Data Science. 3 Credits.

Introduction to Bayesian data analysis. Parameter estimation (using formal analysis, grid approximation, and Markov chain Monte Carlo), hierarchical models, generalized linear models, JAGS, and Stan. Prerequisites: DATS 6101 and DATS 6103.

DATS 6312. Natural Language Processing for Data Science. 3 Credits.

Introduction to natural language processing and its basic techniques and methods. Natural language processing techniques used to explore, analyze, and leverage natural language data stored in text, covering commonly used text analysis techniques and tools. Prerequisite: DATS 6202.

DATS 6401. Visualization of Complex Data. 3 Credits.

This course is a practical approach to fundamentals of data visualization specifically for data science professional. It covers all significant topics, including graphics, discrete and continuous variables, clustering and classification. Restricted to candidates for the MS or graduate certificate in data science; permission of the instructor may be substituted. Prerequisites: DATS 6101, DATS 6102, and DATS 6103.

DATS 6402. High Performance Computing and Parallel Computing. 3 Credits.

Practical approach to high performance computing specifically for the data science professional. Topics such as parallel architectures and software systems, and parallel programming. Restricted to students in the MS or graduate certificate in data science programs or with permission of the instructor. Prerequisites: DATS 6101, DATS 6102 and DATS 6103.

DATS 6450. Topics in Data Science. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Restricted to students in the master's and graduate certificate in data science programs. Restricted to students in the master's and graduate certificate programs in data science. Prerequisites: DATS 6101 or permission of the instructor.

DATS 6499. Data Science Applied Research. 3 Credits.

Students conduct research projects under the supervision of the instructor. Project topics build on the knowledge and skills acquired during the data science program. Permission of the instructor required prior to enrollment.

DATS 6501. Data Science Capstone. 3 Credits.

Practical application of the knowledge and skills acquired during the master's program. Capstone team projects are chosen in consultation with the instructor. In addition to the specific prerequisite courses, completion of five pre-approved data science courses is required prior to enrollment. Restricted to students in their final semester of the MS in data science program. Prerequisites: DATS 6101, DATS 6102 and DATS 6103.

DATS 6810. Hot Topics in Big Data Analytics. 3 Credits.

This course will enhance students' big-data analysis and statistical skills, and is aimed at upper-level undergraduate and graduate students from the physical, biological and social sciences. In addition to overviewing standard tools using R, it will expose students to current thinking about real data, analysis and modeling in our 'non-normal' world where distributions are fat-tailed rather than approximately normal, and where processes are bursty rather than approximately Poisson. Its cross-disciplinary approach will also help address the likely challenge facing next-generation researchers and employees, to 'understand' real-world data not only through statistical tests, but also by building generative simulations (e.g. in C) that reproduce the statistical stylized facts of real-world data sets. Other topics to be discussed include networks, machine-learning, as well as web-scraping of data – e.g. from social media sources. Restricted to Graduate and advance undergraduate students with permission of the instructor. Prerequisite: MATH 2184. Recommended background: Competency in single-variable calculus; MATH 2233 would be beneficial but is not strictly necessary. (Same as PHYS 6810).

DECISION SCIENCES (DNSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

DNSC 1001. Business Analytics I: Statistics for Descriptive and Predictive Analytics. 3 Credits.

Foundations of probability and statistical methodologies used in business analytics; probability laws, probability models, univariate and bivariate models and their applications, sampling, hypothesis testing, contingency table analysis, simple and multiple linear regression models. Credit cannot be earned for this course and STAT 1051, STAT 1053, STAT 1111.

DNSC 1051. Introduction to Business Analytics. 3 Credits.

Business analytics fundamentals; the information it provides, how and when it is used, and how it affects decision making. Uncertainty; using data of all sizes; making decisions with incomplete data. Simulation of real-life scenarios to support optimal decision making. Students must have achieved a minimum score of 61 on the ALEKS placement examination in order to enroll.

DNSC 1099. Variable Topics. 1-36 Credits.

DNSC 2001. Business Analytics II: Predictive and Prescriptive Analytics. 3 Credits.

Builds on the foundations of probability and statistical methodologies covered in DNSC 1001. Categorical data analysis; design of experiments and analysis of variants (ANOVA); multiple regression; parameter estimation and testing; residual analysis; indicator variables; model selection procedures; logistic regression; and applications of optimization models. Prerequisites: DNSC 1001 or STAT 1051 or STAT 1053 or STAT 1111. Credit cannot be earned for this course and STAT 2112.

DNSC 3288. Big Data, Predictive Analytics, and Ethics. 3 Credits.

How data is collected, stored, analyzed, and acted upon. Safeguards in place (or not in place) to protect individual freedoms. Ethical quandaries posed by the advent of recent technological advances. Same As: DNSC 3288W.

DNSC 3288W. Big Data, Predictive Analytics, and Ethics. 3 Credits.

How data is collected, stored, analyzed, and acted upon. Safeguards in place (or not in place) to protect individual freedoms. Ethical quandaries posed by the advent of recent technological advances. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: DNSC 3288.

DNSC 3401. Introduction to Business Analytics. 3 Credits.

Fundamentals of business analytics: what information it provides, how and when that information is used, and how it affects decision making. Working with uncertainty; understanding the dynamic nature of decision making; using data, regardless of its size; and making decisions with incomplete data. The simulation of real-life scenarios to support optimal decision making. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111.

DNSC 3402. Data Mining. 3 Credits.

The practice of exploring and discovering actionable business intelligence from large amounts of data; concepts, methods, and tools; supervised and unsupervised data mining techniques for discovering relationships in large data sets and building predictive models; regression models, decision trees, neural networks, clustering, and association analysis. Prerequisites: APSC 3115 or STAT 1051 or STAT 1053 or STAT 1111; Math 1231 or Math 1252.

DNSC 3403. Decision Models. 3 Credits.

Designing and developing decision models using Microsoft Excel and specialized decision support add-ins; interpreting the models' outputs. Equivalent courses may be substituted for the prerequisites. Prerequisites: DNSC 2001 or STAT 2112 or STAT 2118 or ECON 2123 or STAT 2123.

DNSC 4211. Programming for Analytics. 3 Credits.

Handling and preparing data for business analytics; descriptive, predictive and prescriptive analytics; creating data stories in collaboration with and for end users and information consumers; scripting, publishing, and collaborating for data products. Prerequisites: DNSC 1001 and DNSC 2001. Recommended background: Some prior knowledge of a programming. Credit cannot be earned for this course and DNSC 6211.

DNSC 4219. Forecasting Analytics. 3 Credits.

Predictive analysis and use of black-box models for time-series forecasting. Emphasis on identifying hidden patterns and structures in univariate and multivariate time-series data and using these for forecasting. Prerequisites: DNSC 4211; and DNSC 2001 or ECON 2123 or STAT 2112 or STAT 2118 or STAT 2123; and MATH 1221 or MATH 1231 or MATH 1252.

DNSC 4233. Social Network Analytics. 3 Credits.

Introduction to the theories, methods, and procedures of network analysis with emphasis on applications to organizations and management.

DNSC 4279. Data Mining. 3 Credits.

The practice of exploring and discovering actionable business intelligence from large amounts of data. Prerequisites: DNSC 2001 or ECON 2123 or STAT 2112 or STAT 2118 or STAT 2123; and DNSC 4211; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and DNSC 6279.

DNSC 4280. Machine Learning. 3 Credits.

Machine learning techniques. Topics include supervised learning (classification, regression), unsupervised learning (clustering, dimensionality reduction) and techniques associated with both types of learning. Restricted to students in the BS in business analytics program. Prerequisites: DNSC 4279.

DNSC 4281. Revenue Management Analytics. 3 Credits.

Methodologies used in pricing and revenue management. Tactical optimization of pricing and capacity allocation decisions to ensure the right prices are in place for all products, to all customers, through all channels, at all times. Prerequisites: DNSC 3403. Recommended background: A basic understanding of probability, probability distributions, expected value calculations, and basic optimization, and some knowledge of spreadsheet modeling.

DNSC 4282. Supply Chain Analytics. 3 Credits.

Mathematical modeling techniques used to design, analyze, execute, and integrate supply chains.

DNSC 4289. Capstone in Business Analytics. 3 Credits.

Designed to apply the knowledge gained in the classroom to real world problems by working in teams on an industry project. Students develop significant expertise in a set of analytical tools. Prior completion of all courses in the major is required. Restricted to students in the BS in business analytics program.

DNSC 4403. Decision Models. 3 Credits.

Design and development of decision models using spreadsheet software with decision support add-ins; interpreting decision model outputs; commonly used classes of models; decision analysis spanning business disciplines. Restricted to juniors and seniors.

DNSC 4404. Essentials of Project Management. 3 Credits.

Theoretical foundations of and practical insights into project management; the role of project management in contemporary business and government organizations; the link between projects and strategy. Project design and development.

DNSC 4900. Special Topics. 3 Credits.**DNSC 4995. Independent Study. 6 Credits.**

Students undertake research in an area of particular interest under the direction of a School of Business faculty member.

DNSC 5099. Variable Topics. 1-99 Credits.**DNSC 6201. Introduction to Business Analytics. 1.5 Credit.**

An introduction to business analytic concepts, methods, and tools with concrete examples from industry applications; Big Data and the opportunities it has created for businesses to store, organize, and analyze vast amounts of information. Completion of a basic course in statistics prior to enrollment is recommended.

DNSC 6202. Statistics for Managers. 3 Credits.

Mathematical and statistical concepts employed in the solution of managerial problems. Applications of functions, elements of calculus, and linear algebra. Introduction to probability, frequency distributions, statistical inference, and regression and correlation. Credit cannot be earned for this course and MBAD 6221, MBAD 6222, MBAD 6224.

DNSC 6203. Statistics for Analytics I. 1.5 Credit.

Foundations of statistical methodologies in business analytics; statistical inference and probability models; estimation, hypothesis testing, contingency table analysis, analysis of regression models; logit and probit analysis. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission. Corequisites: DNSC 6206.

DNSC 6206. Stochastic Foundation: Probability Models. 1.5 Credit.

Introduces the foundations of probability, along with the commonly used probability models (binomial, normal, and poisson) in predictive analytics. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission.

DNSC 6207. Applied Probability Models. 1.5 Credit.**DNSC 6208. Computational Optimization. 3 Credits.****DNSC 6209. Forecasting for Analytics. 1.5 Credit.**

Predictive analysis and use of blackbox models for time-series forecasting. Identifying hidden patterns and structures in the data and exploiting these for forecasting. Prerequisites: DNSC 6202 or MBAD 6224.

DNSC 6210. Decision and Risk Analytics. 1.5 Credit.

Concepts, methods, and practical tools to analyze managerial decisions involving risk and uncertainty. Restricted to students in the master of science in business analytics degree program or with program approval. Prerequisites: DNSC 6206 and DNSC 6203.

DNSC 6211. Programming for Analytics. 3 Credits.

Accessing, preparation, handling, and processing data that differ in variety, volume, and velocity. Development of a theoretical grounding in emerging paradigms like schema-less data. Python and R typically used. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with departmental permission. Credit cannot be earned for this course and DNSC 4211.

DNSC 6212. Optimization Methods and Applications. 3 Credits.

Linear, network, integer, and nonlinear models and their fundamental underlying analytic concepts and solution methods; model development, formulation, solution and interpretation of results using powerful commercial software; intuitive understanding of solution methods and their underpinning theoretical paradigms for effective use of optimization models. Restricted to students in the master of science in business analytics degree program or with the permission of the instructor.

DNSC 6213. Statistics for Analytics II. 1.5 Credit.

Statistical methodologies for business analytics in real world scenarios; introduction of high-level analytical techniques such as hierarchical linear modeling and mixed-effects modeling. Restricted to students in the MS in business analytics and graduate certificate in business analytics programs or with permission of the department. Prerequisite: DNSC 6203.

DNSC 6214. Pricing and Revenue Management. 1.5 Credit.

Methodologies for addressing pricing issues; tactical optimization of pricing and capacity allocation decisions; quantitative models of consumer behavior and constrained optimization. For the prerequisites, DNSC 6206 must be taken before DNSC 6203. Prerequisites: DNSC 6206 and DNSC 6203; and DNSC 6202 or MBAD 6224.

DNSC 6215. Social Network Analytics. 1.5 Credit.

Concepts, methods, and applications of network science; analyzing real networks and related phenomena such as organizational analysis, social power, fraud detection, and disease propagation. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224 (note that DNSC 6206 must be taken before DNSC 6203). Recommended background: Prior exposure to Python and R scripts.

DNSC 6216. Business Analytics Skills Workshops. 1.5 Credit.

Practical workshop designed to develop the student's application-related skills for the analytics realm. Programming skills, computing environments (e.g. cloud or enterprise computing), and data ethics and security. Restricted to students in the master of science in business analytics degree program.

DNSC 6217. Business Analytics Practicum. 1.5 Credit.

Working in small teams, students apply their analytics skills to projects sponsored by public or private institutions. Each team is advised by a faculty member, and the practicum sponsor designates a mentor to provide guidance to the team for the duration of the project. Prerequisite: MSBA degree candidacy.

DNSC 6219. Time Series Forecasting for Analytics. 3 Credits.

Predictive analysis and blackbox models for time series and econometric forecasting. If chosen for the prerequisite, DNSC 6206 must be taken before DNSC 6203. Restricted to students in the master of science in business analytics degree program or with the permission of the department. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224.

DNSC 6225. Business Process Simulation. 1.5 Credit.

Approaches and issues involved in business process design; basic tools used to analyze and improve processes; process modelings using a powerful discrete-event simulation tool. If DNSC 6206 and DNSC 6203 are taken as prerequisites, they must be completed in that order. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202 or MBAD 6224.

DNSC 6231. Consulting for Analytics. 1.5 Credit.

Practical tools used by analysts and managing analysts, within an organization or for an external consulting-focused organization, for integrating analytical skills into problem solving. Prerequisites: DNSC 6203, DNSC 6206, and DNSC 6211 or permission of the instructor.

DNSC 6233. Social Network Analysis for Managers. 3 Credits.

Concepts, theories, and applications associated with network data; concepts at micro, meso, and macro levels, including connectedness, homophily, transitivity, and clustering. Power, roles, social position, and social capital.

DNSC 6234. Procurement and Contracting. 3 Credits.

Principles and concepts essential to effecting large procurement programs. Planning, sourcing, and contractual design for diverse acquisitions. Emphasis on federal government policy with comparison of buying at other governmental levels and the private sector.

DNSC 6235. Communication Strategies in Project Management. 3 Credits.

Communication leadership and management practices that facilitate successful project management; strategies and practices related to communication, change management, and performance reporting.

DNSC 6236. Project Quality Management. 3 Credits.

Current theories and practices regarding quality management as applied to manufacturing and the service industry, the application to project systems, and the application to individual projects. Prerequisite: None.

DNSC 6237. International Project Management. 1.5 Credit.

Augments the basics of project management with theory, practice, and methodology related to global project environment; practical investigation of the cultural environment in the context of managing global projects.

DNSC 6238. Project Management and Organizational Context. 1.5 Credit.

Organizational influences on project management practices; definition and classification of organizations; organizational culture; organizational strategy; project management practices that take place during initiation, planning, execution, monitoring and controlling, and closing processes.

DNSC 6239. Project Governance. 1.5 Credit.

An overview of project governance; models, practices and case studies.

DNSC 6247. Organization, Management, and Leadership. 3 Credits.

Fundamentals of human resource management for project managers. Tools and techniques for success in managing and leading people in a project environment. Prerequisites: None.

DNSC 6250. Project Management Finance. 3 Credits.**DNSC 6251. Optimization Models for Decision Making. 1.5 Credit.**

Optimization modeling techniques, including linear programming, sensitivity analysis, networks, integer programming, multiple objective optimization, and nonlinear and evolutionary programming. Prerequisites: DNSC 6202 or MBAD 6224.

DNSC 6252. Risk Analysis for Decision Making. 1.5 Credit.

Probabilistic modeling techniques with spreadsheet implementation. The concept of risk and methods for its analysis; risk attitudes, risk measures, decision trees, simulation models, game theory, real options approach, and risk communication. Recommended background: Working knowledge of basic statistics.

DNSC 6254. Risk Management. 1.5 Credit.

Basic principles of risk management practices. Developing a risk management plan, including identifying, analyzing, mitigating, and monitoring projects risks. Prerequisites: DNSC 6202 or MBAD 6224; or MBAD 6221 and MBAD 6222.

DNSC 6257. Cost Estimation and Control. 1.5 Credit.

Methods of developing project estimates during the planning stages and updating the estimates throughout the life of the project; monitoring, reporting, controlling, and managing project cost; relationships between project cost and other parameters, including scope, time, quality, reliability and procurement risk. Prerequisites: DNSC 6202 and DNSC 6261.

DNSC 6258. Executive Decision Making. 1.5 Credit.

Concepts and methods for making complex decisions in business and government. Identifying objectives and alternatives, setting priorities, and making collaborative decisions.

DNSC 6259. Project Portfolio Management. 1.5 Credit.

Management of an organization's portfolio of projects for the overall success of the enterprise; alignment of projects with an organizations strategy and goals and consistency with values and culture. Prerequisites: DNSC 6202 or MBAD 6221, MBAD 6222 or MBAD 6224.

DNSC 6261. Introduction to Project and Program Management. 3 Credits.

Comprehensive overview of project and program management. Culture, principles, and basic techniques of project management.

DNSC 6262. Directed Computational Project Management. 3 Credits.

Practical examination of project management concepts by quantitative application using various software tools. Research in real cost data to support project calculations. Prerequisite: DNSC 6254, DNSC 6257, DNSC 6261, DNSC 6267.

DNSC 6263. Managing External Projects. 3 Credits.

Fundamentals of contract management from a project manager's perspective. The outsourcing process, associated project strategies, and legal elements. Acquisition planning, vendor selection, contract formulation, and performance control.

DNSC 6267. Planning and Scheduling. 3 Credits.

Integrated planning, scheduling, and control systems for planning the scope of a project; optimizing time, cost, and resources; and monitoring and controlling schedules, including those for delayed projects. Prerequisites: DNSC 6261; and DNSC 6202 or MBAD 6221; and MBAD 6222 or MBAD 6224.

DNSC 6269. Project Management Application. 3 Credits.

Students are expected to demonstrate integration of the knowledge accumulated in their study plan and apply integrated knowledge and experience to best practices, a project case history, and a handbook. Prerequisites: MSPM candidacy or permission of instructor/advisor.

DNSC 6274. Statistical Modeling and Analysis. 3 Credits.

The process of specifying, analyzing, and testing models of human and systemic behavior. Formalization of models; statistical test comparison and selection; computer implementation of univariate, bivariate, and multivariate tests. General linear model: linear regression, analysis of variance, and analysis of covariance. Prerequisite: MBAD 6221 and MBAD 6222 .

DNSC 6275. Advanced Statistical Modeling and Analysis. 3 Credits.

Advanced topics associated with the general linear model. Testing for and remediation of assumption violations. Detection of outliers, influential observations, and multicollinearity. Alternative design strategies in the analysis of variance; latent growth analysis; hierarchical linear modeling; testing for interactions and parallelism. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6276. Exploratory and Multivariate Data Analysis. 3 Credits.

Methods for exploratory and multivariate data analysis. Application and comparison of advanced multivariate analytical procedures. Multivariate and discriminant analysis, LISREL analysis, and canonical correlation. Prerequisite: DNSC 6274 or permission of instructor.

DNSC 6277. Applied Forecasting and Time-Series Analysis for Managers. 3 Credits.

Introduction to various forecasting techniques, including time-series regression models, cyclical trends, exponential smoothing methods, seasonal and nonseasonal ARIMA processes, and the Box-Jenkins approach. Application of forecasting methods in economics, finance, and marketing. Prerequisite: MBAD 6222 or permission of instructor.

DNSC 6278. Big Data Analytics. 3 Credits.

Practical workshop-style course using cloud computing resources to analyze and manipulate data too large to fit on a single machine and/or analyze with traditional tools. Spark, MapReduce, the Hadoop Ecosystem, and other tools. Prerequisites: DNSC 6211 and ISTM 6212. Recommended background: Understanding of and experience with Linux/OSX; programming concepts; R, Python, SQL, or other programming language; remote computing via SSH; shell executables; version control tools such as Git/GitHub.

DNSC 6279. Data Mining. 3 Credits.

How organizations make better use of increasing amounts of collected data and convert that data into information to support managerial decision making; data mining and data analysis methods and tools for exploring and analyzing data sets; state-of-the-art software tools for developing novel applications. Note that the prerequisite courses must be taken in the order listed. Restricted to students in the master of science in business analytics and graduate certificate in business analytics programs. Prerequisites: DNSC 6203 and DNSC 6206. Credit cannot be earned for this course and DNSC 4279.

DNSC 6280. Supply Chain Analytics. 3 Credits.

Analytical framework for how supply chains function for decision making. Decision models studied include inventory management, integrated transportation, risk pooling, network coordination, and supplier management. Prerequisites: DNSC 6202; or DNSC 6203 and DNSC 6206; or MBAD 6224.

DNSC 6290. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

DNSC 6298. Directed Readings and Research. 3 Credits.

DNSC 6300. Thesis Seminar. 3 Credits.

DNSC 6401. Sustainable Supply Chains. 1.5 Credit.

Introduction to integrating environmental management and sustainability concepts into the operations and supply chain management fields.

DNSC 6403. Visualization for Analytics. 1.5 Credit.

Use of data visualization software technology in the context of exploratory and reporting capabilities. SAS Visual Analytics/Statistics and other methodologies. Various graphical approaches to preparing and visualizing data. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224 (if chosen for the prerequisite, DNSC 6206 must be completed before taking DNSC 6203).

DNSC 6404. Sports Analytics. 1.5 Credit.

Analyzing and leveraging information throughout a sports organization. Strategies for gaining competitive advantage on the field of play; player analysis; and business operations. Prerequisites: DNSC 6206 and DNSC 6203; or DNSC 6202; or MBAD 6224 (note that DNSC 6206 must be completed before taking DNSC 6203).

DNSC 6500. Analytic Skills for Managers. 1 Credit.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Restricted to students in the MBA program.

DNSC 8328. Special Topics in Decision Making. 3 Credits.

Special topics and advanced applications, such as catastrophe theory, Markovian decision processes, and Bayesian statistics. May be repeated once for credit.

DNSC 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

DNSC 8392. Computational Optimization. 3 Credits.

The description, design, and programming of efficient computational methods for large-scale optimization problems; introduction to software, optimization solvers, and programming languages used by professionals to code and model industry-size optimization problems.

DNSC 8393. Applied Stochastic Models for Business. 3 Credits.

In-depth coverage of stochastic models and their applications in business and industry; applications to marketing, call center modeling, finance, queuing systems, and operations.

DNSC 8394. Stochastic Programming. 3 Credits.

The intersection of probability theory and statistics with mathematical programming for modeling optimization problems that involve uncertainty. Basic knowledge of linear programming, elementary analysis and probability. Emphasis on algorithmic methods to solve stochastic programming instances.

DNSC 8397. Advanced Special Topics. 1-3 Credits.

Current research and scholarly issues in management science.

DNSC 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

DNSC 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

EAST ASIAN LANGUAGE AND LITERATURE (EALL)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EALL 1075. East Asian Calligraphy. 3 Credits.

Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature. Same as FA 1075.

EALL 2802. Introduction to Chinese Religions. 3 Credits.

General introduction to Chinese religions focusing on religious doctrines and institutions; religious practices, including ancestor worship, family and communal rituals, spirit possession, fengshui theories, pilgrimage, popular worship of ghosts and gods. (Same as REL 2802).

EALL 3099. Variable Topics. 1-12 Credits.**EALL 3811. Confucian Literature in East Asia. 3 Credits.**

General introduction to the Confucian traditions of literature, with an emphasis on history, historical writings, popular tales, and drama in China, Japan, and Korea. (Same as REL 2811).

EALL 3814. Religion and Philosophy in East Asia. 3 Credits.

Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions, how these traditions evolved over time, and the way each culture assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. (Same as REL 2814).

EALL 3814W. Religion and Philosophy in East Asia. 3 Credits.

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and EALL 3814.

EALL 3831. Introduction to Daoism. 3 Credits.

A general introduction to the Daoist tradition from the antiquity to contemporary times, through reading major Daoist classics, scriptures, poems, novels, and examining Daoist material cultures and bodily cultivation techniques. Same As: EALL 6831, REL 2831.

EALL 3831W. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as REL 3831).

EALL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.

Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage. Same as REL 3832.

EALL 3881. Women, Gender, and Religion in China. 3 Credits.

Historical introduction to women and men as gendered subjects and the construction of gender and power in Chinese religions. May be taken for graduate credit with extra work assigned. Same as REL 3881/WGSS 3881. (Same as REL 3881, WGSS 3881).

EALL 4197. Independent Study. 1-3 Credits.

Departmental approval is required to register.

EALL 5099. Variable Topics. 1-99 Credits.**EALL 6811. Confucian Literature in East Asia. 3 Credits.**

Introduction to Confucian literature in China and other parts of East Asia from earliest times to the present day. Various historical, philosophical, and religious dimensions of Confucian texts and practices. (Same as EALL 3811).

EALL 6831. Introduction to Daoism. 3 Credits.

A general introduction to the Daoist tradition from the antiquity to contemporary times, through reading major Daoist classics, scriptures, poems, novels, and examining Daoist material cultures and bodily cultivation techniques. Students taking the course for graduate credit must complete additional work. (Same as EALL 3831, EALL 3831W, REL 3831W).

EALL 6832. Myth, Ritual, and Popular Religion in China. 3 Credits.

Popular beliefs and practices in the everyday life of China, with consideration of a variety of practices such as ancestor worship, family and communal rituals, spirit possession, fengshui theories, and pilgrimage. Credit cannot be earned for this course and EALL 3832, REL 3832.

EALL 6881. Women, Gender, and Religion in China. 3 Credits.

A historical introduction to the concepts of body, gender, and womanhood in Confucian, Daoist, Buddhist, and popular Chinese religious traditions. Women's roles in religious ritual and practices; the influence of Christianity and modernity. (Same as EALL 3881, REL 3881, WGSS 3881).

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECON 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

ECON 1001. Principles of Mathematics for Economics. 3 Credits.

Prepares students for college instruction in principles of microeconomic and macroeconomic theory, as well as instruction in business, social science, and basic science courses that do not require knowledge of calculus. Restricted to students who have successfully completed high school algebra I and basic geometry prior to matriculation and who have taken the Assessment and Learning in Knowledge Spaces (ALEKS) placement examination at GW; No minimum ALEKS score is required for this course.

ECON 1011. Principles of Economics I. 3 Credits.

Major economic principles, institutions, and problems in contemporary life. Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets. Credit cannot be earned for this course and HONR 2043.

ECON 1012. Principles of Economics II. 3 Credits.

Continuation of ECON 1011. Major economic principles, institutions, and problems in contemporary life. Topics in macroeconomics, including national income concepts, unemployment and inflation, institutions of monetary control. Prerequisite: ECON 1011 OR HONR 2043. Credit cannot be earned for this course and HONR 2044.

ECON 1099. Variable Topics. 1-36 Credits.**ECON 2101. Intermediate Microeconomic Theory. 3 Credits.**

Analysis of household economic behavior, including derivation of demand functions. Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2103.

ECONOMICS (ECON)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

ECON 2102. Intermediate Macroeconomic Theory. 3 Credits.

Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2104.

ECON 2103. Intermediate Microeconomic Theory: A Mathematical Approach. 3 Credits.

Analysis of household economic behavior, including derivation of demand functions, and of firm behavior, including derivation of supply frameworks; demand and supply interaction under various market structures and in factor markets; reliance on constrained and unconstrained optimization techniques when analyzing household and firm behavior. Corequisite: MATH 1232. Recommended for students pursuing the BS degree in economics. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044; MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2101.

ECON 2104. Intermediate Macroeconomic Theory: A Mathematical Approach. 3 Credits.

Development and application of mathematical models of aggregate economic behavior with a focus on the intertemporal choices made by households, firms, and governments. Corequisite: MATH 1232. Recommended for students pursuing the BS degree in economics. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044; and MATH 1221 or MATH 1231 or MATH 1252. Credit cannot be earned for this course and ECON 2102.

ECON 2121. Financial Economics. 3 Credits.

Economic analysis of key financial institutions, markets, and variables. Investigation of the performance of asset markets and the roles of money, credit, interest rates, and exchange rates. Examination of private sector institutions like equity markets and the banking system and the roles of regulators like the Federal Reserve. Credit cannot be earned for both ECON 2121 and ECON/FINA 3301. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044. Credit cannot be earned for this course and FINA 3301.

ECON 2122. Monetary Theory and Policy. 3 Credits.

Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. Prerequisites: ECON 1011 and ECON 1012.

ECON 2123. Introduction to Econometrics. 3 Credits.

Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231; and STAT 1051 or STAT 1053 or STAT 1111. Same As: STAT 2123.

ECON 2136. Environmental and Natural Resource Economics. 3 Credits.

Analysis of a variety of environmental and natural resource problems. The economic causes of these problems, their consequences, and the relative merits of alternative policies for dealing with them. Prerequisites: ECON 1011 and ECON 1012; or HONR 2043 and HONR 2044.

ECON 2148. Survey of Health Economics. 3 Credits.

Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. Credit cannot be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 1011 and ECON 1012. Credit cannot be earned for this course and ECON 3148.

ECON 2151. Economic Development. 3 Credits.

Theories and empirical studies of the economic problems of developing countries. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044. Credit cannot be earned for this course and ECON 6250.

ECON 2151W. Economic Development. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ECON 1011 and ECON 1012.

ECON 2157. Urban and Regional Economics. 3 Credits.

Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets. Prerequisites: ECON 1011 and ECON 1012.

ECON 2158. Industrial Organization. 3 Credits.

Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. Prerequisite: ECON 1011- ECON 1012.

ECON 2159. Government Regulation of the Economy. 3 Credits.

Economic analysis of antitrust and regulation in the American economy. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103 or ECON 2158.

ECON 2160. Surv:Finance&Engineering Econ. 3 Credits.

ECON 2167. Economics of Crime. 3 Credits.

Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044.

ECON 2169. Introduction to the Economy of China. 3 Credits.

Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. Prerequisites: ECON 1011 or HONR 2043 and ECON 1012 or HONR 2044.

ECON 2170. Introduction to the Economy of Japan. 3 Credits.

Analysis of the structure and growth of the Japanese economy. Prerequisites: ECON 1011 and ECON 1012.

ECON 2180. Survey of International Economics. 3 Credits.

Basic concepts of international trade and international finance, with emphasis on policy issues. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Credit cannot be earned for this course and ECON 6280.

ECON 2181. International Trade Theory and Policy. 3 Credits.

The basis for international trade and the effect of trade on consumers, producers, and workers; causes and effects of the international movement of factors including foreign direct investment, outsourcing, and migration; and the impacts of trade policies and trade agreements. Credit may not be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Credit cannot be earned for this course and ECON 3181, ECON 6283.

ECON 2182. International Macroeconomic Theory and Policy. 3 Credits.

Topics include the balance of payments, the determination of exchange rates and prices in open economies, the interaction of the exchange rate and domestic economic activity, international financial markets, and exchange rate and financial crises. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044. Credit cannot be earned for this course and ECON 6284.

ECON 2185. Economic History and Problems of Latin America. 3 Credits.

Analysis of present structures and problems of Latin American economies. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044.

ECON 2195W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ECON 2198. Special Topics in Economics - Regional. 3 Credits.

Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011 and ECON 1012.

ECON 2199. Special Topics in Economics. 3 Credits.

Topics vary depending on current issues of interest and faculty availability. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044.

ECON 3098. Variable Topics - Regional Economics. 1-9 Credits.

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ECON 3099. Variable Topics. 1-12 Credits.

ECON 3105. Economic Forecasting. 3 Credits.

Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. Prerequisites: ECON 1011 and ECON 1012; and ECON 2102 or ECON 2104; and ECON 2123.

ECON 3142. Labor Economics. 3 Credits.

Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044; and ECON 2101 or ECON 2103.

ECON 3148. Health Economics. 3 Credits.

Analysis of economic theories and applications to the demand for and supply of health care. Examination of the role of government in health care, public health, and unhealthy behavior (e.g., smoking). Credit cannot be earned for both ECON 2148 and ECON 3148. Prerequisites: ECON 2101 or ECON 2103. Credit cannot be earned for this course and ECON 2148.

ECON 3161. Public Finance: Expenditure Programs. 3 Credits.

Economic analysis of government spending and social regulation program; public goods, externalities, income transfer and social insurance programs, and benefit-cost analysis of government programs. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103.

ECON 3162. Public Finance: Taxation. 3 Credits.

Economic analysis of taxes. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth taxes, design of tax systems, and effects of taxation on labor and capital markets. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 and HONR 2044; and ECON 2101 or ECON 2103.

ECON 3165. Economics of Human Resources. 3 Credits.

Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. Prerequisites: ECON 1011 and ECON 1012; and ECON 2101 or ECON 2103.

ECON 3181. International Trade Theory. 3 Credits.

Rigorous examination of theories of international trade that explain why countries trade and their gains from trade. Theories include comparative advantage, the factor-proportions theory of trade, and recent theoretical developments. The course also deals with the theory of trade policies, such as tariffs and quotas. Credit cannot be earned for both ECON 2181 and ECON 3181. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103; and MATH 1221, MATH 1231, or MATH 1252. Credit cannot be earned for this course and ECON 2181.

ECON 3190. Law and Economics. 3 Credits.

An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103.

ECON 3191. Game Theory. 3 Credits.

Introduction to game theory, covering concepts such as Nash equilibrium, evolutionary games, backward induction and subgame perfection, Bayesian-Nash games of imperfect information, adverse selection, and moral hazard. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and ECON 2101 or ECON 2103.

ECON 3198. Advanced Topics in Economics - Regional. 3 Credits.

Topics cover individual countries or regions of the world and vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON 2104) or ECON 2123.

ECON 3199. Advanced Topics in Economics. 3 Credits.

Topics vary depending on current issues of interest and faculty availability. Prerequisites: Depending on the topic: ECON 2101 (or ECON 2103) or ECON 2102 (or ECON 2104) or ECON 2123.

ECON 4198W. Proseminar in Economics. 3 Credits.

Preparation and presentation of a research paper in any field of economics agreed upon by the student and instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to seniors in the economics program. Prerequisites: ECON 2101 or ECON 2103; and ECON 2102 or ECON 2104. Recommended background: Prior or concurrent enrollment in ECON 2123 or STAT 2112 or STAT 2118.

ECON 4199. Independent Research - Economics. 3 Credits.

Independent research. Prerequisites: ECON 1011 and ECON 1012; and completion of 12 credits of upper-division economics courses, including ECON 2101 or ECON 2103 and ECON 2102 or ECON 2104, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the economics department.

ECON 5099. Variable Topics. 1-99 Credits.**ECON 6217. Survey of Economics I. 3 Credits.**

Intermediate-level microeconomic theory for graduate students in fields other than economics.

ECON 6218. Survey of Economics II. 3 Credits.

Continuation of ECON 6217. Intermediate-level macroeconomic theory for graduate students in fields other than economics. (ECON 6217 and ECON 6218—).

ECON 6219. Managerial Economics. 3 Credits.

Intermediate microeconomic theory, with emphasis on production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Credit can be earned for only one of ECON 6217 or ECON 6219.

ECON 6237. Economics of the Environment and Natural Resources. 3 Credits.

Analysis of public policy problems relating to the environment and natural resources development and management. Prerequisite: ECON 6217.

ECON 6239. Economics of Defense. 3 Credits.

Economic analysis applied to national security planning and objectives. Analysis of defense establishment problems, including manpower, the defense industry base, procurement policy.

ECON 6248. Health Economics. 3 Credits.

Demand for medical care; organization of the health care delivery industry; policy issues on regulation, efficiency, and allocation of health care services.

ECON 6249. Industrial Org-TComm Industry. 3 Credits.**ECON 6250. Survey of Economic Development. 3 Credits.**

An introduction to economic problems faced by less developed countries. Emphasis on applications to policymaking and evaluation. Prerequisite: ECON 6217 or ECON 6280 or equivalent. Credit cannot be earned for this course and ECON 2151.

ECON 6255. Economics of Technological Change. 3 Credits.

Economics of research and development; innovation and growth; the role of government in the development and use of new technology.

ECON 6269. Economy of China I. 3 Credits.

Analysis of organization, operation, policies, and problems. Development of the economy since 1949.

ECON 6270. Economy of China II. 3 Credits.

Continuation of ECON 6269. Examination of critical problems of development. Prerequisites: ECON 6269 or permission of the instructor.

ECON 6271. Economy of Japan. 3 Credits.

Analysis of Japanese economic institutions and their contribution to Japan's development.

ECON 6280. Survey of International Economics. 3 Credits.

Introductory international trade and finance, primarily for students in the Elliott School. Topics include the economic effects of trade liberalization and protection, exchange rate determination, and macroeconomic policies in an open economy. Recommended background: introductory microeconomics and macroeconomics. Credit cannot be earned for this course and ECON 2180.

ECON 6283. Survey of International Trade Theory and Policy. 3 Credits.

For graduate students in fields other than economics. Survey of international economics and policy; application of comparative advantage and other arguments for trade; impact of trade on a domestic economy; new arguments for protectionism; and regional trading blocs. Credit cannot be earned for this course and ECON 2181.

ECON 6284. Survey of International Macroeconomics and Finance Theory and Policy. 3 Credits.

For graduate students in fields other than economics. Open economy macroeconomics; international finance; balance of payments accounting; exchange markets; alternative models of balance of payments determination and adjustment; behavior of flexible exchange rate systems. Credit cannot be earned for this course and ECON 2182.

ECON 6285. Economic Development of Latin America. 3 Credits.

Diversity of structures of Latin American economies; import substituting industrialization; inflation; problems of underemployment and income distribution.

ECON 6286. Economic Development of Latin America. 3 Credits.

Continuation of ECON 6285. Structure of trade; protection, exports, and economic development; regional and global economic integration; foreign investment, multinational enterprise, and technology transfer.

ECON 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as GEOG 6290/ SOC 6290/ STAT 6290.

ECON 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as GEOG 6291/ SOC 6291/ STAT 6291.

ECON 6292. Topics in International Trade. 3 Credits.

Topics on international trade issues and policy. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6293. Topics in International Finance. 3 Credits.

Topics on macroeconomic issues and policies in open economies, including exchange rate regimes, determinants of international capital flows, currency crises, financial contagion, current account sustainability and sovereign crises, fiscal problems, and macro-policies in emerging markets and mature economies.

ECON 6294. Topics in Economic Development. 3 Credits.

Topics on economic development issues and policy vary depending on faculty availability and interest. Primarily for master's students in programs other than economics. May be repeated for credit if topic differs.

ECON 6295. Special Topics. 3 Credits.

Topics vary, depending on current issues of interest and faculty availability.

ECON 6298. Reading and Research. 3 Credits.

Independent research. Restricted to master's candidates.

ECON 6300. Mathematical Methods for Economics. 3 Credits.

Instruction in the mathematical background required to appreciate and understand the use of mathematics in economic analysis, including multivariable calculus, integral calculus, and linear algebra. Emphasis on techniques for solving systems of equations, unconstrained and constrained optimization, comparative static analysis, difference equations, and analysis of dynamic models and their application to a range of economic problems. Restricted to students in the MA in applied economics program.

ECON 6301. Applied Microeconomic Theory. 3 Credits.

The principal areas of microeconomic theory: consumer demand, decision making under uncertainty, production and costs, game theory, and product markets; both competitive and imperfectly competitive, factor markets, and market failures. Emphasis on the application of theory to microeconomic issues of interest to the private and public sectors, such as product pricing, market entry and deterrence, competition policy, tax policy, and environmental regulation. ECON 6301 may be taken as a corequisite. Restricted to students in the MA in applied economics program. Prerequisite: ECON 6300.

ECON 6305. Applied Macroeconomic Theory. 3 Credits.

Development of an integrated framework for analyzing the determination of macroeconomic variables such as total production, unemployment, interest rates and inflation; interpreting macroeconomic data and macroeconomic policy; linking economic theory and current economic policy. The level of mathematical rigor is above that in a typical intermediate undergraduate macroeconomics course, but below that in a first-year PhD course. ECON 6300 may be taken as a corequisite. Restricted to students in the MA in applied economics program. Prerequisite: ECON 6300.

ECON 6321. Applied Managerial Economics. 3 Credits.

The application of economic principles and methodologies to key management decisions within organizations. Recommended background: Prior completion of a course in intermediate microeconomics.

ECON 6323. Applied Behavioral Economics. 3 Credits.

The application of economic principles and methodologies to key management decisions within organizations. Recommended background: Prior completion of a course in intermediate microeconomics.

ECON 6325. Applied Game Theory. 3 Credits.

Equilibrium concepts based on the Nash Equilibrium; application of these concepts to oligopolistic markets, long-term relationships in repeated games, auctions, reputation formation, and others. Recommended background: Prior completion of a course in intermediate microeconomics and one semester of undergraduate calculus.

ECON 6330. Applied Macroeconomics and Money. 3 Credits.

Motivations for employing the modern, expanded tools of a central bank; historical and present limitations. Recommended background: Prior completion of a course in intermediate macroeconomics.

ECON 6335. Applied Financial Derivatives. 3 Credits.

Introduction to the theoretical and practical aspects of financial and derivative markets; application of quantitative and statistical approaches to a variety of problems. Recommended background: Prior completion of a course in intermediate microeconomics.

ECON 6340. Applied Labor Economics and Public Policy. 3 Credits.

Topics in labor economics, including unemployment, unions, immigration, the minimum wage, pensions, worker mobility, and inequality. ECON 6300 may be taken as a corequisite. Prerequisite: ECON 6300.

ECON 6344. Applied Industrial Organization. 3 Credits.

The behavior of firms and implications of market structure and resource allocation; market participants, the role of transaction costs, product differentiation, imperfect knowledge, and market contestability. Public policy related to monopoly regulation and antitrust law. Use of standard microeconomic empirical and theoretical tools, including an introduction to game theory. Recommended background: Prior completion of a course in intermediate microeconomics and one semester of undergraduate calculus.

ECON 6350. Applied Development Economics. 3 Credits.

The complex causes of underdevelopment and contemporary ideas about how to make development succeed; theory underlying development economics, as well as the analytical tools used in development research. Students are expected to have a working understanding of the concepts of calculus. Recommended background: Prior completion of a course in intermediate microeconomics or intermediate macroeconomics.

ECON 6374. Probability and Statistics for Economics. 3 Credits.

Basics of research design, probability theory, mathematical expectations, univariate and bivariate statistical comparison tools, and a brief introduction to regression analysis. Restricted to students in the MA in applied economics program or with the permission of the instructor.

ECON 6375. Applied Econometrics. 3 Credits.

Introduction to the skills needed to critically evaluate and conduct econometric analysis. Multiple regression analysis; theoretical underpinnings of the ordinary least squares estimator; interpreting regression results and how to address common issues that arise in regression analysis; econometric methods to estimate and test economic models and to address causal questions using observational data. Restricted to students in the MA in applied economics program. Prerequisite: ECON 6374.

ECON 6376. Time Series Analysis. 3 Credits.

The tools required to understand, implement, and interpret common models used in time series econometrics. Emphasis on intuition and application. Students become proficient with performing basic time series analysis and forecasting using time series statistical software. Restricted to students in the MA in applied economics program. Prerequisites: ECON 6305 and ECON 6374.

ECON 6997. Independent Research. 1-3 Credits.

This course is limited to master's degree candidates in Economics. Before permission is granted to register for ECON 6997, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. The written plan must also be approved by the program director. This course may be repeated once for credit but to no more than a total of 6 credits.

ECON 6998. Thesis Research. 3 Credits.**ECON 6999. Thesis Research. 3 Credits.****ECON 8301. Microeconomic Theory I. 3 Credits.**

Theory of unconstrained optimization; optimization subject to equality and inequality constraints, along with applications. Profit maximization, utility maximization and cost minimization, concave and quasi-concave functions, monotone comparative statics, duality theory, the envelope theorem and Le Chatelier principle, and the Kuhn-Tucker conditions.

ECON 8302. Microeconomic Theory II. 3 Credits.

Expected utility theory, general equilibrium in a pure exchange economy and economy with production, welfare theorems and the core theory of the competitive firm in the short run and long run, monopoly and price discrimination, models of oligopoly. Prerequisite: ECON 8301.

ECON 8303. Microeconomic Theory III. 3 Credits.

Theory of games, including Nash equilibrium and its refinements and comparative statics, evolutionary game theory, multistage games and subgame perfection, repeated games and oligopolistic supergames, static and dynamic Bayesian games, auction theory, and bargaining theory. Prerequisite: ECON 8301 and ECON 8302.

ECON 8305. Macroeconomic Theory I. 3 Credits.

Alternative theories of income, employment, and the price level; impact of monetary and fiscal policy; role of expectations in the economy; and microfoundations of macroeconomic models and dynamic analysis.

ECON 8306. Macroeconomic Theory II. 3 Credits.

Extensions of alternative models of income determination, economic growth, and the application of analytical frameworks to the U.S. and international economies. Prerequisite: ECON 8305.

ECON 8307. Macroeconomic Theory III. 3 Credits.

Extensions to stochastic and dynamic general equilibrium frameworks, with emphasis on economic policy. Prerequisite: ECON 8306.

ECON 8323. Monetary Theory and Policy I. 3 Credits.

Theory of monetary policy within the framework of contemporary American central banking.

ECON 8324. Monetary Theory and Policy II. 3 Credits.

Continuation of ECON 8323. Theory of monetary policy within the framework of contemporary American central banking.

ECON 8337. Environmental Economics. 3 Credits.**ECON 8341. Labor Economics I. 3 Credits.**

Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8342. Labor Economics II. 3 Credits.

Continuation of ECON 8341. Theory of wages and employment, analysis of labor supply and demand. Analysis of unemployment; unions; wage regulation.

ECON 8345. Industrial Organization I. 3 Credits.

Economic theory and evidence regarding industrial market structure, conduct, and economic performance.

ECON 8346. Industrial Organization II. 3 Credits.

Continuation of ECON 8345. Economic issues in antitrust and government regulation of the U.S. economy.

ECON 8351. Development Economics I. 3 Credits.

Major analytic concepts, measures, theoretical models, and empirical methods of development economics.

ECON 8352. Development Economics II. 3 Credits.

Continuation of ECON 8351. In-depth examination of special research topics with emphasis on methods in applied microeconomics.

ECON 8357. Regional Economics. 3 Credits.

Study of regional planning and growth models, including input-output, programming, and econometric models used by planning agencies; analysis of interregional production, trade, migration, firm location, and pricing models.

ECON 8358. Urban Economics. 3 Credits.

Analysis of spatial relationships among economic activities within an urban area including the urban land, labor, and housing markets; urban transportation models; fiscal relationships among jurisdictions.

ECON 8363. Public Finance I. 3 Credits.

Theoretical and empirical analysis of the economic role of the public sector and the effects of public expenditures on resource allocation and income distribution. Topics include public goods, externalities, social insurance, and benefit-cost analysis.

ECON 8364. Public Finance II. 3 Credits.

Theoretical and empirical analysis of the effects of taxes and transfers on the allocation of resources and income distribution. Topics include partial and general equilibrium models of tax incidence, effects of taxes on labor supply, saving, and portfolio choices of households and on investment and financing decisions of firms.

ECON 8375. Econometrics I. 3 Credits.

Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as STAT 8375.

ECON 8376. Econometrics II. 3 Credits.

Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as STAT 8376. Prerequisite: ECON 8375.

ECON 8377. Econometrics III. 3 Credits.

Econometric methods for systems of equations and panel data, with additional topics that may vary from year to year. Prerequisite: ECON 8376.

ECON 8378. Economic Forecasting. 3 Credits.

Introduction to the theoretical and applied aspects of economic forecasting. Topics include the role of forecasting, univariate time-series analysis, single equation models, multiple series models, and evaluation of forecasts. Prerequisites: ECON 8375 or permission of the instructor.

ECON 8379. Laboratory in Applied Econometrics. 3 Credits.

Application of econometric theory and the use of econometric software; students are required to write an empirical research paper. The course usually deals exclusively with either micro or macroeconomic issues. May be repeated for credit provided the topic differs.

ECON 8381. International Trade Theory. 3 Credits.

International trade theory, including alternative models of the gains from trade and evaluations of the new justifications for protectionism, and analysis of commercial policy, factor flows, and trade and investment with multinational corporations. Prerequisites: Most sections require calculus or permission of the instructor.

ECON 8382. International Finance and Open-Economy Macroeconomics. 3 Credits.

International finance, including alternative models of balance of payments behavior and adjustment, payments accounting, exchange markets, and alternative exchange-rate regimes.

ECON 8383. International Financial Markets. 3 Credits.

Financial economics and international financial markets. Topics include standard asset pricing theory, uncertainty in open economy macroeconomics models, financial market microstructure, and incomplete markets.

ECON 8395. Advanced Special Topics. 3 Credits.

Topics vary depending upon current interests and faculty availability. Open to graduate students in economics. May be repeated for credit.

ECON 8397. Dissertation Proposal Seminar. 3 Credits.

Limited to Doctor of Philosophy candidates in Unit II. Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies.

ECON 8997. Independent Research. 3 Credits.

Prior to enrollment, a written plan of study must be submitted for approval of both the faculty member directing the research and the director of graduate studies for the PhD program or the department chair. May be repeated for a total of 6 credits. Restricted to doctoral degree candidates in economics. Prerequisites: departmental approval.

ECON 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ECON 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

EDUCATIONAL LEADERSHIP (EDUC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EDUC 0920. Continuing Research - Master's. 1 Credit.

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EDUC 0940. Continuing Research: Doctoral. 1 Credit.

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EDUC 1099. Variable Topics. 1-36 Credits.**EDUC 2701. Museums as Cultural and Educational Resources. 3 Credits.**

A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area. Admission by permission of instructor.

EDUC 3002. Special Workshops. 3 Credits.**EDUC 5099. Variable Topics. 1-99 Credits.****EDUC 6100. Experimental Courses. 1-12 Credits.**

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 6101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with a program advisor.

EDUC 6112. Foundations of Assessment, Testing, and Measurement in Education. 3 Credits.

Foundations of assessment, testing, and measurement with a focus on basic statistical concepts for assessment data literacy, research design issues for assessments, a review of other educational assessments (IQ and psychological, personality and diagnostic), and other issues with assessment and testing including technology, ethical, and legal issues.

EDUC 6114. Introduction to Quantitative Research. 3 Credits.

Development of a conceptual understanding of research design and quantitative analysis options for the consumer of research. Appropriate use of vocabulary and interpretation of research findings. Critique of research articles and/or development of a small-scale proposal.

EDUC 6116. Introduction to Educational Statistics. 3 Credits.

Fundamentals of descriptive statistics and hypothesis testing; introduction to inferential statistics and research design, distinguishing between nonexperimental, quasi-experimental, and true experimental designs. Designed for those with little preparation in quantitative methods or who are not prepared for Educ 8120.

EDUC 6232. Supervision of Curriculum, Instruction, and Assessment. 3 Credits.

Preparation to lead and assess curriculum, instruction, and assessment practices in educational settings.

EDUC 6234. Foundations of K-12 Educational Leadership. 3 Credits.

Function, processes, and best practices involved in school principal leadership.

EDUC 6236. School Law and Policy. 3 Credits.

The legal basis of education and public schools in the United States. Constitutional provisions and federal statutes that guide school law. Legal factors that influence school policy. Consideration of practical school situations for legal implications, development of skills to research legal issues affecting schools, and preventive law measures.

EDUC 6238. Leadership for Equity and Social Justice. 3 Credits.

Cultural diversity and social justice in the context of teaching, learning, and leadership practice; systemic inequities in schools and how inclusive and socially just leadership practices can address these inequities.

EDUC 6240. Instructional Leadership for School Improvement. 3 Credits.

Introduction to the theory and practice of school improvement with a focus on the role of school leaders in the process.

EDUC 6242. Administrative Issues in Education. 3 Credits.

The impact of major social, political, economic, and education issues on the role of school leaders and the delivery and quality of programs and services.

EDUC 6244. School, Family, and Community Engagement. 3 Credits.

The purpose, scope, essential elements, and impact of a successful school-community relations program; community power structures, the roles of policy and leadership, communication techniques for interacting with various audiences and the media, and evaluation of public relations and marketing for educational institutions.

EDUC 6246. School Finance and Resource Management for School Leaders. 3 Credits.

Theory and practice of personnel and resource management for school administrators; selection, compensation, evaluation, promotion, retention, and removal of staff; principles of effective financial and resource management, including accounting, budgeting, and reporting; technology acquisition, building operations, and facilities management.

EDUC 6252. Human Relations Diversity. 3 Credits.

Application of current theory and research findings in human relations to staff motivation, change, conflict management, and communication techniques for working with individuals and groups within organizations.

EDUC 6256. School Business Management. 3 Credits.

Management and control of the business functions of school districts. Assessing, planning, developing, and presenting educational budgets; the legal contexts affecting school business management. Risk management and school-site budgeting.

EDUC 6258. School Finance. 3 Credits.

The financing of public elementary and secondary education in the United States; current revenue sources, distribution decisions, and trends in the fiscal operations of schools. Litigation, finance policies, and equitable investments of public monies.

EDUC 6260. Practicum in Supervision. 3-6 Credits.

Practical experience in supervision of instruction. Admission by permission of instructor.

EDUC 6262. Internship in Supervision and Instructional Leadership. 3-6 Credits.

Service in a school situation directed by the University's faculty and school systems; integration of theory and practice.

EDUC 6264. Problems and Practices in Staff. 3 Credits.

Application of principles and practices concerned with change and evaluation of educational administration.

EDUC 6270. Education Policy for School Leaders. 3 Credits.

Overview of education policy for educational leaders; economic and social dimensions of education policy and analysis of the policy process; policy development, planning, implementation, analysis, and evaluation.

EDUC 6272. Leading Evidence-Based Action Research for School Improvement. 3 Credits.

Culminating experience implementing the design and leadership of an action research project at a school or central office location. Gathering and analysis of data, reviewing the literature, developing and implementing a program to address an identified area of need; and measuring the program's effectiveness and reflecting on/modifying it based on results. Prerequisite: EDUC 6287.

EDUC 6287. Internship: Administration. 1-6 Credits.

Standards-based work in a practical setting, planned and guided cooperatively by GW and personnel in the placement school district.

EDUC 6314. History of American Education Reform. 3 Credits.

An examination of how evolving social, economic, and political forces have propelled and opposed American education reform efforts throughout history.

EDUC 6368. Leadership and Education. 3 Credits.

A general introduction to issues of leadership applicable to education settings and to key features of educational organizations; leadership as a process and a set of skills and how its styles interact with organizational contexts.

EDUC 6371. Education Policy. 3 Credits.

An introduction to the development, implementation, and assessment of education policies at national, state, and local levels.

EDUC 6381. Program Evaluation: Theory and Practice. 3 Credits.

Introduction to the theory of social program evaluation, alternative evaluation models and methodologies, and the political and social contexts of evaluation.

EDUC 6388. Analysis of Education Policy Issues. 3 Credits.

Covers a range of education policy options, assessing their advantages and disadvantages based on evidence, and drawing implications for policy formulation. A critical approach is applied to the assigned readings, questioning the sources of evidence, appropriateness of analysis, and validity of the findings. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 6392. Practicum in Educational Policy Program Evaluation. 3-6 Credits.

Supervised practical experience in field placements. Admission by permission of instructor. Prerequisite: EDUC 6381.

EDUC 6401. Foundations in Educational Technology. 3 Credits.

Theory and practice of educational technology. Key characteristics of different media, principles of application, and issues concerning their appropriate use.

EDUC 6402. Trends and Issues in Educational Technology. 3 Credits.

The research and practice surrounding the use of computers in educational and training settings. Students acquire the practical knowledge necessary to the development and evaluation of computer-related curricula through projects and case studies.

EDUC 6403. Educational Hardware Systems. 3 Credits.

Design and implementation of educational hardware systems, including computers and computer networks.

EDUC 6404. Managing Computer Applications. 3 Credits.

For managers and prospective managers in education and human services who are concerned with the automation of their operations. Basic principles needed to design, implement, and manage an information system. Admission by permission of instructor.

EDUC 6405. Developing Multimedia Materials. 3 Credits.

The design, development, integration, and use of multimedia resources in education and training settings. Students examine and critique multimedia technologies, develop instructional materials, and create a unit or module that applies instructional design theory.

EDUC 6406. Instructional Design. 3 Credits.

Designing, implementing, and evaluating instructional strategies for learners. Assessing needs, writing objectives, selecting curriculum/content, selecting and implementing methods and techniques, selecting appropriate devices and evaluating instruction.

EDUC 6407. Design and Implementation of Educational Software. 3 Credits.

Theory and practice of creating educational software; psychological basis of using software in learning; instructional programs; authoring tools; artificial intelligence applications; interactive media. Students design and evaluate an educational program. Prerequisite: EDUC 6401 or permission of instructor.

EDUC 6421. Critical Issues in Distance Education. 3 Credits.

Historical, conceptual, theoretical, and practical issues associated with distance education as a foundation for research and practice in the domain of distance education as well as adult learning, educational systems design, and school administration and policy.

EDUC 6422. Instructional Needs Assessment and Analysis. 3 Credits.

An introduction to the role of instructional needs assessment and analysis. The design and development of instruction. Key elements of the instructional design cycle, including data analysis.

EDUC 6423. Technology and Disabilities. 3 Credits.

Assistive technology as it impacts the lives of people with disabilities, including the performance of tasks related to employment, education, and activities of daily living.

EDUC 6424. Learning Technologies and Organizations. 3 Credits.

The role of learning technology in organizations, learning in the workplace, and knowledge management in corporations, schools, and universities.

EDUC 6425. Developing Effective Training with Technology. 3 Credits.

Development of skills in planning and producing effective technology-rich training that meets institutional and organizational needs.

EDUC 6426. Computer Interface Design for Learning. 3 Credits.

Human-computer interaction, both in general and with emphasis on issues in education. General design aspects; theories, principles, and guidelines related to human-computer interaction.

EDUC 6427. Advanced Instructional Design. 3 Credits.

Development of a prototype instructional design project and documentation report requiring rapid design and development strategies. Prerequisites: EDUC 6406.

EDUC 6428. Developing Digital Professional Portfolios. 3 Credits.

Students create a digital professional portfolio, using advanced skills in the design, development, integration, and use of multimedia resources.

EDUC 6441. Internship in Educational Technology Leadership. 3 Credits.

Students are assigned to a cooperating agency and work in consultation under the guidance of the course instructor. Admission by permission of instructor.

EDUC 6442. Educational Technology Leadership Master's Project. 1-6 Credits.

Students design, develop, implement, and evaluate an individual project. Admission by permission of instructor.

EDUC 6500. Introduction to Student Affairs and Higher Education. 3 Credits.

Introduction to the study of higher education and the student affairs profession, including the ways in which broader aspects of higher education research, theory and policy inform the work of student affairs practitioners. Historical and current contexts of American higher education, the academic community, and existing issues and emerging challenges surrounding the practice of student affairs in the current higher education landscape.

EDUC 6510. Administration of Higher Education. 3 Credits.

Government, organization, and administration of colleges and universities; duties of trustees and administrators.

EDUC 6520. Foundations of College Student Development. 3 Credits.

College student development theories, practices, and problems, including historical overview and human development theories related to college students.

EDUC 6525. Managing College Student Services Programs. 3 Credits.

An overview of student affairs administrative practices, including planning models, budgeting, policy development, program development, facility management, and team building. Admission by permission of instructor.

EDUC 6530. Intercultural Campus Leadership. 3 Credits.

This course is designed to explore intercultural leadership skills through the lens of understanding group identity differences, multicultural competence, and the foundations of effective advocacy for social justice. Lectures, readings, class discussions, written assignments, and experiential activities are used to promote an understanding of intercultural leadership skills to help create inclusive learning environments. The course explores how oppression and privilege relate to differences based on gender, race and ethnicity, sexual orientation, and (dis)ability. Students also study how these identities intersect with each other.

EDUC 6540. Group and Organizational Theories. 3 Credits.

Review of major organizational theories inside and outside higher education, including systems, institutional, cultural, cognitive, environmental, ecological, as well as power and influence.

EDUC 6550. Assessment in Higher Education. 3 Credits.

Key concepts in the assessment of outcomes in higher education and in student affairs. History of the assessment movement in higher education, strategies and methods for measuring outcomes of the college experience, identifying the limitations of operational processes that can be improved, and current issues in measuring student success in higher education.

EDUC 6555. Higher Education Policy. 3 Credits.

Assessment of policies that impact higher education, including the relationship of K-12 policy to higher education. Policy networks and mechanisms of policymaking. Policy development and assessment.

EDUC 6560. Legal Problems in Higher Education. 3 Credits.

Investigation of legal problems in higher education related to the legal structure of higher education, religious concerns, students, faculty, and academic programs.

EDUC 6565. Financing Higher Education. 3 Credits.

Analysis of private, state, federal, and other revenue sources; strategic planning, program budgets, and financial methods and practices.

EDUC 6570. Educational Planning. 3 Credits.

An examination of the planning movement in education: its historical development and the recent shift in premises, context, and expectations. Different approaches to the planning process; its role in research; and overview of main analytical techniques currently in use.

EDUC 6572. Dynamics of Change. 3 Credits.

An analysis of the process of change, particularly as it relates to educational policy. Comparison of theories; analytical tools; historical precedents; examples of federal education policies.

EDUC 6575. Personnel Administration. 3 Credits.

Human resource management: planning, recruitment, selection, placement and induction, staff development, rewards, and negotiations. Issues and legislation that influence personnel functions and policy; communication skills for human resource leadership.

EDUC 6579. Managing Multicultural Environments. 3 Credits.

Application of multicultural research in identifying key elements for managing diverse environments, communicating with families, planning professional development activities, and increasing student learning.

EDUC 6585. Master's Internship in Higher Education Administration. 3-6 Credits.

Supervised field experience in higher education settings. Admission by permission of instructor.

EDUC 6590. Capstone in Higher Education Administration. 0 Credits.

The capstone is designed to promote the integration of the core curriculum and practitioner experiences of the Master's degree program in Higher Education Administration, and to prepare for student transition to a professional student affairs or academic affairs position following completion of the degree. Restricted to students in the MAEd&HD in higher education administration program.

EDUC 6601. International and Comparative Education. 3 Credits.

Theoretical foundations of comparative and international education; systematic investigation of the structure and practices of selected representative school systems in different parts of the world. Emphasis on development of methodologies for comparative study.

EDUC 6602. Regional Studies in International Education. 3 Credits.

In-depth study of education in a selected region of the world. Structures and issues facing education systems in social, political, economic, cultural, and historical context. Prospects of education for human national development. May be repeated for credit provided the region differs.

EDUC 6610. Programs and Policies in International Education. 3 Credits.

Overview of policies and programmatic responses to issues in international education. Topics include education and development, international higher education and student services, and education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6615. Internationalizing U.S. Schools. 3 Credits.

EDUC 6620. Strategies and Analysis in International Education. 3 Credits.

Strategies for improving education in international contexts. Topics include education and development, international higher education and student services, or education and marginalized people. May be repeated for credit provided the topic differs.

EDUC 6630. International Experiences. 1-6 Credits.

Study and research in a foreign country as part of a group program. Admission may require permission of the instructor.

EDUC 6631. Internship: International Education. 1-6 Credits.

Service in an international education institution or related individually designed program planned to enable the student to connect theory to practice. Admission may require permission of instructor. May be repeated for credit.

EDUC 6640. Selected Topics in International Education. 3 Credits.

Current trends, themes, and issues in international education. May be repeated for credit provided the topic differs.

EDUC 6650. Education and National Development. 3 Credits.

The role education plays in the process of national development in advanced industrial societies and societies moving to industrialism.

EDUC 6660. Capstone in International Education. 3 Credits.

Review of core topics in international education and completion of major supervised project or paper. Taken near the end of the master's program in lieu of the Comprehensive Examination.

EDUC 6701. Museums as Institutions I: Fundamentals. 3 Credits.

An overview of the museum as an environment for learning, considering the influence of institutional history and organizational structure on the museum's mission of serving the public.

EDUC 6702. Facilitating Museum Learning I: Fundamentals. 3 Credits.

Theory of and practice in the development of communication skills in the museum. Educational concepts; teaching strategies and techniques; institutional liaison and group process.

EDUC 6703. Museum Audiences. 3 Credits.

A survey of the museum's diverse audience, emphasizing implications for effective programming, with attention to audience research.

EDUC 6704. Facilitating Museum Learning II: Field Placement and Seminar. 3-6 Credits.

Supervised placement in local educational institutions. On-campus seminar focuses on human development and learning theory. Placement requires a 16 hour per week commitment.

EDUC 6705. Museums as Institutions II: Field Placement and Seminar. 6 Credits.

Supervised placement in area museums and related organizations where students carry out projects in cooperation with the site. On-campus seminar includes presentations by leading practitioners. Placement requires a commitment of 32 hours per week. Restricted to museum education students. Prerequisites: EDUC 6701, 6702, 6703 and 6704.

EDUC 6706. Evaluating Museum Learning. 3 Credits.

Evaluation and research methods appropriate to the museum setting. Review of research on museum audiences; designing exhibition and program evaluations.

EDUC 6707. Museum Proposal Writing. 3 Credits.

Preparation of proposals for museums seeking support from public and private funders. Proposals are developed in cooperation with local museums.

EDUC 6709. Interpretation in the Historic House Museum. 3 Credits.

Seminar integrating advanced practices of museum education with current scholarship in architectural history, material culture, and social history. Extensive use of Washington museum resources. Same as AMST 6709. Admission by permission of instructor.

EDUC 6710. Museums and Technology. 3 Credits.

Applications of technology that link the public with the museum: Internet exhibitions, interactive computer programs, video conferencing, the electronic classroom. Guest lectures, field trips, and group projects.

EDUC 6711. Museum as a Learning Environment. 3 Credits.

Exploration of why visitors frequent museums and how they create personal meaning. Approaches to support the audience's engagement with the museum's resources.

EDUC 6801. Prelude to Experiential Education and Jewish Cultural Arts. 1 Credit.

Theme-based orientation to the program in experiential education and Jewish cultural arts and to the metropolitan Washington, DC, Jewish community. Includes extensive site visits. Restricted to students in the experiential education and Jewish cultural arts program.

EDUC 6802. Finale in Experiential Education and Jewish Cultural Arts. 1 Credit.

Theme-based orientation to the program in experiential education and Jewish cultural arts and to the metropolitan Washington, DC, Jewish community. Students plan and implement extensive site visits. Restricted to students in their final semester of the experiential education and Jewish cultural arts major. Prerequisite: EDUC 6801.

EDUC 6803. Introduction to Experiential Jewish Education. 4 Credits.

Introduction to the theory and practice of experiential Jewish education in a variety of settings, addressing the relationship of education to identity development. Includes a fieldwork experience.

EDUC 6804. Applied Research in Experiential Jewish Education. 3 Credits.

Overview of research methods employed in experiential Jewish educational settings and their various applications to practice. Prerequisite: EDUC 6803 Introduction to Experiential Jewish Education.

EDUC 6805. Capstone in Experiential Education and Jewish Cultural Arts. 3 Credits.

Six-week, full-time internship at leading Jewish cultural institutions in the United States and abroad. Restricted to students in the experiential education and Jewish cultural arts program.

EDUC 6806. Jews, Social Justice, and Activism. 3 Credits.

Critical examination of the important place of social activism, civic engagement, and community service in American Jewish life.

EDUC 6807. Fieldwork in Experiential Jewish Education. 3 Credits.

Sixteen-week, part-time internship at leading Jewish organizations or institutions. Restricted to students in the master's degree in experiential Jewish education program.

EDUC 6810. Paideia and Jewish Education. 2 Credits.

Analysis of the ancient Greek concept of paideia and its implications for the theory and practice of contemporary experiential Israel education.

EDUC 6811. Foundations of Contemporary Israel. 3 Credits.

Key questions and concepts surrounding Israel's history, and Israeli society, politics, and culture, from 1948 to present. Restricted to students in the graduate certificate in Israel education program.

EDUC 6812. American Jews and Modern Israel. 2 Credits.

The relationships of young American Jews, and the American Jewish community more broadly, to the modern State of Israel, particularly in the context of new political and ideological dynamics in the United States and Israel.

EDUC 6813. The Israel Educational Experience. 4 Credits.

Held in Israel over an eight-day period. Students learn about issues that characterize contemporary Israeli society and apply this learning to educational programming. Restricted to students in the graduate certificate in Israel education program.

EDUC 6840. Introduction to Improvement Science in Education. 3 Credits.

The process and application of improvement science to complex educational problems.

EDUC 6841. Inquiry Tools Supporting Improvement Science. 3 Credits.

The means by which improvement science uses and adapts to a range of established qualitative and quantitative tools, processes, and methods to support educator inquiry within the context of K-12 school settings.

EDUC 6842. Teacher Leadership through Improvement Science. 3 Credits.

Improvement science practices that facilitate teacher leadership; dispositions, knowledge, processes, and relationships supportive of teacher leaders working in different school contexts.

EDUC 6843. Improvement Science as Educational Change. 3 Credits.

Improvement science as a staged, interpretive educational change process; diverse role group perspectives; past and current reforms efforts.

EDUC 6998. Thesis Research. 3 Credits.

Thesis research.

EDUC 6999. Thesis Research. 3 Credits.

EDUC 8100. Experimental Courses. 1-12 Credits.

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EDUC 8101. Research and Independent Study. 1-3 Credits.

Review of literature. Preparation of a dissertation proposal and a manuscript of publishable quality.

EDUC 8110. Advanced Study: Ideas, Issues, and Practices in Education. 3 Credits.

For precandidates for the EdD Alternative means of responding to the complexities of the educational process. Topics vary but concern education as an individual process and as sociocultural preservation and renewal. May be repeated for credit.

EDUC 8120. Group Comparison Designs and Analyses. 3 Credits.

Designs and analyses to assess differences for more than two groups when compared on one dependent variable. Fixed, random, and mixed effects ANOVA and ANCOVA models within factorial design, multiple comparison tests, and introduction to regression analysis. Prerequisites: EDUC 6116.

EDUC 8122. Qualitative Research Methods. 3 Credits.

A general introduction to several major qualitative research traditions (e.g., biography, grounded theory, ethnography, phenomenology, and case study). Application of qualitative research design and procedures, including preliminary data collection, analysis, and writing.

EDUC 8130. Survey Research Methods. 3 Credits.

Techniques used to collect an array of information from a large number of people through structured interviews and mailed, e-mailed, or web-based questionnaires. Defining the research question and design; sampling, survey development, data collection procedures, pretesting, and data handling. Prerequisite: EDUC 8120, EDUC 8122.

EDUC 8131. Case Study Research Methods. 3 Credits.

Techniques used to examine one or a few complex cases, collecting data from several types of sources and by several methods. The course covers design, data collection, and data analysis/integration. Prerequisite: EDUC 8122.

EDUC 8140. Ethnographic Research Methods. 3 Credits.

Techniques used to examine systematically the contemporary daily life of a given group in its natural setting, focusing on culture—the recurring patterns of thought and social relations. Issues of research design and data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8142. Phenomenological Research Methods. 3 Credits.

Techniques used to elicit and recognize perceptions, interpretations, motives, expectations, and imaginations. The framing of appropriate research questions, data collection and analysis, and the statement of conclusions. Prerequisite: EDUC 8122.

EDUC 8144. Discourse Analysis. 3 Credits.

Techniques used to examine verbal and nonverbal communication to understand identity, beliefs, intentions, relationships, and culture. The framing of appropriate research questions; data collection and analysis. Prerequisite: EDUC 8122.

EDUC 8147. Critical Methodologies in Educational Research. 3 Credits.

Theoretical foundations of multiple critical research traditions; researcher responsibility, power and the construction of knowledge; scholarly research in design, practice, and report, drawing upon relevant critical epistemologies. Prerequisite: EDUC 8122.

EDUC 8148. Qualitative Data Collection. 3 Credits.

Identification of appropriate data sources, participant recruitment, mechanics of data collection, and research protocol development. Conducting observations, interviews, focus groups, and other ethnographic methods. Prerequisite: EDUC 8122.

EDUC 8149. Qualitative Data Analysis. 3 Credits.

Analysis of ethnographic and other forms of qualitative data in educational research. Interpretive strategies for analyzing qualitative data. Prerequisite: EDUC 8122.

EDUC 8170. Educational Measurement. 3 Credits.

Classical and modern measurement theory, item response theory, and factor analysis. Educational and psychological instrument development and validation. Interpretation of scale scores and assessment of instrument adequacy. Prerequisites: EDUC 8120. Recommended background: EDUC 6112 or equivalent.

EDUC 8171. Predictive Designs and Analyses. 3 Credits.

Techniques used to assess how independent variables are related to one dependent variable. Multiple linear regression, logistic regression, ordinal regression, and non-linear regression. Appropriate research questions, data interpretation, and design within generalized linear modeling. Prerequisites: EDUC 8120.

EDUC 8172. Multivariate Analysis. 3 Credits.

Techniques for assessment of relationships among multiple independent variables and dependent variables. Multivariate analysis of variance (MANOVA), multivariate analysis of covariance (MANCOVA), discriminant analysis, and exploratory factor analysis. Prerequisite: EDUC 8171.

EDUC 8173. Structural Equation Modeling. 3 Credits.

Multivariate techniques used for assessment of structural (causal) relations among latent (unobserved) variables with multiple observed indicators: observed and latent variable path analysis and confirmatory factor analysis. Latent means analysis and latent growth modeling. Prerequisite: EDUC 8171.

EDUC 8174. Hierarchical Linear Modeling. 3 Credits.

Techniques appropriate for analyses of hierarchically structured data. Theoretical concepts of hierarchical linear models (HLM); social and behavioral research; popular HLM software such as HLMwin; and large scale datasets. Prerequisites: EDUC 8171.

EDUC 8175. Item Response Theory. 3 Credits.

Conceptual, mathematical, and applied issues in item response theory. Dichotomous models, item response theory software used for estimation and model fit, test construction, differential item functioning, and item response theory equating. Prerequisites: EDUC 8170.

EDUC 8177. Assessment Engineering. 3 Credits.

In-depth coverage of topics related to assessment engineering, including cognitive model development using cognitive diagnostic assessment and formative assessment modeling, item model development using auto item generation, and automated test assembly and psychometric model development using computer adaptive testing. Introduction to current assessment engineering and educational big-data analytic applications. Prerequisites: EDUC 8170.

EDUC 8179. Capstone Project in Assessment, Testing, and Measurement in Education. 3,6 Credits.

Multifaceted assessment that serves as a culminating academic and intellectual experience for students during the end of their academic program. The capstone project is similar to a thesis or dissertation but may take a variety of forms. Permission of the instructor required prior to enrollment. Prerequisite: EDUC 8170.

EDUC 8240. Organizational Theory and Leadership in Education. 3 Credits.

Theories and models examining how pk-12 school organizations are part of larger bureaucratic structures and how micro processes that help the overall organization function occur. Restricted to students in the EdD in educational leadership and administration program.

EDUC 8268. Leadership Theory for Education. 3 Credits.

Historical and contemporary theories of leadership through the lens of education; leadership, adaptive leadership, and power analysis.

EDUC 8270. Fundamentals of Educational Planning. 3 Credits.

The planning movement in education at the federal, state, division, and building levels; strategic, short-term, and long-term planning processes for school and educational leaders.

EDUC 8271. Education Policy for School Leaders. 3 Credits.

The interactions of policy development, interpretation, and implementation at different levels of the system; how policy actors draw upon different values to advance and critique current problem formulations and related solutions in education.

EDUC 8276. Seminar: Administration and Supervision. 1-12 Credits.**EDUC 8277. Advanced Instructional Leadership for School Improvement. 3 Credits.**

Introduction to the role of the instructional leader from school and district perspectives. Students gain theoretical and practical skills and knowledge in areas including instructional improvement; education reform; accountability; conditions for improvement; and planning and sustaining change.

EDUC 8280. Critical Review of Educational Leadership Literature. 1,3 Credit.

The techniques, tools, and presentation of critical reviews and syntheses of educational literature used to inform forthcoming research. Systematic mapping of what is known and deriving research questions, conceptual frameworks, and applicable methods. Prerequisite: an approved dissertation topic or permission of instructor.

EDUC 8320. The Politics of Education. 3 Credits.

Examination of the contextual factors (political, economic, and historical) and the nature of political decision making on education issues, primarily at the state and local level. Prerequisite: EDUC 6371.

EDUC 8321. Economics of Education. 3 Credits.

Application of economic theory and analysis to education problems and policies; analysis of contemporary education reforms adopted to improve educational outcomes. Prerequisites: EDUC 6371 and EDUC 8171.

EDUC 8322. Education Policy Implementation. 3 Credits.

The evolution and implementation of education policies. Analysis of policy implementation at varying governance levels and types of educational systems. Policy is analyzed as a process and as it interacts with organizational, social, economic, and political factors. Prerequisites: EDUC 6371.

EDUC 8323. Policies of Education Equity. 3 Credits.

Analysis of the development, implementation, and evaluation of education equity policies, with consideration of their context, formulation, and application. Prerequisites: EDUC 6371 and EDUC 8171.

EDUC 8325. Policy Design: Accountability in Education. 3 Credits.

Models of educational accountability and their implementation within the broader U.S. education system; approaches to accountability, including contemporary policies such as market-based systems, regulatory approaches, and professional accountability. Prerequisite: EDUC 6371.

EDUC 8329. Seminar in Program Evaluation. 3 Credits.

Contemporary problems and issues in evaluation of social programs: design, implementation, analysis, and utilization. Prerequisite: EDUC 6381 and approval of instructor.

EDUC 8334. Doctoral Internship in Educational Policy. 3-6 Credits.

Methods of analysis used in the study of educational policy issues. Case studies on a range of policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisite: EDUC 6371, EDUC 6114, or permission of instructor.

EDUC 8340. Methods of Policy Analysis in Education. 3 Credits.

Methods of analysis used in the study of educational policy issues; policy issues and trends, including testing and accountability, school finance, school choice, and the federal role. Prerequisites: EDUC 6116 and EDUC 6371.

EDUC 8345. Advanced Studies in Educational Policy Analysis. 1-12 Credits.

The process by which education policies are designed, adopted, and implemented by education systems. Case studies of specific policies, examining their assumptions and objectives, the criteria for assessing their effectiveness, and their governance at federal, state, and local levels. Prerequisite: EDUC 6371, EDUC 8120, or permission of instructor.

EDUC 8505. Seminar: Higher Education Administration. 1-12 Credits.**EDUC 8510. Administration and Organization of Higher Education. 3 Credits.**

Organizational characteristics and administrative nature of colleges and universities; challenges and opportunities for governance; cultures, norms, and changes in higher education organizations.

EDUC 8515. Comparative and International Higher Education. 3 Credits.

An exploration of cultural, theoretical, and disciplinary perspectives of international higher education through a comparative lens.

EDUC 8520. Theories for Research on College Students. 3 Credits.

Theoretical approaches used to study college students; competing frameworks and the contributions of emergent approaches to understanding college students.

EDUC 8525. College and University Curriculum. 3 Credits.

Development, patterns, creative design, issues, problems, evaluation, and trends in the higher education curriculum.

EDUC 8530. Leadership in Higher Education. 3 Credits.

Cognitive leadership theory as articulated in higher education: what leadership is, how it works, how it is practiced, how it is considered by scholars and practitioners, and how it is researched.

EDUC 8540. History of Higher Education. 3 Credits.

History, philosophy, scope, purpose, present status, programs, and trends in higher education in the United States.

EDUC 8555. Policy Analysis in Higher Education. 3 Credits.

The intricacies of major policy debates in higher education, focusing on policy framing, goals, solutions, and implementation.

EDUC 8560. Case Studies in Higher Education Administration. 3 Credits.

An analysis of case studies related to administrative functions in colleges and universities.

EDUC 8565. College and University Governance. 3 Credits.

Organizational and administrative structures, patterns, and relationships in higher education.

EDUC 8566. Higher Education Finance. 3 Credits.

Fundamental concepts in higher education finance; state finance and policy issues; and the impact of financial decisions made at the federal, state, and institutional levels on faculty and students.

EDUC 8580. The Community/Junior College. 3 Credits.

The two-year college as it relates to secondary education, four-year colleges, and universities. Objectives, curricula, students, faculty, legal concerns, and special problems of two-year colleges.

EDUC 8582. Administration and Governance of Two-Year Colleges. 3 Credits.

A study of the community/junior college, focusing on administrative and governance patterns and national, regional, state, and local influences, as well as the theory and structure of two-year college organization.

EDUC 8585. Doctoral Internship in Higher Education Administration. 3-6 Credits.

Service in a higher education situation directed by the University and the cooperating institution to integrate theory and practice. Admission by permission of instructor.

EDUC 8594. Current Issues in Higher Education. 3 Credits.

Analysis of contemporary issues in higher education practice and scholarship.

EDUC 8701. Education Policy Design. 3 Credits.

Processes and practices of policy planning and design in a system of federal, state and local control; effect of federal actions on the work of state and local educators; the state role in shaping federal education policies.

EDUC 8702. Evidence in Education Policymaking. 3 Credits.

Review of theory and research on evidence-informed policymaking and the practical skills of drafting evidence-informed policy initiatives; integrating research with other types of evidence to understand policy problems and formulate responses.

EDUC 8703. Implementation for Education Policymakers. 3 Credits.

The challenge of designing and implementing policy with attention to implementation. Review of research on the organizational, social, and political factors that influence implementation and case study analyses of successful and unsuccessful policy implementation.

EDUC 8704. Advocacy and Strategic Communications. 3 Credits.

The ways in which public discourse and political advocacy shape policy making and implementation; framing policy issues, advancing policy objectives, and engaging stakeholders and members of the media.

EDUC 8998. Pre-Dissertation Seminar. 3-6 Credits.

Required of all departmental EdD degree candidates. Approval of the dissertation research proposal by the dissertation committee is necessary for successful completion of the seminar. Admission by permission of instructor.

EDUC 8999. Dissertation Research. 3,6 Credits.

Prerequisite: EDUC 8998.

ELECTRICAL AND COMPUTER ENGINEERING (ECE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ECE 1010. Introduction to Electrical and Computer Engineering I. 1 Credit.

Basic and emerging concepts in electrical and computer engineering; professional literature and resources; technical writing, speaking, and presentation skills. Practical experiments and projects. (Fall, Every Year).

ECE 1020. Introduction to Electrical and Computer Engineering II. 1 Credit.

Continuation of ECE 1010. Basic and emerging concepts in electrical and computer engineering; professional literature and resources; technical writing, speaking, and presentation skills. Practical experiments and projects. (Spring, Every Year).

ECE 1099. Variable Topics. 1 Credit.**ECE 1120. C Programming for Electrical and Computer Engineering. 3 Credits.**

Basic programming concepts including algorithmic thinking and structured programming, control flow, data types, pointers, functions, algorithms, I/Os, threads, and performance evaluation and optimization; concurrency and multicore programming using threads, processes as well as parallel C programming paradigms; controlling hardware devices and fine control via interfacing with assembly language. Credit cannot be earned for both this course and CSCI 1121. (Spring, Every Year) Credit cannot be earned for this course and CSCI 1121.

ECE 1125. Data Structures and Algorithms for ECE. 3 Credits.

Fundamentals of algorithms and data structures for electrical and computer engineering; techniques to solve problems through programming in C/C++ languages, linked lists, stacks, queues and trees; searching methods such as binary trees, hashing, and multi-way trees; design and analysis of algorithms and their space and time complexity. Prerequisite: ECE 1120. (Fall, Every Year).

ECE 2110. Circuit Theory. 4 Credits.

Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasors; power calculations; transformers; two-port circuits. CAD tools used in circuit projects. Corequisites: APSC 2113; and PHYS 1022 or PHYS 1026. (Fall and spring, Every Year).

ECE 2115. Engineering Electronics. 4 Credits.

Solid state devices used in electronic engineering; physics of their operation; application to electronic circuits. Application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 2110. (Spring, Every Year).

ECE 2120. Engineering Seminar. 1 Credit.

A detailed view of the electrical and computer engineering professions. Departmental and other speakers discuss facets of ECE, engineering education, and other department, college, or university topics of interest. (Fall, Every Year).

ECE 2140. Design of Logic Systems. 4 Credits.

Boolean algebra; combinational and sequential circuits; minimization techniques; design and build logic subsystems, such as decoders, multiplexers, adders, and multipliers. Use of CAD tools. Prerequisites: ECE 2110. Corequisites: ECE 2115. (Spring, Every Year).

ECE 2210. Circuits, Signals, and Systems. 3 Credits.

Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters. CAD tools used in design of projects. Prerequisites: ECE 2110. (Spring, Every Year).

ECE 3125. Analog Electronics Design. 4 Credits.

Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers; output stages and power amplifiers; frequency response of amplifiers, high-frequency models of FETs and BJTs; introduction to feedback circuit topologies; use of electronic CAD tools, such as P-SPICE. Prerequisite: ECE 2115. (Fall, Every Year).

ECE 3130. Digital Electronics and Design. 4 Credits.

Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as SPICE. Students must have completed a course in logic systems, such as ECE 2140 or equivalent, prior to enrollment. Consult the instructor if uncertain whether this requirement has been met. Prerequisite: ECE 2140. (Fall, Every Year).

ECE 3135. Digital Design with FPGAs. 4 Credits.

Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project. Prerequisite: ECE 2140. (Spring, Every Year).

ECE 3220. Introduction to Digital Signal Processing. 3 Credits.

Signal representation, sampling, discrete-time signals, z-transforms and spectra, difference equations; Fourier analysis; discrete Fourier transform, IIR and FIR filter design. Prerequisite: ECE 2210. (Fall, Every Year).

ECE 3225. Signal and Image Analysis. 3 Credits.

Introduction to digital filters and digital image processing, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Prerequisites: APSC 3115 and ECE 2110. (As arranged, Every Year).

ECE 3310. Introduction to Electromagnetics. 3 Credits.

Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves, reflection from a dielectric of fiber and integrated optics. Prerequisites: APSC 2113; and PHYS 1022 or PHYS 1026. (Spring, Every Year).

ECE 3315. Fields and Waves I. 3 Credits.

Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching; review of vector analysis and numerical methods; electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy; Magnetostatics, Biot-Savart Law, Maxwell's equations, vector magnetic potential, inductance, magnetic energy, boundary conditions. Prerequisites: APSC 2113; and PHYS 1022 or PHYS 1026. (Fall, Every Year).

ECE 3410. Communications Engineering. 3 Credits.

Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK. Pulse code modulation, DPCM and delta modulation. Prerequisites: APSC 3115; and ECE 2210. Recommended background: Students in this course should have taken APSC 3115 (Engineering Analysis III) and ECE 2210 (Circuits, Signals, and Systems) or an equivalent course; If unsure, please contact the instructor, and discuss the prerequisite requirements. (Spring, Every Year).

ECE 3515. Computer Organization. 3 Credits.

Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing. Prerequisites: ECE 2140. (Fall, Every Year).

ECE 3520. Microprocessors: Software, Hardware, and Interfacing. 3 Credits.

Microprocessor architecture, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory access, microprocessor-based system. Hands-on laboratory experience using laboratory facilities is an integral part of this course. Prerequisites: ECE 1120 and ECE 2140. (Fall, Every Year).

ECE 3525. Introduction to Embedded Systems. 3 Credits.

Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisites: ECE 1120 and ECE 3520. (Spring, Every Year).

ECE 3530. Introduction to Parallel and Distributed Computer Systems. 3 Credits.

Parallel Computing versus Distributed Computing Systems. Applications of Parallel Computing and Distributed Computing in Science and Engineering. Computer networks versus interconnection networks of parallel systems; high throughput versus low latency computing systems. Data Centers, Clouds, Grids, Edge, Fog and Cluster Computing. Performance analyses and evaluation of parallel and distributed systems. Shared memory and distributed systems programming with introduction to OpenMP, pthreads, message passing, Hadoop and MapReduce. Synchronization issues and methods. Introduction to the design and analyses of parallel algorithms. Performance Analysis and Program Optimizations. Introduction to GPUs and Heterogeneous systems and programming. Offered as arranged. Prerequisites: ECE 1120 and ECE 1125. (Summer, Every Year).

ECE 3915W. Electrical and Computer Engineering Capstone Project Lab I. 1 Credit.

Program majors take ECE 3915, ECE 4920, and ECE 4925 in sequence beginning in the second semester of their junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Spring, Every Year).

ECE 4140. VLSI Design and Simulation. 3 Credits.

Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student designs a VLSI chip, simulates the design and submits a GDS II file for Chip fabrication. Prerequisites: ECE 3130 and ECE 3135. (Same as ECE 6240) (Fall, Every Year).

ECE 4145. Micro- and Nanofabrication Techniques. 3 Credits.

Introduction to the basic fabrication principles at the micro and nano scale; students practice and fabricate simple devices. Prerequisite: ECE 2110. (Fall, Every Year) Same As: ECE 6245.

ECE 4150. ASIC Design and Testing of VLSI Circuits. 3 Credits.

ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140 or equivalent chips. Prerequisite: ECE 4140. (Same as ECE 6250) (Spring, Every Year).

ECE 4155. Sensors, Networks, and Applications. 3 Credits.

Sensor technologies for measurement of mechanical, optical, magnetic, electromagnetic, thermal, and acoustic signals; interface electronic components, calibration, noise, and nonlinearity in addition to main modern sensors and sensor networks. Prerequisites: ECE 3125 or permission of instructor. (Spring, Every Year) Credit cannot be earned for this course and ECE 6255.

ECE 4160. Introduction to Nanoelectronics. 3 Credits.

Nanoscience and technology and nanoelectronics. Basic nanofabrication steps, and techniques to build devices such as carbon nanotubes, Graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). Prerequisite: ECE 2115. (Same as ECE 6260) (Fall, Every Year).

ECE 4320. Fields and Waves II. 3 Credits.

Magnetostatic fields, Lorentz force torques, Biot-Savart law, Ampere's law, magnetic materials, inductance, magnetic energy; Maxwell's equations, Faraday's law, charge-current continuity, vector potential; time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics; radiation, dipole, gain, effective area. Prerequisites: APSC 2114; and ECE 3315. (Spring, Every Year).

ECE 4415. Introduction to Computer Networks. 3 Credits.

Layered protocol architectures; digital transmission and fundamental limits; error detection and ARQ protocols; data link layer and control; multiple access protocols; circuit and packet switching; multiplexing; routing; flow and congestion control and queue management; LAN standards; TCP/IP; Next-generation Internet. Prerequisites: APSC 3115. (Spring, Every Year).

ECE 4425. Data Communications Laboratory. 1 Credit.

Experiments in support of the analysis and design of communications systems with emphasis on network protocols. Time and frequency division multiplexing, flow control, automatic repeat request, interfacing, token ring, token bus, multiple access for Ethernet, routing, packet switching. Prerequisite: ECE 4415. (Spring, Every Year).

ECE 4435. Photonics and Fiber Optics. 3 Credits.

Concepts of opto-electronic devices; light-matter-interaction; absorption; device details and applications: laser, photodetector, modulators, optical cavity, waveguides and optical fibers; device and link considerations, including energy-per-bit, modulation speed, and nano fabrication; plasmonics and nanophotonics; industry perspective. Prerequisites: APSC 2114; ECE 3310 or ECE 4320. Recommended background: Prior completion of at least one undergraduate-level course in electromagnetism and semiconductors. (Spring, even years) Credit cannot be earned for this course and ECE 6765.

ECE 4535. Computer Architecture and Design. 3 Credits.

Advanced topics in computer architecture and design; instruction-level parallelism, thread-level parallelism, memory, multithreading, and storage systems. Prerequisite: ECE 3515. (Fall, Every Year) Credit cannot be earned for this course and ECE 6005.

ECE 4610. Electrical Energy Conversion. 3 Credits.

Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. Prerequisites: ECE 2210 and ECE 3315. (Same as ECE 6610) (Spring, Every Year).

ECE 4620. Electrical Power Systems. 3 Credits.

AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency and power flow control. Voltage, current and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 6620) (Fall, Every Year).

ECE 4662. Power Electronics. 3 Credits.

The application of electronics to energy conversion; principles of operation, analysis, and control of circuits; methods of solving power electronic circuits and finding the steady-state values of important quantities; deriving the linear model of the studied power electronic circuits and designing controllers for these devices. A general knowledge of electric circuits and linear control theory is required. Restricted to undergraduate students. (Same as ECE 6662) (Spring, Every Year).

ECE 4710. Control Systems Design. 3 Credits.

Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems. Prerequisites: APSC 2114; and ECE 2210 or MAE 3134. (Fall, Every Year).

ECE 4730. Robotic Systems. 3 Credits.

Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 3197. Prerequisite: computer programming, APSC 2058, ECE 4710.

ECE 4920W. Electrical and Computer Engineering Capstone Project Lab II. 3 Credits.

Program majors take ECE 3915, ECE 4920, and ECE 4925 in sequence beginning in the second semester of their junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Fall, Every Year).

ECE 4925W. Electrical and Computer Engineering Capstone Project Lab III. 3 Credits.

Program majors take ECE 3915, ECE 4920, and ECE 4925 in sequence beginning in the second semester of their junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: ECE 4920W. (Spring, Every Year).

ECE 4980. Special Topics. 1-3 Credits.

Topic to be announced in the Schedule of Classes. (Fall and spring).

ECE 4990. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

ECE 6005. Computer Architecture and Design. 3 Credits.

Advanced topics in computer architecture and design; instruction-level parallelism, thread-level parallelism, memory, multithreading, and storage systems. (Fall, Every Year).

ECE 6010. Linear Systems Theory. 3 Credits.

Introduction to linear systems theory. Topics include linear vector spaces and linear operators, mathematical representation of dynamic linear systems, concept of state and solution of the state equation, controllability and observability, canonical forms of the state equation, state feedback, and state estimation. (Fall, Spring, Every Year).

ECE 6015. Stochastic Processes in Engineering. 3 Credits.

Axioms of probability; conditional probability; independent events; sequential experiments. Single and multiple random variables. Discrete-valued and continuous-valued stochastic processes; discrete-time and continuous-time stochastic processes; mean, auto-correlation and autocovariance functions; multiple random processes; stationary stochastic processes and linear time-invariant systems; ergodicity; Markov chains. Examples from engineering applications. (Fall, spring, and summer, Every Year).

ECE 6020. Applied Electromagnetics. 3 Credits.

Vector algebra and calculus, Divergence and Stokes theorems, Maxwell's equations, Boundary conditions, Poynting vector theorem, Time harmonic waves, Wave equation, Propagation in lossy media, Skin depth, Plane waves in an arbitrary direction, Polarization, Snell's law, Transmission line equations, Propagation constant, Characteristic impedance, Average power, Waveguides, TEM, TM and TE modes, cutoff frequencies, Vector and scalar potentials, scalar Green's function, Near and far fields from a dipole, radiated power and Antenna fundamentals Recommended background: ECE 4320 or similar course. (Fall, Every Year).

ECE 6025. Signals and Transforms in Engineering. 3 Credits.

Signal spaces and approximation. Orthogonal functions. Fourier series and transform. Bandpass signals and modulation. Hilbert transform and analytic signals. Time frequency analysis. Short-time Fourier transform. Linear systems properties. Laplace transform. Sampling and discrete-time signals. Discrete-time Fourier transform and z-transform. Wavelets. (Fall and spring, Every Year).

ECE 6030. Device Electronics. 3 Credits.

Semiconductor device concepts; doping, drift diffusion, recombination. Analysis of Schottky and Ohmic contacts, pn junctions, MOS systems. Modeling and analysis of semiconductor devices such as MOSFET and bipolar transistors. Hot electron and short and narrow channel effects. (Spring, Every Year).

ECE 6035. Introduction to Computer Networks. 3 Credits.

Layered protocol architectures. Digital transmission, fundamental limits. Error detection and ARQ protocols. Data link layer and control. Multiple access protocols. Circuit and packet switching. Multiplexing. Routing. Flow and congestion control, queue management. LAN standards. TCP/IP. Next-generation Internet. (Fall and spring, Every Year) Same As: ECE 4415.

ECE 6045. Special Topics. 3 Credits.

Topics vary by semester. May be repeated provided topic differs. See department for details. (Fall and spring, Every Year).

ECE 6050. Research. 1-12 Credits.

Applied research and experimentation projects, as arranged. May be repeated for credit.

ECE 6060. Electric Power Generation. 3 Credits.

Primary traditional/conventional and alternative/renewable energy sources and energy storage applications. Large generation plants and distributed small generation units and impact on transmission and distribution systems operation and infrastructure. Review of applicable schemes of hybrid generation. Evaluate smart grid objectives on long and short term stability of large power networks. (Fall, Every Year).

ECE 6105. Introduction to High-Performance Computing. 3 Credits.

Taxonomy and classifications of computers and parallel computers. Parallel thinking and parallel algorithms. Domain decomposition and load balancing. Programming parallel computers using the message passing, global address space, and partitioned global address space paradigms. Restricted to graduate students in science or engineering or permission of the instructor. (Fall, Every Year).

ECE 6120. Advanced Microarchitecture. 3 Credits.

Review of computer architecture fundamentals performance and power; pipeline design and hazards; superscalar pipelines, speculation and recovery; fetch logic and instruction caches; branch prediction; decoder logic for CISC and RISC; scheduling and instruction issue; ALUs and register files; memory optimizations; commit logic. Prerequisite: ECE 6005. Recommended background: Students should have taken at least one course in computer architecture, such as ECE 6005 or equivalent, prior to enrollment. (Spring, Every Year).

ECE 6125. Parallel Computer Architecture. 3 Credits.

Architectural classifications and taxonomies of parallel computers; enabling technologies, including advanced processor concepts, interconnection networks, high-speed memory architectures and protocols; parallel performance and scalability; and introduction to parallel algorithms and parallel programming. Prerequisites: ECE 6005 or ECE 6105. (Spring, Every Year).

ECE 6130. Big Data and Cloud Computing. 3 Credits.

This course covers a wide range of research topics related to big data and cloud computing, including data centers, virtualization, hardware and software architecture, as well as system-level issues on performance, energy efficiency, reliability, scalability and security. Prerequisites: ECE 6005 or ECE 6105. (Spring, Every Year).

ECE 6132. Secure Cloud Computing. 3 Credits.

The course provides a comprehensive guide to security concerns and best practices for cloud computing and cloud services. Topics discussed include cloud computing architectures, risk issues and legal topics, data security, internal and external clouds, information security frameworks and operational guidelines. Offered as arranged. Restricted to students in the MEng in cybersecurity policy and compliance program. (Summer, Every Year).

ECE 6140. Embedded Systems. 3 Credits.

Architectural advances and instruction sets for embedded microprocessors. Real-time operating systems and real-time scheduling, use of pre-designed software and hardware cores. Sensors, actuators, and data acquisition. System-on-chip (SoC). Design case studies. Prerequisite: ECE 6005. (Fall, Every Year).

ECE 6150. Design of Interconnection Networks for Parallel Computer Architectures. 3 Credits.

In-depth study and fundamental design principles of interconnection networks for parallel computing architectures including network-on-chips for multicores and chip multiprocessors (CMPs), interconnection networks for multiprocessors, multi-computers, and datacenters; interconnect topologies, routing protocols and algorithms, switching techniques, flow control protocols, router design, modeling and simulation tools, interconnect reliability, scalability, security, emerging technologies for interconnects (optical, wireless, radio frequency), emerging applications (neuromorphic, quantum, and approximate computing), case studies covering modern commercial examples. Restricted to SEAS graduate students. Prerequisites: ECE 6005 or equivalent. Recommended background: Prior completion of a course in computer organization or computer architecture, which may be ECE 3515 or ECE 6005 or an equivalent. (Spring, Every Year).

ECE 6160. Secure Computer Architecture. 3 Credits.

Building blocks of secure hardware and systems: trusted execution environment, security engines; side and covert channels in computing systems; hardware trojans; physically unclonable functions and challenges; obfuscation strategies. Prerequisites: ECE 6005 or equivalent with permission of the instructor. (As arranged, Every Year).

ECE 6213. Design of VLSI Circuits. 3 Credits.

This class covers top-down ASIC/FPGA design methodology; Modeling of VLSI circuits using HDL; Behavioral, Structural, and RTL modeling techniques; Logic synthesis techniques; Design verification plan and techniques; Students design and verify a final project using state-of-the-art commercial VLSI CAD tools for ASIC and FPGA (Altera). (Fall, Every Year).

ECE 6214. High-Level VLSI Design Methodology. 3 Credits.

This class covers advanced ASIC-FPGA design methodology including: synthesis methodology for both ASIC and FPGA design flow, DSP design for mobile device and implementation to ASIC and FPGA, low-power SOC design, CPF implementation, area/delay/power optimization and trade-offs, DFT, DFM, Low-Power design for mobile device, and Hardware/Software co-design. Advanced low power design for multi-core CPU architecture, LP top-down design flow with CPF implementation/verification. Students design and verify a final project using ASIC CAD tools and FPGA demo board with built-in LA. Prerequisite: ECE 6213. (Spring, Every Year).

ECE 6215. Introduction to MEMS. 3 Credits.

Introduction to microelectromechanical and nanoelectromechanical systems (MEMS/NEMS). Basic principles of simulating, designing, and fabricating MEMS/NEMS. Prerequisite: ECE 6240. Recommended background: Students in this course should have taken at least one prior course in ECE 6240; If unsure, contact the instructor, and discuss the pre-requisite requirements. (Spring, Every Year).

ECE 6216. RF/VLSI Circuit Design. 3 Credits.

Introduction to radio frequency systems: RF design, specifications, S-parameters, gain, noise, stability, matching concepts, small signal amplifiers, low noise amplifiers, power amplifiers, system-level design. In this course students use CAD tools such as ADS and other industrial tools to design class project. Prerequisite: ECE 6240. (Spring, odd years).

ECE 6218. Advanced Analog VLSI Circuit Design. 3 Credits.

CMOS technology, CMOS analog building blocks, current sinks, current sources, current mirrors, voltage references, CMOS amplifier design, feedback circuits, frequency response, compensation. Analysis of circuit variants: cascoding, active replacement elements – non-linear circuits. A/D converter design, examples of CMOS A/Ds. Mixed-signal layout techniques. Students are required to design CMOS Analog Circuit project, and submit final design Layout together with simulation using CAD (CADENCE analog design) simulation tools. Final report is required. Prerequisite: ECE 6240. (Spring, even years).

ECE 6221. Introduction to Physical Electronics. 3 Credits.

Theoretical principles underlying the operation of electronic devices; postulates of quantum mechanics: wave-particle duality, uncertainty relations, electronic band structure; free-carrier statistics; electron-photon interaction; physical principles of semiconductor and optoelectronic devices. (Fall, Every Year).

ECE 6240. VLSI Design and Simulation. 3 Credits.

Study of VLSI circuit design including PMOS and NMOS transistor analysis, switch and gate logic design, understanding of semiconductor fabrication processes and design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, and designing with highly variable process parameters. Each student designs a VLSI chip, simulates the design and submits a GDS II file for Chip fabrication. (Same as ECE 4140) (Fall, Every Year).

ECE 6245. Micro- and Nanofabrication Technology. 3 Credits.

Introduction to the basic fabrication principles at the micro- and nanoscale; practical experience and fabrication of simple devices. Restricted to graduate students. Prerequisite: ECE 2150. (Fall, Every Year) Same As: ECE 4145.

ECE 6250. ASIC Design and Testing of VLSI Circuits. 3 Credits.

ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. MIPS CPU HDL implementation/verification/testing. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed and fabricated in ECE 4140/6240 or equivalent chips. Prerequisite: ECE 6240. (Spring, Every Year) Same As: ECE 4150.

ECE 6255. Sensors, Networks, and Applications. 3 Credits.

Sensor technologies for measurement of mechanical, optical, magnetic, electromagnetic, thermal, and acoustic signals; interface electronic components, calibration, noise, and nonlinearity in addition to main modern sensors and sensor networks. Restricted to graduate students. Prerequisites: permission of the instructor. (Spring, Every Year) Credit cannot be earned for this course and ECE 4155.

ECE 6260. Introduction to Nanoelectronics. 3 Credits.

Nanoscience and technology and nanoelectronics. Basic nanofabrication steps; techniques to build devices such as carbon nanotubes, graphene device, and other 2D nanoelectronic devices. Tools for performing design and characterizations of nanodevices, including scanning electron microscopy (SEM), atomic force microscopy (AFM), and transmission electron microscope (TEM). (Same as ECE 4160) (Fall, Every Year).

ECE 6500. Information Theory. 3 Credits.

Introduction to the mathematical representation of information, including the concepts of entropy, mutual information and information transfer over noisy media; mathematical representation of information sources; entropy and mutual information; noiseless and noisy coding theorems; data compression; communication channels and their capacity to convey information; and rate distortion theory. Prerequisite: ECE 6015. (Spring, odd years).

ECE 6505. Error Control Coding. 3 Credits.

Introduction to the principles governing the mathematical theory of error detecting and correcting errors occurring in the transfer of information over digital communication channels. Prerequisite: ECE 6015. (Spring, Every Year).

ECE 6510. Communication Theory. 3 Credits.

Principles of digital communications. Channels, digital modulation; optimum receivers and algorithms in the AWGN; coherent, non-coherent, and fading channels. Correlation detectors, matched filters; diversity. Bounds on performance of communications, comparison of communications systems and implementation issues. Prerequisite: ECE 6015. (Spring, Every Year).

ECE 6520. Mobile and Wireless Communication Systems. 3 Credits.

Characterization of mobile and wireless channels. Indoor and outdoor path loss models. Multipath propagation. Fading and fading countermeasures: coding, equalization. Power control. Cellular design and frequency reuse. Modulation and coding techniques. Spread Spectrum and OFDM. Random access methods. Code and Space Division Multiple Access, MIMO. Prerequisite: ECE 6510. (Fall, odd years).

ECE 6525. Satellite Communication Systems. 3 Credits.

Low earth orbit and geostationary satellite systems; transmission systems; RF link budgets; modulation and multiplexing; multiple access techniques, including FDMA, TDMA, and CDMA; satellite transponders, antennas, and earth stations. Prerequisite: ECE 6510. (Fall, Every Year).

ECE 6530. Electronic Warfare. 3 Credits.

Electronic attack and protection of information; countermeasures and counter-countermeasures; attacks on ranging and tracking radar systems; jamming and jamming defense; attacks on communications systems; defensive techniques, signal design, spread spectrum; attack and defense of optical and high-energy systems. Offered as arranged. Prerequisite: ECE 6510. (Summer, Every Year).

ECE 6550. Network Architectures and Protocols. 3 Credits.

The course covers network topologies and control structures; Switching and routing of information streams; Internet transmission protocols; Data representations and codes; Application protocols; Mail and file transfer protocols; and Network management systems. Prerequisite: ECE 6035. (Spring, Every Year).

ECE 6560. Network Performance Analysis. 3 Credits.

Telecommunications traffic models: arrival and service time distributions, Poisson and Erlang formulas. Topological design algorithms. Delay and blocking models and probabilities for packet switched networks. Routing, relaying, and flow control algorithms: delay and cost minimization, throughput optimization. Prerequisites: ECE 6015 and ECE 6035. (Fall, Every Year).

ECE 6565. Telecommunications Security. 3 Credits.

Speech and data scrambling. Linear and nonlinear transformations. Cryptographic techniques. Block and stream ciphers. The Data Encryption Standard (DES). Key management, digital signatures, message authentication, hash functions. Public key algorithms. Restricted to Students with graduate standing in science or engineering or with the permission of the instructor. (Fall, Every Year).

ECE 6570. Telecommunications Security Protocols. 3 Credits.

The OSI security architecture: services and mechanisms; risk analysis; Internet protocol security mechanisms; Ipv4 and Ipv6 security; security associations, authentication, MD5; encapsulating security payload (ESP); e-mail security: PGP, S/MIME, PEM, MSP; secure voice communications algorithms; security in Internet commerce: SSL, SET. Offered as arranged. Prerequisites: ECE 6035 and ECE 6565. (Fall and spring, Every Year).

ECE 6575. Optical Communication Networks. 3 Credits.

Wave propagation through fiber, dispersion, polarization. Multiplexing techniques, WDM. Optical networking components. Optical transmission systems design. All-optical networking, broadcast star and wavelength routing networks. Performance analysis, survivability, control and management. Optical access networks. (Fall, Every Year).

ECE 6580. Wireless Networks. 3 Credits.

The course introduces students to the principles governing the design and implementation of various types of wireless networks; mathematical analysis of telecommunications traffic; technology of wireless information transmission systems; first, second and third generation cellular networks based on circuit and packet switching principles; capacity sharing and duplex transmission; Time Division and Code Division Multiplex system; fourth and fifth generation cellular networks; wireless local and personal area networks; performance evaluation of wireless cellular and local area networks. Prerequisite: ECE 6035. (Spring, Every Year).

ECE 6610. Electrical Energy Conversion. 3 Credits.

Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters. Renewable generation, utility grid integration, smart grid applications. May be taken for graduate credit by students in fields other than electrical engineering. (Spring, Every Year) Same As: ECE 4610.

ECE 6620. Electrical Power Systems. 3 Credits.

AC power grids, transmission line parameters, load flow, economic dispatch voltage, frequency, and power flow control. Voltage, current, and power limitations. Fault analysis and stability considerations. Effect of independent power producers and variable energy sources and energy storage. (Same as ECE 4620) (Fall, Every Year).

ECE 6662. Power Electronics. 3 Credits.

The application of electronics to energy conversion. Principles of operation, analysis, and control of circuits including solid-state electronic switches. Methods of solving power electronic circuits and finding the steady-state values of important quantities. Deriving the linear model of the studied power electronic circuits and designing controllers for these devices. A general knowledge of electric circuits and linear control theory is required. (Spring, Every Year).

ECE 6666. Power System Transmission, Control, and Security. 3 Credits.

Analysis of AC networks, load flow, transient stability, economic dispatch, reactive compensation, FACTS, effects of alternative generation, voltage and frequency control, N-1 contingency, restoration techniques. Offered as arranged. Prerequisite: ECE 6620. (Fall and spring, Every Year).

ECE 6667. Nuclear Power Generation. 3 Credits.

Review of nuclear reactor engineering, traditional and developing reactor design, issues regarding the safe operation of nuclear plant, and control and regulatory aspects of nuclear power generation. Prerequisite: ECE 6620. (Fall, even years).

ECE 6668. Power Distribution Grids. 3 Credits.

Equipment for power distribution for industrial, commercial and residential applications. Switching and safety at the distribution voltage level. Bulk Insulation Level and Insulation coordination principles. Applications of 'smart-grid' innovations to short and long-term development of remote metering and customer communications. Selection and Application of Protective Relays, Fuses, Ground-Fault Protection. Prerequisite: ECE 6060. (Fall, odd years).

ECE 6669. Smart Power Grids. 3 Credits.

Overview of probability theory. Overview of basic power market reliability modeling and evaluation. Generation supply reliability techniques, modeling and evaluation. Reliability of transmission system and delivery of supply. Loss of load probability evaluation. Forced and maintenance outages and impact on system reliability. Load forecasting and probability of interconnected systems. Risk evaluation in power system operation. Operating reserve techniques and indices. Distribution system reliability including substations. Composite system reliability modeling. Reliability worth and value. (Spring, odd years).

ECE 6670. Power System Protection. 3 Credits.

Main philosophy for protection of power systems. Protection systems and approaches. Reliability and security of protection systems. Protection of Generators, Transformers, Motors and Transmission Lines. Requirements for Distributed Source Generation (DSG's). Requirements for system protection, to prevent grid blackouts and to enhance power system security. Prerequisite: ECE 6620. (Spring, even years).

ECE 6690. Power Systems Economics. 3 Credits.

Overview of electrical power market economics and market participants. Production pricing and market clearing pricing. Market ancillary service pricing. Location marginal pricing and zonal pricing schemes. New electrical generation entrant impact. Investing in generation and in transmission. Independent power producers and independent transmission owners. Offered as Arranged. (Fall and spring, Every Year).

ECE 6691. Power Systems Reliability. 3 Credits.

Overview of probability theory. Overview of basic power market reliability modeling and evaluation. Generation supply reliability techniques, modeling and evaluation. Reliability of transmission system and delivery of supply. Loss of load probability evaluation. Forced and maintenance outages and impact on system reliability. Load forecasting and probability of interconnected systems. Risk evaluation in power system operation. Operating reserve techniques and indices. Distribution system reliability including substations. Composite system reliability modeling. Reliability worth and value. (Spring, even years).

ECE 6699. Energy and Sustainability. 3 Credits.

Energy sources; consumptions; societal and environmental impacts; energy generation and harvesting technology; thermodynamics and efficiency limits; nanotechnology for sustainability; emission and pollution; growth models; learning curves; life-cycle-analysis; energy in an international perspective. Offered as arranged. Recommended background: A basic understanding of energy and thermodynamics such as material covered in ECE 4620 and MAE 2131. (Fall and spring, Every Year).

ECE 6710. Microwave Engineering. 3 Credits.

Graduate level elective course open to Electrical Engineering graduate students. Topics include transmission line theory, transmission lines and waveguides, waveguide discontinuities, microwave networks, impedance matching and tuning, microwave resonators, power dividers and directional couplers, and microwave filters and active microwave circuits. Prerequisite: ECE 6020. (Fall, even years).

ECE 6715. Antennas. 3 Credits.

Graduate level elective course open to Electrical Engineering graduate students. Topics include antenna circuits, radiation pattern, reciprocity, gain, receiving cross-section, scattering by antennas, mutual coupling, arrays; polarization; radiation from current distributions, equivalent aperture currents, dipoles, patch antennas, large phased arrays. Restricted to graduate students in electrical engineering. Prerequisite: ECE 6020. (Spring, odd years).

ECE 6720. Remote Sensing. 3 Credits.

Active and passive remote-sensing systems: scatterometers, real-aperture imaging, and synthetic-aperture radars. Sensing of surface, subsurface, and atmospheric parameters at microwave, infrared, and optical frequencies. Analysis of radiometric techniques using radiative transport theory, inverse scattering methods, profile inversion. The course is intended to provide graduate students and engineers with an in-depth understanding of the fundamentals of remote sensing at microwave, infrared and optical frequencies with emphasis on recent research innovations in these areas. Prerequisite: ECE 6020. (Spring, even years).

ECE 6725. Electromagnetic Radiation and Scattering. 3 Credits.

Alternative representations of solutions to Maxwell equations, Fourier transforms and spherical mode representations, field equivalence principle, dyadic Green's functions, radiation and scattering by simple shapes, geometrical theory of diffraction, integral equations and the moment method. Offered as arranged. Prerequisite: ECE 6020. (Fall and spring, Every Year).

ECE 6730. Waves in Random Media. 3 Credits.

Propagation and scattering of electromagnetic, optical, and acoustic waves in random media, scattering from rough surfaces and randomly distributed particles, turbulence. Applications to propagation through rain and fog. Laser beam scintillations, remote sensing, and communications channel modeling. Monte Carlo simulation. The course is intended to provide graduate students and engineers with an in-depth understanding of the fundamentals of wave propagation in complex media at microwave, infrared and optical frequencies with emphasis on recent research innovations in these areas. Offered As Arranged. Prerequisite: ECE 6725. (Summer, Every Year).

ECE 6735. Numerical Electromagnetics. 3 Credits.

Systematic discussion of useful numerical methods in computational electromagnetics including integral equation techniques and differential equation techniques, both in the frequency and time domains. Hands-on experience with numerical techniques, including the method of moments, finite element and finite difference time-domain methods, and spectral integral methods. Related numerical issues such as accuracy, stability and dispersion are discussed. Examples are drawn from various electromagnetic applications such as nanowires, waveguides, and antenna radiation. Prerequisites: ECE 6020, ECE 6025, and ECE 6800. (Fall, odd years).

ECE 6745. Analysis of Nonlinear and Multivalued Devices. 3 Credits.

Numerical techniques for modeling semiconductor and magnetic devices; modeling multivalued behavior of memory materials; optimization of geometry. Offered as arranged. Prerequisite: ECE 6020. (Fall and spring, Every Year).

ECE 6750. Modern Radar Systems. 3 Credits.

The radar range equation. Radar cross section of targets, target detection and parameter estimation, detection in clutter. Resolution, ambiguities, and signal design. Moving-target indicators. Pulse Doppler radar. Radar antennas, phased arrays. Synthetic aperture and space-based radar. The course is intended to provide graduate students and engineers with an in-depth understanding of the fundamentals of wave propagation in complex media at microwave, infrared and optical frequencies with emphasis on recent research innovations in these areas. Offered as arranged. Prerequisite: ECE 6015. (Fall and spring, Every Year).

ECE 6760. Propagation Modeling in Wireless Communications. 3 Credits.

Wireless communication channel modeling, propagation mechanisms, terrestrial fixed links, mobile satellite systems, macrocells, fading models, microcells, picocells, diversity, equalizers. Specific applications to 3G, 4G and 5G mobile systems. Prerequisite: ECE 6020. (Spring, odd years).

ECE 6765. Photonics and Fiber Optics. 3 Credits.

Concepts of opto-electronic devices; light-matter-interaction; absorption; device details and applications discussed: laser, photodetector, modulators, optical cavity, waveguides and optical fibers; device and link considerations include: energy-per-bit, modulation speed, and nano fabrication; plasmonics and nanophotonics; industry perspective. Recommended background: Students should have taken at least one prior course in electromagnetism and semiconductors at the undergraduate level. (Spring, even years).

ECE 6770. Applied Magnetism. 3 Credits.

Classification of magnetic materials. Magnetic measurements. Soft and hard magnetic materials. Applications to microwave, magnetic recording, permanent magnets, magneto-optics, magnetic refrigeration, sensors, magnetostrictive devices. Electric power. Superconducting devices. Offered as arranged. Prerequisite: ECE 6020. (Summer, Every Year).

ECE 6800. Computational Techniques in Electrical Engineering. 3 Credits.

Introduction to linear algebra and vector spaces as applied to networks and electrical systems. Orthogonal bases, projections, and least squares. Fast Fourier transforms. Eigenvalues and eigenvectors with applications. Computations with matrices. Constrained optimization in electrical systems. Network models and applications. Special relativity. (Fall, Every Year).

ECE 6810. Speech and Audio Processing by Computer. 3 Credits.

The objective of this course is to introduce computer processing of speech and audio. Topics include: acoustic sensor technologies and characteristics, direction finding, speech analysis and synthesis, audio formats and compression standards, time-varying autoregressive models, speech recognition, automatic target recognition. Restricted to graduate students. (Fall, Every Year).

ECE 6815. Multimedia Processing. 3 Credits.

Introduction to multimedia. Formats, conversion and combinations; delivery and trends; servers and networks; hardware and architecture; enduser devices; digital libraries, video conferencing and collaboration; and educational and health applications. Case studies and trials. Offered as arranged. Restricted to graduate students with programming experience in C, C++ or Java. Prerequisite: ECE 6005. (Fall and spring, Every Year).

ECE 6820. Real-Time Digital Signal Processing. 3 Credits.

Digital signals, binary number representation, fixed-point and floating-point DSP architectures. Q-format for data representation, bit allocation and arithmetic. Portability of arithmetic expressions: floating point vs. fixed point. Development of real-time signal processing software. Applications to signal parameter estimation, signal generation, filtering, signal correlation, spectral estimation (FFT). Offered as arranged. Prerequisite: ECE 6005. Recommended background: Students in this course should have taken at least one prior course in ECE 6005 Computer Architecture and Design and have a basic knowledge of computer architecture and DSP algorithms; Knowledge of C programming language, assembly language and MATLAB is desirable; If unsure, contact the instructor, and discuss the pre-requisite requirements. (Fall and spring, Every Year).

ECE 6825. Computer Control Systems. 3 Credits.

Analysis of automatic control systems in which the control procedure uses on-line digital computation. Topics include single- and multi-rate sampling, z-transforms, responses of discrete systems, stability criteria, and discrete control design. Prerequisite: ECE 6010. (Fall, odd years).

ECE 6830. System Optimization. 3 Credits.

Parameter optimization problems, theory of minima and maxima. Optimization problems for dynamic systems, calculus of variations, the maximum principle and the Hamilton-Jacobi equation. Optimization problems with constraints, optimal feedback systems. Numerical solution of optimal problems. Prerequisite: ECE 6010. (Spring, Every Year).

ECE 6835. Nonlinear Systems. 3 Credits.

Definition of linear and nonlinear systems; introduction to approximate analysis of nonlinear systems: describing functions, Krylov and Bogoliubov asymptotical method, and Tsytkin locus. Forced oscillations: jump resonance. Stability analysis: Liapunov criterion. Luré problem and Popov's method. Prerequisite: ECE 6010. (Fall, even years).

ECE 6840. Digital Image Processing. 3 Credits.

Properties of images and visual systems; image acquisition, sampling, quantization; one- and two-dimensional image transform techniques; enhancement and restoration; image coding and data compression; segmentation, representation, boundary and shape, texture, matching. Image understanding. Students should have completed at least one prior course in computational methods or signal processing, such as ECE 6800 or equivalent, prior to enrollment. Contact the instructor if uncertain as to whether this requirement has been met. Prerequisite: ECE 6800. (Spring, odd years).

ECE 6842. Image Engineering. 3 Credits.

Solid-state imaging devices and image engineering; basic understanding of the detection and noise processes underlying the sensing of optical radiation and the engineering and physics of image formation; radiometry, optics and image formation, and imaging devices; image quality metrics and system design trades. Students should have completed at least one course in linear systems and stochastic processes prior to enrollment. Contact the instructor if uncertain as to whether this requirement has been met. (Fall, even years).

ECE 6845. Image Synthesis. 3 Credits.

The objective of this course is to introduce techniques for synthesizing images using mathematical models and other reconstruction techniques. The course starts with introduction to image formation process, then other techniques for synthesizing color textures and three-dimensional scenes are covered. Prerequisite: ECE 6015. (Spring, Every Year).

ECE 6850. Pattern Recognition. 3 Credits.

Random vectors, transformations; hypothesis testing, error probability, sequential methods. Bayes, other linear classifiers; discriminant functions, parameter estimation, learning, and dimensionality reduction; nonparametric methods; clustering; feature selection and ordering; computer applications and projects. Students should have completed at least one prior course in probability and statistics, such as ECE 6015 or equivalent, prior to enrollment. Contact the instructor if uncertain as to whether this requirement has been met. Prerequisite: ECE 6015. (Fall, odd years).

ECE 6855. Digital Signal Processing Techniques. 3 Credits.

Signal and system representation, sampling and quantization, transform techniques. Recursive and nonrecursive digital filter design, recursive estimation, linear predictive filtering. Fast algorithms for signal processing. Current topics. Prerequisite: ECE 6015. (Fall, Every Year).

ECE 6860. Compression Techniques for Data, Speech, and Video. 3 Credits.

Lossless and lossy coding theorems, rate distortion bound. Data compression algorithms: Huffman coding, run-length coding. Differential coding. Transform coding. Voice, audio, image and video coding techniques: CELP, JPEG, MPEG, MP3. Data coding standards: G.722, G.726, G.728, H.261, H.323. Offered as arranged. Prerequisites: ECE 6015 and ECE 6025. (Fall and spring, Every Year).

ECE 6865. Statistical Signal Estimation. 3 Credits.

Minimum variance unbiased estimation. Cramer-Rao bound, statistical modeling, sufficient statistics, maximum likelihood estimation, efficient estimators, least squares. Bayesian estimators. Wiener and Kalman filters, complex data and parameters. Applications to radar, speech, image, biomedicine, communications, controls. Prerequisite: ECE 6015. (Fall, odd years).

ECE 6875. Wavelets and Their Applications. 3 Credits.

Time-frequency analysis. Multiresolution analysis. Continuous, discrete, and discrete-time wavelet transform. Multirate filter banks. Multiband wavelets, two-dimensional wavelets. Wavelet packets and matching pursuit. Wavelets in noise filtering, compression, modeling of fractals, communications, detection, adaptive systems, and fast computation. Prerequisites: ECE 6025 and ECE 6855. (Spring, odd years).

ECE 6880. Adaptive Signal Processing. 3 Credits.

Adaptation criteria. Least mean square and recursive least square. Convergence of adaptive algorithms and tracking. Linear and nonlinear Kalman filters. Blind source separation. Iterative (turbo) decoding and equalization. Nonlinear/non-Gaussian models: particle filtering. Machine learning: back propagation, support vector machines. Applications in system identification, adaptive channel equalization, interference cancellation and suppression, and adaptive antenna arrays. Prerequisite: ECE 6865. (Spring, even years).

ECE 6882. Reinforcement Learning. 3 Credits.

Semi-supervised learning, sequential and automated decision making, dynamic programming, Monte Carlo learning, temporal difference learning, off-policy and on-policy learning, deep reinforcement learning, inverse reinforcement learning. (Spring, Every Year).

ECE 6885. Computer Vision. 3 Credits.

Image processing; edge detection, segmentation, local features, shape and region description in 2D and 3D. Insights from human vision studies. Representation for vision: object models, synthetic images, matching, gaps, algorithms. Interference, production system, syntactic networks. Planning spatial reasoning for robot vision. Prerequisites: CSCI 6511; and ECE 6850. Recommended background: Students in this course should have taken at least one prior course in artificial intelligence and/or pattern recognition; Acceptable courses include ECE 6850 (Pattern Recognition), or an equivalent course; If unsure, contact the instructor, and discuss the prerequisite requirements. (Spring, even years) Same As: BME 6885.

ECE 6998. Thesis Research I. 3 Credits.

N/A.

ECE 6999. Thesis Research II. 3 Credits.

Thesis research.

ECE 8150. Advanced Topics in Computer Architecture. 3 Credits.

Examples of topics are interconnection networks, fault tolerance, load balancing, workload characterization, and performance modeling of advanced computer systems. Prerequisite: ECE 6120, ECE 6125.

ECE 8999. Dissertation Research. 12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall and spring, Every Year).

EMERGENCY HEALTH SERVICES (EHS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EHS 1002. CPR and First Aid. 1 Credit.

Development of the proper techniques of cardiopulmonary resuscitation and first aid. Nationally recognized certification provided.

EHS 1025. Introduction to Prehospital Care. 2 Credits.

Concepts of prehospital care, including terminology, basic emergency care, communication, and anatomy and physiology for emergency care; first aid and Basic Life Support (BLS) training. Restricted to students in the health sciences program. Prerequisites: HSCI 1101, HSCI 1102 and HSCI 1103.

EHS 1040. Emergency Medical Tech-Basic. 3 Credits.

EMT-Basic knowledge and skills. Includes basic life support, patient assessment, bleeding control, bandaging and splinting. Successful completion makes student eligible to sit for National Registry certification exam.

EHS 1041. EMT - Basic Lab. 1 Credit.

Application and practice of EMT-Basic skills.

EHS 1044. EMT - Basic Recertification. 3 Credits.

Prepares students to recertify as a National Registry EMT-Basic. Includes an "EMT Refresher" class and continuing education program. Laboratory fee.

EHS 1058. EMT Instructor Development. 2 Credits.

Students develop and deliver didactic and skill instruction. Students participate in the day-to-day teaching and management in an EMT-Basic program.

EHS 1101. Introduction to Emergency Health Services I. 2 Credits.

Introduction to concepts of emergency health services; medical emergency management in a prehospital environment and EMS operations. Criminal background check required. Prerequisite: EHS 1025.

EHS 1102. Introduction to Emergency Health Services II. 2 Credits.

Continuation of topics introduced in EHS 1101, including managing medical emergencies, trauma emergencies, and working with special patient populations. Restricted to students in emergency health services program. Prerequisites: EHS 1025 and EHS 1101.

EHS 2104. Legal Aspects in Emergency Management. 3 Credits.

Legal issues in the delivery of emergency medical services, including abandonment, malpractice, negligence, patient consent, the Freedom of Information and Privacy Acts, the Good Samaritan law, protocol deviation, record keeping, patient refusal of services, and medical control. Emergency medicine legislation and recent court decisions. Prerequisite: HSCI 2103.

EHS 2105. Drug Addiction and Pain Management in the Emergency Health Services. 1 Credit.

The science of addiction and pain with a focus on management and intervention strategies used in the provision of emergency health services in the prehospital setting. Prerequisites: EHS 1040 and EHS 1041.

EHS 2107. Theory and Practice of Research in a Clinical Setting. 4 Credits.

Fundamentals of clinical research methods, design, and analysis related to emergency medicine.

EHS 2108. Emergency Medicine Clinical Scribe. 3 Credits.

Fundamentals of emergency medicine clinical practice through documentation and management of clinical information. Students participate as members of an emergency medicine team and explore topics related to emergency health care, e.g., practical human anatomy, medical terminology, diagnosis, patient care, medical records, and practice management.

EHS 2109. Infectious Diseases and Bioterrorism. 3 Credits.

Examination of the basic principles of epidemiology, the growing problem of emerging infectious diseases, the threat of biological warfare, and emergency preparedness planning and response for large-scale biological events. Restricted to students in the health sciences program or with the instructor's permission. Recommended background: 4 credits in courses in the areas of biology or anatomy and physiology; or HSCI 2102.

EHS 2110. Emergency Department Critical Care Assessment and Procedures. 4 Credits.

Expansion of EMT-Basic knowledge and skills for independent performance as a hospital technician; emphasis on the Emergency Department and Intensive Care Units.

EHS 2131. History Taking and Physical Examination. 2 Credits.

Conducting an assessment of patients' health care needs and providing basic care during the patient intake process. Restricted to students in SMHS. Prerequisites: HSCI 1101, HSCI 1102 and HSCI 1103.

EHS 2160. Disaster Response Planning and Management. 3 Credits.

Planning for and management of mass-casualty incidents in the pre-hospital and hospital environments for all risks (attack, man-made, and natural), including development of response plans, triage, medical evacuation procedures, communications, roles of government and the private sector, terrorism, pandemics and epidemics, and medical care for mass gatherings. Restricted to students in the health sciences program or with the instructor's permission.

EHS 2161. Principles of Hazardous Materials and CBRNE Incident Management. 3 Credits.

Examination of hazardous materials and their risks, including chemical, biological, radiological, nuclear, and explosives (CBRNE). Identification of hazardous materials and related problems, precautions in approaching the contaminated patient, protective clothing, decontamination, and management of selected hazards, and countermeasures. Restricted to students in the health sciences program or with the instructor's permission. Recommended background: 4 credits in courses in biology or anatomy and physiology; or HSCI 2102.

EHS 2162. Introduction to the Principles of Tactical Medicine. 4 Credits.

The basics of tactical emergency medicine, such as acute care in tactical combat situations and medical operations support of tactical teams.

EHS 2166. Current Topics. 1 Credit.

Review of the current literature to identify clinical, operational, educational, and administrative issues important in the leadership of EMS.

EHS 2174. Foundations of Emergency Health Services Systems. 3 Credits.

An overview of the design and operation of Emergency Health Services (EHS) systems, delivery of services, and the echelons of care. The history of Emergency Medical Services (EMS), the interface of public and private organizations and review of the various personnel who comprise these systems is examined in relation to their impact on the health care delivery system.

EHS 2175. Community Risk Management and Safety in EHS. 3 Credits.

This course introduces the EHS professional to the benefits of community information and community relations. Students analyze strategies for introducing risk reduction programs and apply these concepts in the development of such programs.

EHS 2211. Introduction to Telemedicine. 3 Credits.

An introduction to the ethical, legal, and technical aspects of telemedicine, including, but not limited to, emerging technologies, planning and operational considerations. Students complete a number of practical exercises requiring direct application and utilization of Internet, video, audio, and other technologies.

EHS 3101. Leadership Concepts. 3 Credits.

Leadership topics in the context of emergency action and disaster response, including developing leadership skills, team and group dynamics, and contrasting military and civilian leadership structures. Restricted to students in the health sciences program or with the instructor's permission. Credit cannot be earned for this course and EHS 4111.

EHS 3103. Technology in Critical Incident Response. 3 Credits.

Examination of the role of technology in critical incident response through an assessment of domestic and international cases. Restricted to students in the health sciences program or with the permission of the instructor. Prerequisite: EHS 2160.

EHS 3105. Integrated Response to High Impact Violent Incidents. 3 Credits.

Examination of resources and response strategies needed to mitigate high impact, violent incidents involving an ongoing threat; evaluation of multiagency and multidiscipline integrated operations, mass casualty events, and terrorism. Restricted to students in the health sciences program or with the instructor's permission. Prerequisite: EHS 2160.

EHS 3107. Financial Management for the Disaster Cycle. 3 Credits.

Financial management, budgeting, and grants management in the emergency response and preparedness arenas. Restricted to students in the health sciences program or with the instructor's permission. Prerequisite: EHS 2160. Credit cannot be earned for this course and CML 2142.

EHS 4101. Humanitarian Relief Operations. 3 Credits.

An integrative approach to humanitarian relief operations, including factors that can influence relief delivery, field planning considerations, and the roles and limitations of non-governmental organizations, international organizations, local government, and various federal and civilian and military agencies. Emphasis on medical aspects of working with particular populations such as women, children, the elderly, and culturally underrepresented or persecuted population subsets.

EHS 4103. Advanced Topics in Leadership. 3 Credits.

Leadership topics for emergency managers and responders, including leadership in complex systems, change management, interagency collaboration, and leadership in domestic and international responses. Restricted to students in the health sciences program or with the instructor's permission. Prerequisite: EHS 3101. Recommended background: EHS 2160.

EHS 4105. Operations Management in Asymmetric Conditions. 3 Credits.

Application of operations management principles in asymmetric conditions, including multi-dimensional approaches and responses to attack, man-made, and natural disasters. Restricted to students in the health sciences program or with the instructor's permission. Prerequisites: EHS 2160 and EHS 3101. Credit cannot be earned for this course and EHS 4110.

EHS 4110. Operations Management in Emergency Health Services Systems. 3 Credits.

Applies principles of general management that contribute to the effectiveness of day to day operations within an Emergency Health Services Organization.

EHS 4111. Leadership Concepts in EHS. 3 Credits.

This course is designed to provide a basic introduction to leadership by focusing on what it means to be a good leader. Emphasis in the course is on the practice of leadership in the Emergency Health Services setting. The course examines topics such as: the nature of leadership, recognizing leadership traits, developing leadership skills, creating a vision, setting the tone, listening to out-group members, handling conflict, overcoming obstacles, and addressing ethics in leadership. The course provides a special focus on facilitating students' understanding of their own leadership vision.

EHS 4112. Special Operations and Disaster Management. 3 Credits.

This course is an introduction to Emergency Health Services (EHS) Special Operations. The student develops and applies a general understanding of what constitutes special operations and resources needed to mitigate special operations incidents, both small and large, in the twenty-first century. The student is able to evaluate local special operations incidents, major multi-agency operations, scheduled and unscheduled mass casualty events, terrorism and natural disaster.

EHS 4144. Seminar in EHS Leadership. 3 Credits.

A senior capstone course, integrating the theories and concepts covered in previous work, with a focus on the identification and resolution of problems and opportunities encountered by the health sciences manager. To be taken in the final semester of study or with the program director approval.

EHS 4160. Project Management and Leadership Capstone. 3 Credits.

Capstone course using challenges and opportunities encountered by emergency managers to apply and develop project management and leadership approaches. Restricted to students in the health sciences program or with the instructor's permission. Prerequisites: EHS 2160 and EHS 3101. Recommended background: completion of EHS 3107, EHS 4103, and EHS 4105.

EHS 4197. Clinical Internship. 1-6 Credits.

EHS 4198. Administrative Internship. 1-12 Credits.

EHS 4199. Independent Study. 1-3 Credits.

EHS 5099. Variable Topics. 1-99 Credits.

EHS 6115. Operational Leadership in a VUCA Environment. 3 Credits.

How leadership can operate most effectively within and meet the challenges of a VUCA (volatility, uncertainty, complexity, and ambiguity) environment using innovation, collaboration and cultural intelligence. Models, principles, and best practices for leaders. Restricted to SMHS students.

EHS 6201. Response to High Impact Emergencies. 3 Credits.

Strategies for an effective response to large-scale and high-impact emergencies examined as the managerial foundation for development of a response policy.

EHS 6203. Legal, Regulatory, and Ethical Issues in Emergency Medical Services Leadership. 3 Credits.

Laws, regulations, and standards pertaining to emergency services. Implications for organizational policy and response requirements for executives, managers, and supervisors.

EHS 6204. Public Information Management for Emergency Medical Services Leadership. 3 Credits.

Public information management for emergency services executives, managers, and supervisors.

EHS 6205. Strategic Emergency Response. 3 Credits.

Strategic analysis of counterterrorism response requirements for the emergency service organization. Determination of vulnerabilities and trends; development of operational doctrine.

EHS 6206. Case Studies in EMS Leadership. 3 Credits.

Integrative case-based approach to the analysis of complex problems in the management and leadership of emergency medical services. Same as CML 6205.

EHS 6210. EMS Systems Design and Analysis. 3 Credits.

System design characteristics of high-performance EMS systems based on excellence in emergency care, response-time reliability, economic efficiency, and customer service from a strategic perspective.

EHS 6211. Innovations in Telemedicine. 3 Credits.

Consideration of telemedicine in a multidisciplinary format toward innovation and entrepreneurship in the fields of medicine, public health, engineering, and business. Credit cannot be earned for this course and PUBH 6099.

EHS 6227. Introduction to Human Health in Space. 3 Credits.

Introduction to aerospace concepts in an interdisciplinary context for those interested in human spaceflight. Elements of physiology, medicine, law, policy, engineering, and history are incorporated.

EHS 6274. Health Economics and Finance. 3 Credits.

Issues of health care economics, financial management, and budgeting that relate to managerial decision making. Applied financial management, management control systems, budgeting, staffing, and cost accounting. (Same as CML 6274).

EHS 6275. Leadership and Change in Emergency Medical Services. 3 Credits.

The concept of leadership within the context of health professions, health systems, and health policy.

ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING (EMSE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EMSE 1001. Introduction to Systems Engineering. 1 Credit.

Core concepts in systems engineering; processes of system decomposition and integration; upfront conceptual design, rapid prototyping, structured testing, balanced work, lean processes, and design for manufacturability. Restricted to undergraduate systems engineering majors or with the permission of the instructor. (Fall, Every Year).

EMSE 1099. Variable Topics. 1 Credit.**EMSE 2705. Mathematics in Operations Research. 3 Credits.**

Linear algebra topics relevant for optimization methods and models; systems of linear equations, Gaussian elimination, matrix algebra, vector spaces, determinants, linear programming, orthogonality and least squares; mathematical foundations of optimization theory; linear algebra, advanced calculus, convexity theory; geometrical interpretations and use of software. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: MATH 2233. (Same as MATH 2184) (Spring, Every Year).

EMSE 2801. Fundamentals of Systems Engineering. 3 Credits.

The systems approach to designing, building, and operating complex engineering systems; requirements, functional decomposition, systems architecting, analysis of alternatives, project life cycle modeling, cost analysis, and technical performance measurement. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisites: EMSE 1001; and COMM 1040 or COMM 1041 or COMM 1042. (Fall and spring, Every Year).

EMSE 3740W. Systems Thinking and Policy Modeling. 3 Credits.

Introduction to systems thinking and system dynamics approach to policy analysis; applications to business management and public policy; key principles of systems; causal-loop and stock and flow models of business growth, technology adoption, and marketing. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisites: CSCI 1111 or CSCI 1121 or CSCI 1131. (Fall, Every Year).

EMSE 3741. Systems Thinking and Policy Modeling Recitation. 3 Credits.

The practical use of the simulation software. Individually and in groups, students review class material, work on in-class practice problems, enhancing their semester long projects, and prepare for the midterm and final examinations. Corequisites: EMSE 3740W.

EMSE 3760. Discrete Systems Simulation. 3 Credits.

Modeling of the operation of service systems using the discrete event simulation paradigm; theoretical topics including random variable sampling, input distribution fitting, model verification and validation, and aleatory and epistemic uncertainty in the simulation output analysis context. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: EMSE 3740W. (Fall, Every Year).

EMSE 3815. Requirements Analysis and Elicitation. 3 Credits.

The process of translating and decomposing systems engineering objectives into measurable and tractable requirements; how requirements analysis supports general processes and standards through elicitation methods, requirements decomposition, traceability matrices, and systems requirements specifications, and case studies that feature contemporary SE problems. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: EMSE 2801. (Spring, Every Year).

EMSE 3820. Project Management for Engineering Systems. 3 Credits.

Introduction to project management concepts, processes, tools, and techniques; activity planning, budgeting, scheduling, analyzing risk, monitoring and controlling, evaluation and terminating; challenges of uncertainty, risk, and behavioral factors. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisites: APSC 3115 and EMSE 3815. (Spring, Every Year).

EMSE 3850. Quantitative Models in Systems Engineering. 3 Credits.

Introduction to analytical models used in systems engineering to support decision making in business and government; applications to, for example, production planning, workforce scheduling, and network problems; formulating and solving models using spreadsheets. Corequisite: APSC 3115. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: EMSE 2705. (Fall, Every Year).

EMSE 3855W. Critical Infrastructure Systems. 3 Credits.

Topics in engineered infrastructure systems; asset management, environmental impact analysis, input-output life cycle analysis and inoperability modeling, infrastructure risk and reliability analysis, resilience and resistance to natural hazards or service disruptions, and development of infrastructure sustainability metrics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: UW 1020. (Spring, Every Year).

EMSE 4190. Senior Project in Systems Engineering I. 3 Credits.

First of a two-semester senior project to identify real world problems and assess applicable systems engineering methodologies. Project focus varies, but may include Washington, DC, area problems in public infrastructure or the private sector, including transportation, energy, environment, health care, telecommunications. Restricted to undergraduate students majoring in systems engineering. Prerequisites: EMSE 3820 and EMSE 4765. (Fall, Every Year).

EMSE 4191. Senior Project in Systems Engineering II. 3 Credits.

Second phase of a two-semester senior project. Field experience and systems engineering project completion in a team context. Each small group confronts an actual problem, conducts an analysis and formulates a solution using systems engineering methods and models. Oral and written reports demonstrate project management, effective teamwork, and the mastering of applied systems engineering concepts. Restricted to undergraduate students majoring in systems engineering. Prerequisite: EMSE 4190. (Spring, Every Year).

EMSE 4197. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Instructor's permission required prior to registration. (Spring and fall, Every Year).

EMSE 4198. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status.

EMSE 4410. Engineering Economic Analysis. 3 Credits.

How the concept of time value of money is used to make optimal engineering project investment choices in the face of competing alternatives; life-cycle financial analysis of engineering projects. Provides foundation knowledge for the National Council of Examiners for Engineering and Surveying Fundamentals of Engineering examination. Restricted to undergraduate SEAS students or with permission of the instructor. Prerequisites: ECON 1011 and MATH 1232. (Fall and spring, Every Year).

EMSE 4574. Introduction to Programming for Analytics. 3 Credits.

Introduction to programming using the R programming language. Functions, conditionals, loops, strings, file input/output, plotting, coding style, Monte Carlo methods, and packages. Recommended background: No prior programming experience is needed to succeed in this course. (Fall, Every Year).

EMSE 4575. Exploratory Data Analysis. 3 Credits.

Introduction to exploratory data analysis using the R programming language. Topics include data visualization, data wrangling, reproducibility, information communication, webscraping, github, and rmarkdown. Restricted to students in the data analytics program. Prerequisites: EMSE 4574 or equivalent. Recommended background: Experience with R is recommended but not essential.

EMSE 4710. Applied Optimization Modeling. 3 Credits.

Formulation and analysis of linear, network, and integer optimization models that arise in practice; optimization software to formulate and solve models. Linear optimization theory and algorithms: Simplex method, branch-and-bound, duality theory. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisites: EMSE 2705 and EMSE 3850. (Fall, Every Year) Credit cannot be earned for this course and EMSE 6710.

EMSE 4755. Quality Control and Acceptance Sampling. 3 Credits.

Survey of techniques in quality control, including acceptance sampling, capability analysis, control charts, and design of experiments. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: EMSE 4765. (Fall, Every Year).

EMSE 4765. Data Analysis for Engineers and Scientists. 3 Credits.

Inference methods in a single dimension: estimation, confidence intervals, hypothesis testing and goodness-of-fit testing; multivariate data analysis techniques using matrices and vectors: the Hotelling T-squared test, multiple linear regression and principle component analysis. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: APSC 3115. (Spring, Every Year).

EMSE 4770. Techniques of Risk Analysis and Management. 3 Credits.

Topics and models in current risk analysis; use of quantitative and qualitative methods in risk analysis; modern applications of risk-based planning and risk management. Restricted to undergraduate students majoring in systems engineering or with the permission of the instructor. Prerequisite: EMSE 4755. (Spring, Every Year).

EMSE 5099. Variable Topics. 1-99 Credits.

EMSE 6001. The Management of Technical Organizations. 3 Credits.

Introduction to management theory and practice for engineers advancing to leadership and engineering management roles. (Spring, Every Year).

EMSE 6005. Organizational Behavior for the Engineering Manager. 3 Credits.

Individual and group behavior in the context of technical organizations, focused on relationships and interactions within an organization's operating activities. Individual and group development and motivation. Organizational structures and cultures. (Spring, Every Year).

EMSE 6014. Management of Engineering Contracts. 3 Credits.

The total contracting process considered from the perspectives of the industrial and government buyer and the seller of technical materials and services. (Fall, even years).

EMSE 6018. Engineering Law. 3 Credits.

Legal principles and procedures of interest to engineers. The American legal system, contracts and specifications, liability of professional engineers, product liability, agency relationships, patent and proprietary rights, special problems in research and development contracts. (Fall, odd years).

EMSE 6020. Decision Making with Uncertainty. 3 Credits.

Problem formulation. Concepts and techniques used in analyzing complex decision problems. Modeling decision problems using decision trees, probability models, multi-objective models and utility theory. (Fall, Every Year).

EMSE 6023. Technology Issue Analysis. 3 Credits.

Contextual background and intellectual basis for addressing technology issues in the public and private sectors. Technology impact assessment, forecasting, and innovation; principles and practices of technology transfer as elements of a systematic approach to making technology decisions. (Fall, odd years).

EMSE 6025. Entrepreneurship and Technology. 3 Credits.

Concepts and methods associated with starting an entrepreneurial venture: organization design, team building, protection of intellectual property, strategies for developing and marketing a technology product; financial, legal, and market valuation issues and methods for a start-up venture. (Fall, even years).

EMSE 6026. Technical Enterprises. 3 Credits.

Essential features of technology-based companies from the entrepreneur's point of view. Team preparation of a simulated business plan for a technology-based company. Designed for those working in technical firms and for government personnel who depend on technical firms as suppliers. (As arranged).

EMSE 6030. Technological Forecasting and Management. 3 Credits.

Concepts and methods for understanding the dynamics of technological change. Issues in technology assessment, technology transfer, and strategic management of technology. (Spring, even years).

EMSE 6035. Marketing Analytics for Design Decisions. 3 Credits.

Analyzing data to inform design decisions in an uncertain, competitive, market, topics include consumer choice modeling, programming in R, survey design, conjoint analysis, optimization market simulation, and professional communication skills. (Fall, Every Year).

EMSE 6045. International Technology Commercialization. 3 Credits.

The process of moving ideas to commercial reality in an international setting. Interdisciplinary approach that weaves together study of international and organizational cultures and dynamics, with the disciplines of analytics, engineering management, entrepreneurship, marketing, and technology forecasting, to commercialize innovations in technology. (Spring, Every Year).

EMSE 6070. Management of Research and Development. 3 Credits.

Seminar on readings and classic and contemporary case studies in the strategic management of innovation and technology. (Fall and spring).

EMSE 6099. Problems in Engineering Management and Systems Engineering. 3 Credits.

Capstone project providing the opportunity to apply concepts and tools previously studied to the solution of a real-world problem. Students work in small groups on a problem proposed by students and approved by the instructor. Restricted to master's candidates in the department, preferably during the last semester of their program. (Spring, Every Year).

EMSE 6115. Uncertainty Analysis for Engineers. 3 Credits.

Basics of probability theory and statistics, with a focus on engineering applications, particularly in the realm of systems. Topics include simulation, uncertainty analysis, central limit theorem, systems examination and analysis, and application to systems design and management. (Fall, spring, and summer, Every Year) Credit cannot be earned for this course and APSC 3115.

EMSE 6200. Policy Factors in Environmental and Energy Management. 3 Credits.

Exploration of the policy development process from several different but integrated perspectives. Focus on areas of environmental and energy management and use of current case studies to develop a framework of understanding to support decisions in a broad variety of management settings. (Spring, odd years).

EMSE 6220. Environmental Management. 3 Credits.

Technical, economic, political, administrative, and social forces influencing the quality of the environment and the use of resources. Government and industrial programs to combat pollution of the air, soil, and water; existing and pending pertinent legislation; theoretical aspects of specific management problems. (Fall, odd years).

EMSE 6225. Air Quality Management. 3 Credits.

The nature of critical local, regional, continental, and global problems associated with air pollution and the historical evolution of such problems. The complex regulatory and institutional framework controlling air quality management in the U.S. Current air quality management concepts and processes. (Spring, odd years).

EMSE 6230. Hazardous Waste Management and Cleanup. 3 Credits.

Hazardous waste management and cleanup processes used in the U.S. and around the world. The roles of the relevant federal, state, and local government agencies; major hazardous waste laws and regulations. Planning, assessment, investigation, design, and construction phases of hazardous waste remediation projects. (Spring, even years).

EMSE 6235. Water Quality Management. 3 Credits.

The nature of point and non-point sources of surface and ground water pollution and the statutory, regulatory, and institutional framework controlling water quality management activities in the U.S. Current approaches to water quality protection and enhancement. The role of engineered treatment processes in water quality management. (Spring, even years).

EMSE 6240. Environmental Hazard Management. 3 Credits.

Causes and effects of extreme natural and technological hazards. Organizational responsibilities, management approaches, directed technologies, and social factors related to environmental hazard assessment. Cultural, institutional, and technical capacities bearing on environmental disaster management, national and international risk reduction, and mitigation measures. (Spring, Odd Years).

EMSE 6245. Analytical Tools for Environmental Management. 3 Credits.

A survey course in environmental management, focusing on tools to assess the environment: quantitative risk assessment, environmental valuation methodologies, Congressional activities, and environmental laws. The regulatory process as it relates to environmental management. Risk assessment and modeling approaches to solving environmental problems. (Spring, odd years).

EMSE 6260. Energy Management. 3 Credits.

Examination of the range of available energy resources, trends in their use, the programs and organizations that have developed and evolved to address problems associated with energy resource use. (Fall, even years).

EMSE 6285. Analytical Tools for Energy Management. 3 Credits.

Analytical tools needed to manage energy resources at the facility level. Energy technologies: instrumentation, measurement, and control. Energy auditing; conservation techniques, financial and economic analysis, and maintenance of energy budgets. Functions of an energy management office of a large organization. (Fall, even years).

EMSE 6290. Climate Change: Policy, Impacts, and Response. 3 Credits.

The known and unknown in climate change science; strategies and technologies for mitigation of and adaptation to the impact of climate change; international issues related to avoidance, challenges posed by as yet undefined effects, and responsibilities mandated by existing and proposed laws, executive orders, regulations, and court rulings. (Fall, odd years).

EMSE 6291. Greenhouse Gas Measurement and Reporting. 3 Credits.

Study of existing methodologies and standards for measuring and reporting greenhouse gas (GHG) emissions with particular emphasis on accepted environmental accounting frameworks for the business sector and regulatory schemes. (Fall and spring, Every Year).

EMSE 6292. Greenhouse Gas Mitigation. 3 Credits.

Conducting mitigation analyses, identifying, and analyzing projects to reduce greenhouse gas emissions with a focus on energy efficiency and renewable energy; monitoring and reporting emission reductions using accepted methodologies; use of carbon markets as a tool for cost-effective mitigation. This course is taught online. (Fall and spring, Every Year).

EMSE 6293. Greenhouse Gas Management Assurance and Information Systems Design. 3 Credits.

Design of information systems for management of greenhouse gas emissions. Assurance of greenhouse gas emissions assertions. This course is taught online. (Fall and spring, Every Year).

EMSE 6295. Environmental Security. 3 Credits.

Overview of potential terrorist attack vectors on government-owned and private sector assets most directly tied to environmental health and safety. Homeland security requirements for environmental infrastructure, water supplies, energy sources, nuclear waste, and other programs vulnerable to targeting. Courses of action designed to prevent attacks. (Fall).

EMSE 6300. Homeland Security: The National Challenge. 3 Credits.

Evolution of homeland security as a concept, legal framework, and redirection of national policies and priorities. Issues and problems of implementation. Evolution of terrorist threat and U.S. response. Fundamental policy legislation and documents. (Spring, Every Year).

EMSE 6305. Crisis and Emergency Management. 3 Credits.

Defining crises, emergencies, and disasters; developing crisis, business continuity, and incident management plans within robust emergency management programs; National Response Framework and National Incident Management System; organizing for response, managing the response organization, managing in a turbulent environment, and crisis decision making and communication. (Fall, Every Year).

EMSE 6310. Information Technology in Crisis and Emergency Management. 3 Credits.

The role of information in crisis and response management, determining disaster and crisis information requirements; information technologies applied to crisis, disaster, and emergency management; causes and effects of information breakdowns. (Spring, even years).

EMSE 6315. Management of Risk and Vulnerability for Hazards and Terrorism. 3 Credits.

Development of concepts required for risk-based planning and risk management. Objectives and methods for vulnerability assessment for natural disaster, technological hazards, and terrorist threats. Risk analysis, perception, communication, and mitigation. (Fall, odd years).

EMSE 6320. International Disaster Management. 3 Credits.

Guiding principles, key institutions, operational requirements, policy issues, and broad fundamentals associated with international disaster risk reduction and humanitarian response to natural and man-made disasters and complex emergencies. (Fall).

EMSE 6325. Medical and Public Health Emergency Management. 3 Credits.

Medical and public health management issues encountered in crises, emergencies, and disasters for non-medical emergency managers. The spectrum of medical, public health, psychological and behavioral problems; incident management organization and processes that address these concerns and integrate medical and public health assets into the response. (Spring).

EMSE 6330. Management of Terrorism Preparedness and Response. 3 Credits.

Terrorism, terrorist methods, and human/infrastructure vulnerability. Current preparedness and response programs. Mitigation, preparedness, and response requirements to manage mass terrorism incidents within the context of all-hazard emergency management. Case studies. (Fall).

EMSE 6345. Disaster Recovery and Organizational Continuity. 3 Credits.

Disaster recovery planning and business continuity. Recovery of information and communication systems. The role of the private sector in mitigation and recovery. Public/private partnerships in community reconstruction and recovery. (Spring).

EMSE 6350. Hazard Mitigation in Disaster Management. 3 Credits.

Risk reduction through hazard mitigation and its role in an emergency management program; analysis of past and current government and private-sector programs; examination of new approaches with case study examples; structural versus nonstructural actions; mitigation of the terrorism risk. (Fall). (Fall, Every Year).

EMSE 6410. Survey of Finance and Engineering Economics. 3 Credits.

Survey of material relevant to financial decision making for engineering activity; traditional engineering economy topics; fundamentals of accounting; financial planning, budgeting, and estimating applicable to management of technical organizations. (Fall, Every Year).

EMSE 6420. Uncertainty Analysis in Cost Engineering. 3 Credits.

Basic skills for building probability models to perform meaningful engineering economic studies, financial feasibility assessments, and cost uncertainty analysis in the planning phase of engineering projects; analytical and closed form equations from probability theory; simulation modeling for problems with structures without closed form equations. Prerequisite: EMSE 6410. (Spring, Every Year).

EMSE 6430. Financial Management for Engineers. 3 Credits.

Management of existing resources, including the use of financial statements and ratio analysis to assess a company's financial health, its strengths, weaknesses, recent performance, and future prospects; financial forecasting and planning with particular emphasis on managing growth and decline; financing of company operations, including a review of the principal security types, the markets in which they trade, and the proper choice of security type by the issuing company; the use of discounted cash flow techniques, such as the net present value and the internal rate of return, to evaluate investment opportunities. Prerequisite: EMSE 6410. (Fall, Every Year).

EMSE 6450. Quantitative Methods in Investment Engineering. 3 Credits.

Cash flow streams and the basic theory of interest; bond pricing and immunization of bond portfolios, the term structure of interest rates, mean-variance portfolio theory and the capital asset pricing model; value at risk. Restricted to SEAS Graduate students or permission of instructor. Recommended background: Technical background at the level of a bachelor's degree in engineering, mathematics, or science and working knowledge of Microsoft Excel. (Spring, Every Year).

EMSE 6505. Knowledge Management I. 3 Credits.

The foundations of knowledge management, including cultural issues, technology applications, organizational concepts and processes, management aspects, and decision support systems. Case studies. (Fall).

EMSE 6506. Knowledge Management II. 3 Credits.

A capstone course. Students work in teams, applying principles and processes of systems thinking, systems engineering, and integrative management in the design and implementation of a knowledge management system. Prerequisite: EMSE 6505.

EMSE 6507. Advanced Knowledge Management. 3 Credits.

Advanced study of contemporary knowledge management: cost estimating methods, development of enterprise-level strategies, structure of strategic leadership in managing intellectual capital and competitive intelligence. (Fall, spring, and summer, Every Year).

EMSE 6510. Decision Support Systems and Models. 3 Credits.

Theory of decision making—a cognitive view. Modeling decision maker heuristics and processes. Design, implementation, and evaluation of state-of-the-art DSS (hands-on). Assess impact of behavioral, situational, and organizational variables. (Fall).

EMSE 6537. Information Operations. 3 Credits.

National security concerns of governments and business about attacks across national borders and through physical protective mechanisms. The emergence of information technologies, from casual to full-fledged operational scale, to advance causes. Specific examples (e.g., attacks on Estonia, Palestinian conflict). (On demand).

EMSE 6540. Management of Information and Systems Security. 3 Credits.

Information and information security defense techniques and countermeasures with defense fundamentals; critical infrastructure protection; network defense techniques such as designing firewall systems and IDS, VPNs, cryptographic solutions, Internet security protocols, and cyber security and information assurance tenants such as confidentiality, Integrity, availability, authentication and non-repudiation. (Fall, Every Year).

EMSE 6542. Cybersecurity Risk Management and Compliance. 3 Credits.

Cybersecurity threats and other risks to an organization's core business; risk-based planning and risk management of cybersecurity at the enterprise level; risk assessment and modeling approaches to cybersecurity issues related to security structures, sustaining healthy cybersecurity posture, and satisfying compliance with risk frameworks. Prerequisite: EMSE 6540. (Fall, spring, and summer, Every Year).

EMSE 6543. Managing the Protection of Information Assets and Systems. 3 Credits.

Advanced topics in protection of information assets and systems, including authentication, asset control, security models and kernels, physical security, personnel security, operational security, administrative security, security configuration management, and resource control. Prerequisite: EMSE 6540.

EMSE 6544. Auditing, Monitoring, and Intrusion Detection for Information Security Managers. 3 Credits.

Methods for detecting problems with unauthorized activity in information systems and management challenges associated with those activities. Prerequisite: EMSE 6540.

EMSE 6545. Internet and Online Law for Security Managers. 3 Credits.

Legal issues regarding control of behavior, information security mechanisms, and information systems engineering in connected enterprises. Specific laws and regulations governing Internet and online activity, jurisdictional challenges associated with networked computing, and business law in cyberspace. (Fall and spring, Every Year).

EMSE 6546. Cybercrime for Information Security Managers. 3 Credits.

Information security actions related to and in response to criminal activity, including industrial espionage, back-hacking, cracking, and cyberterrorism. Transnational issues, cybercrime treaties and conventions, and cyberwar issues. (Fall, spring, and summer, Every Year).

EMSE 6547. Cyber Resilience. 3 Credits.

Resilience planning for cybersecurity; assessment and modeling approaches to limit system failure toward creating a cyber-resilient organization; recognition, resistance, recovery, reinstatement from the perspectives of information technologists and engineering managers; existing cybersecurity reliance frameworks; potential policies to sustain a healthy and robust security posture. (Fall, spring, and summer, Every Year).

EMSE 6549. Business and Competitive Intelligence. 3 Credits.

Discovery and analysis of competitive information from open-source intelligence. Sources and methods for data collection; legal issues and constraints; analysis processes; longitudinal aspects; inference. (Spring).

EMSE 6560. Open-source Intelligence Analysis. 3 Credits.

Data analytics tools and develop decision support frameworks to identify threats, evaluate capability of actors to exploit vulnerabilities, and evaluate the risk of damage. Overview of strategies for mining/aggregating data across multiple sources. Restricted to SEAS online students. (As arranged, Every Year).

EMSE 6570. Information Management and Information Systems. 3 Credits.

The use of information in organizations, the management of the information resource; the impact of information and communication technology. (Spring).

EMSE 6573. Managing E-Commerce Technologies. 3 Credits.

Principles of good e-business management. Methods of conducting e-commerce—major opportunities, limitations, issues, and risks. Popular technologies for building e-businesses, security authentication, privacy, acceptable use policies, and legal limits. (Fall, odd years).

EMSE 6574. Programming for Analytics. 3 Credits.

Introduction to programming for data analytics using the Python programming language. Prepares students for higher-level courses in data analytics. Recommended background: Some prior experience with programming. (Fall, Every Year).

EMSE 6575. Applied Machine Learning for Analytics. 3 Credits.

Methods and techniques for discovering patterns and relationships in aggregated data, with practical focus on engineering problems. Tools, techniques, and methods explored in the context of their application. Students are expected to have completed coursework in linear algebra and probability and statistics prior to enrollment. Prerequisite: EMSE 6574. (Spring, Every Year).

EMSE 6577. Data-Driven Policy. 3 Credits.

The application of data mining algorithms and other computational techniques to answer questions related to policy; problem formulation, tool selection, and interpretation of analysis results; volume, velocity, variety, veracity, and value. May serve as a capstone course in the data analytics sequence. Prerequisites: EMSE 6705, EMSE 6575 and EMSE 6765. (Spring, Every Year).

EMSE 6579. Applied Data Mining in Engineering Management. 3 Credits.

Methods and techniques for discovering patterns and relationships in aggregated data, with practical focus on engineering problems. Tools, techniques, and methods explored in the context of their application. Prerequisite: EMSE 6020, EMSE 6586.

EMSE 6580. Information and Software Engineering. 3 Credits.

Introduction to analysis and design of information systems including requirements analysis, project management, and software architectures. Introduction to CASE tools. Prerequisite: EMSE 6570 or permission of instructor.

EMSE 6582. Object-Oriented Analysis and Design. 3 Credits.

The object-relationship model and the object-behavior model. Managing complexity with views and high-level modeling in object-oriented systems analysis. The concepts, the method, and applications, including object-based and object-oriented languages. Prerequisite: EMSE 6580.

EMSE 6584. Fundamentals of Artificial Intelligence. 3 Credits.

History of AI, expert systems, knowledge representation, search and control techniques, natural language processing, computer vision, computer speech, knowledge-based systems, and evidential reasoning. Hands-on experience with a knowledge-based shell. (Spring).

EMSE 6586. Data Management Systems for Data Analytics. 3 Credits.

Study and design of database and data management systems for big data and data analytics; design of relational database systems and the SQL query language; NoSQL databases for unstructured data, including key-value, distributed table, graph databases, parallel processing databases. Prerequisite: EMSE 6574. (Spring, Every Year).

EMSE 6588. Software Project Development with CASE. 3 Credits.

Evaluation and selection of CASE tools, use of CASE tools in software design/project. Graphical user interface and re-engineering tools. Open only to master's candidates in the department during the last semester of their program. Prerequisite: EMSE 6580.

EMSE 6589. Data Communications and Networks. 3 Credits.

Technical and managerial aspects of data communications, with emphasis on communication networks. Methodologies used in data communications, communication networks, and distributed data processing. (On demand).

EMSE 6701. Operations Research Methods. 3 Credits.

Deterministic and stochastic methods. Optimization algorithms: Simplex method, Branch and Bound, combinatorial algorithms, heuristic methods. Optimization theory: convexity, duality, sensitivity analysis. Stochastic optimization: marginal analysis, Markov chains, Markov decision processes. Prerequisite: APSC 3115 or EMSE 6020, MATH 2233, or permission of instructor.

EMSE 6705. Mathematics in Operations Research. 3 Credits.

Mathematical foundations of optimization theory: linear algebra, advanced calculus, convexity theory. Geometrical interpretations and use of software. Prerequisite: MATH 2233.

EMSE 6710. Applied Optimization Modeling. 3 Credits.

Analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government. Modeling techniques and applications; use of optimization software to solve models. Prerequisite: EMSE 6850 or permission of instructor.

EMSE 6715. Theory of Games. 3 Credits.

Mathematical models of conflict and cooperation with applications in economics, business, defense, transportation, and societal issues (voting schemes, fair division, auctions). Concept and computation of equilibrium in n-person games. Prerequisite: MATH 2233 or permission of instructor.

EMSE 6720. Topics in Optimization. 3 Credits.

Selected topics from the fields of linear programming, nonlinear programming, dynamic programming, heuristics, and constraint programming. May be repeated for credit provided the topic differs. Prerequisite: EMSE 6701 or permission of instructor.

EMSE 6730. Integer and Network Programming. 3 Credits.

Combinatorial optimization problems: algorithms and applications. Network problems: minimum spanning tree, shortest path, maximum flows, minimum cost flows, optimal matchings, routing problems. Complexity theory. Enumeration and cutting plane methods for solving integer programs. Prerequisite: EMSE 6701 or permission of instructor.

EMSE 6740. Systems Thinking and Policy Modeling I. 3 Credits.

Introduction to systems thinking and the system dynamics approach to policy analysis, with applications to business management and public policy. Causal-loop and stock and flow models of business growth, technology adoption, and marketing. Use of role-based games to explain key principles of systems. Use of simulation software to model problems and case studies.

EMSE 6745. Systems Thinking and Policy Modeling II. 3 Credits.

Case studies in dynamic policy analysis. Use of microcomputers in simulation. The class collectively models and simulates a social system to explore policy options. Prerequisite: EMSE 6740.

EMSE 6750. Stochastic Foundations of Operations Research. 3 Credits.

Topics in probability theory, stochastic processes, and statistical inference. Foundations of probability, conditional probability and expectation, Poisson processes, Markov chains, and Brownian motion. Prerequisite: APSC 3116 or permission of instructor.

EMSE 6755. Quality Control and Acceptance Sampling. 3 Credits.

Statistical approaches to quality assurance. Single and multivariate control charts, acceptance sampling by attributes and variables, process capability and design of experiments. Prerequisite: APSC 3115 or permission of instructor.

EMSE 6760. Discrete Systems Simulation. 3 Credits.

Analytical methods for the solution of problems in engineering using concepts from probability and statistics: probability modeling, random variables and their distributions, mathematical expectation, sampling, point and confidence interval estimation, hypothesis testing, correlation, regression, and engineering applications. Restricted to SEAS graduate students. Prerequisites: One of the following: CSCI 1121, CSCI 1041, CSCI 1111, or permission of instructor. (Spring, Every Year).

EMSE 6765. Data Analysis for Engineers and Scientists. 3 Credits.

Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, data compression. Model validation. Prerequisites: APSC 3115 or permission of instructor. (Fall, spring, and summer, Every Year).

EMSE 6767. Applied Data Analytics. 3 Credits.

Applied and practical data analytics. High-level theory, with primary focus on practical application of a broad set of statistical techniques needed to support an empirical foundation for systems engineering and engineering management. A variety of practical visualization and statistical analysis techniques. Leveraging Minitab and Excel to examine raw data to arrive at insightful conclusions. (Fall, spring, and summer, Every Year).

EMSE 6770. Techniques of Risk Analysis and Management. 3 Credits.

Topics and models in current risk analysis; modern applications of risk-based planning and risk management; use of quantitative methods in risk analysis. (Spring).

EMSE 6790. Logistics Planning. 3 Credits.

Quantitative methods in model building for logistics systems, including organization, procurement, transportation, inventory, maintenance, and their interrelationships. Stresses applications. Prerequisite: APSC 3115, MATH 1232.

EMSE 6801. Systems Engineering I. 3 Credits.

Systems approach to the architecting and engineering of large-scale systems; elements of systems engineering; methods and standards; computer tools that support systems and software engineering; trends and directions; the integrative nature of systems engineering. (Fall, spring, and summer).

EMSE 6805. Systems Engineering II. 3 Credits.

Application of systems engineering tools to provide hands-on experience with essential elements of practice. Processes of requirements engineering, functional analysis and allocation, risk management, architecting; architectural heuristics, axiomatic design, analytical assessment of alternative architectures. Prerequisite: EMSE 6801.

EMSE 6807. Advanced Systems Engineering. 3 Credits.

Analysis of advanced systems engineering topics; system lifecycle models, INCOSE Vision 2025, requirements types and processes, architectural design processes and frameworks, DoDAF artifacts, enterprise architecture and enterprise systems engineering, complex adaptive systems (CAS), modeling languages and SysML, and Model Based Systems Engineering (MBSE). Applications of systems engineering tools and techniques. (Spring, Every Year).

EMSE 6810. Systems Analysis and Management. 3 Credits.

The systems or holistic approach as a methodology for making decisions and allocating resources. Analysis by means of objectives, alternatives, models, criteria, and feedback. (fall, spring, summer).

EMSE 6815. Requirements Engineering. 3 Credits.

Requirements in systems engineering, including requirement types, quality factors, elicitation methods, analysis, derivation of implicit requirements, management, traceability, verification, cross-requirement assessments, and validation. Focus on writing and managing quality requirements in complex systems. Prerequisite: EMSE 6801.

EMSE 6817. Model-Based Systems Engineering. 3 Credits.

Model-based systems engineering and its derivative, evidence-based systems engineering, as techniques with potential for improving the technical integrity of complex systems. The foundation to these model- and research-based techniques for system definition and analysis as applied to life-cycle systems engineering. Prerequisites: EMSE 6805 or permission of the instructor. (Fall, spring, and summer, Every Year).

EMSE 6820. Program and Project Management. 3 Credits.

Problems in managing projects; project management as planning, organizing, directing, and monitoring; project and corporate organizations; duties and responsibilities; the project plan; schedule, cost, earned-value and situation analysis; leadership; team building; conflict management; meetings, presentations, and proposals. (Fall).

EMSE 6825. Project Cost and Quality Management. 3 Credits.

Developing project cost and resource estimates during the planning stages. Monitoring, forecasting, and controlling cost throughout the project life cycle. Project quality planning, assurance, and control. Relationships among project scope, time, cost, quality, human resources, communications, procurement, and risk. Preparation for the Project Management Professional examination. Prerequisite: EMSE 6820.

EMSE 6830. Human Factors Engineering. 3 Credits.

Study of the human-machine interface applied to system design, job design, and technology management. Human sensory-motor, perceptual, and cognitive functions; task analysis and allocation; contextual aspects of human factors engineering. Modeling, design, and evaluation methodologies. Applications to user-centered industrial and information systems. (As required).

EMSE 6840. Applied Enterprise Systems Engineering. 3 Credits.

Applications of systems engineering in the U.S. Department of Defense and other federal government entities as well as commercial sectors; architectural frameworks and enterprise architecting concepts and practices, including JCIDS/DODAF, federal enterprise architecture framework, and Zachman Framework; enterprise architecting and advanced modeling tools. Prerequisite: EMSE 6801. (Fall, spring, and summer, Every Year).

EMSE 6845. Lean and Agile Systems Engineering. 3 Credits.

Lean and agile methods as applied to the engineering design and development of systems; review of contemporary implementation frameworks, methodologies, and the tools used to support them. Implications for traditional systems engineering; fundamental changes to the requirements processes; implications for engineering management. Prerequisite: EMSE 6805. (Spring, Every Year).

EMSE 6848. Systems of Systems. 3 Credits.

Complex systems engineering in terms of systems of systems (SoS); theoretical and practical instances of SoS; application of lifecycle systems engineering processes; various types of SoS and the challenges to be faced to ensure their acquisition and technical integrity. Prerequisite: EMSE 6805. (Spring, Every Year).

EMSE 6850. Quantitative Models in Systems Engineering. 3 Credits.

Quantitative modeling techniques and their application to decision making in systems engineering. Linear, integer, and nonlinear optimization models. Stochastic models: inventory control, queuing systems, and regression analysis. Elements of Monte Carlo and discrete event system simulation. Prerequisite: APSC 3115 or EMSE 6020.

EMSE 6855. Reliability Analysis and Infrastructure Systems. 3 Credits.

Modeling basic variables and defining the limit-state surface. Computing the reliability index of an infrastructure system by approximating the limit-state surface—FORM and SORM. Modeling an infrastructure system. Reliability analysis using branch and bound, failure paths and failure modes, identification of dominant failure paths. Case studies. (Fall).

EMSE 6991. Project for Professional Degree. 3 Credits.

Limited to students in the Applied Scientist or Engineer degree program.

EMSE 6992. Special Topics. 3 Credits.

Selected topics in engineering management and systems engineering, as arranged. May be repeated for credit. Permission of the instructor required prior to enrollment. (Fall and spring, Every Year).

EMSE 6995. Research. 1-12 Credits.

Basic or applied research in engineering management or systems engineering. Open to master's degree candidates in the department. May be repeated for credit.

EMSE 6997. Advanced Topics in Operations Research. 3 Credits.

Advanced topics from the literature of operations research for analysis, presentation, and discussion. Reading assignments from professional journals selected by the instructor and the student. May be repeated for credit. Prerequisite: permission of instructor.

EMSE 6998. Thesis Research. 3 Credits.

EMSE 6999. Thesis Research. 3 Credits.

EMSE 8000. Research Formulation in Engineering Management and Systems Engineering. 3 Credits.

First in a two-course sequence of doctoral seminars designed to give students their first exposure to the process of formulating and executing empirical research. Class format includes discussion, field experiments, data analysis, and theorizing. Study of core concepts in building theory from empirical data and classic works in technically-oriented management theory. Participants design and execute a research project. Restricted to EMSE PhD students. (Spring, Every Year).

EMSE 8001. Research Methods for Engineering Management and Systems Engineering. 3 Credits.

Second in a two-course sequence introducing doctoral students to the fundamentals of research design and methods. Introduction to a range of research methods relevant to the study of engineering management and systems engineering, reading, writing, and critiquing the elements of a research proposal. Restricted to EMSE PhD students. Prerequisite: EMSE 8000. (Fall, Every Year).

EMSE 8010. Advanced Topics in Optimization. 3 Credits.

May be repeated for credit provided the topic differs. Prerequisite: EMSE 6701, EMSE 6705 or permission of instructor.

EMSE 8020. Advanced Stochastic Models in Operations Research. 3 Credits.

Applied probability models, including the Poisson process, continuous-time, denumerable-state Markov processes, renewal theory, semi-Markov regenerative processes. Applications to queues, inventories, and other operations research systems. Prerequisite: permission of instructor.

EMSE 8030. Risk Management Process for the Engineering Manager. 3 Credits.

Risk management process; individual and collaborative responsibilities of program and engineering managers; practical applications of risk-based planning and risk management tools essential to success of any program; communicating the process and its value in avoiding catastrophic outcomes. Case studies. (Fall, spring, and summer, Every Year).

EMSE 8099. Survey of Research Formulation for Engineering Management. 3 Credits.

Researching the praxis paper. Introduces the design of research studies in applied engineering management settings from a practical perspective. Fundamentals of applied research, formulating research questions/hypotheses and research designs from empirical data. Restricted to students in the DEng in the field of engineering management program. (Fall, spring, and summer, Every Year).

EMSE 8100. The Praxis Proposal. 3 Credits.

Overview of research methods; aims and purposes of the praxis; development of praxis research strategies; formulation and defense of a praxis proposal. Praxis proposal defense must be passed before the student is admitted to degree candidacy to undertake praxis work. Restricted to students who have completed all required coursework for the DEng in the field of engineering management degree. (Fall, spring, and summer, Every Year).

EMSE 8199. Praxis Research. 1-12 Credits.

Independent applied research in engineering management culminating in the final praxis report and final examination for the degree of doctor of engineering. May be repeated for credit. Restricted to students in the DEng in the field of engineering management program who have passed the praxis proposal defense. Prerequisite: EMSE 8100. (Fall, spring, and summer, Every Year).

EMSE 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall and spring, Every Year).

EMSE 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall and spring, Every Year).

ENGLISH (ENGL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENGL 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the schedule of classes for more details.

ENGL 1050. Introduction to Literary Studies. 3 Credits.

How to read and interpret literature at the college level and beyond. Close readings of poetry, fiction, and drama, emphasizing genre and form.

ENGL 1099. Variable Topics. 1-36 Credits.**ENGL 111W. Preparation-Peer Tutors-Writing. 3 Credits.****ENGL 1210. Introduction to Creative Writing. 3 Credits.**

An exploration of genres of creative writing (fiction, poetry, and/or playwriting). Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing.

ENGL 1300. The Bible as Literature. 3 Credits.

The Bible in translation as a literary object; the historical context in which its many parts were composed and its literary themes, styles, and structures.

ENGL 1305. Colonial/Post-Colonial British Literature. 3 Credits.**ENGL 1315. Literature and the Financial Imagination. 3 Credits.**

Literary studies focused broadly on representations of business, finance, or commerce; the economics of literary production; and/or theories of economic class as they pertain to literary works. Topic, genre, and time period vary by instructor.

ENGL 1320. Literature of the Americas. 3 Credits.

American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe. Same As: ENGL 1320W.

ENGL 1320W. Literature of the Americas. 3 Credits.

American literature considered in a global framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1320.

ENGL 1330. Myths of Britain. 3 Credits.

Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor. Same As: ENGL 1330W.

ENGL 1330W. Myths of Britain. 3 Credits.

Why much great English literature turns out not to be so English after all. The literature of the island within a transnational frame. Readings generally range from Beowulf to Arthurian myths to Shakespeare. Topic, genre, and time period vary by instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1330.

ENGL 1340. Essential Shakespeare. 3 Credits.

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world? Same As: ENGL 1340W.

ENGL 1340W. Essential Shakespeare. 3 Credits.

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world? Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1340.

ENGL 1351. Shakespeare Seminar. 3 Credits.

Seminar course for first-year students in the Dean's Scholars in Shakespeare Program. Literary study of Shakespeare's poems and plays along with those of his contemporaries. Topic, genre, and time period vary by instructor.

ENGL 1360. Fantasy and Speculative Fiction. 3 Credits.

General overview of fantasy and speculative fiction. Topics may vary.

ENGL 1365. Literature and the Environment. 3 Credits.

The depiction of the nonhuman world in literature and film; how natural and built environments are translated into narrative; the relationship between literary production and environmental action.

ENGL 1370. Topics in Global Cinema. 3 Credits.

Topics vary by semester. Consult the Schedule of Classes for more details.

ENGL 1500. American Political Fictions. 3 Credits.

Examination of writing about U.S. politics and political figures through intensively subjective first-person points of view. Writers as influential diagnosticians of governance practices.

ENGL 1712W. Bollywood Cinema. 3 Credits.**ENGL 1830W. Tragedy. 3 Credits.**

Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 1840W. Comedy. 3 Credits.

Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the schedule of classes for more details. Instructor's permission is required.

ENGL 2100. Introduction to Asian American Studies through Literature. 3 Credits.

Major topics in Asian American culture and history, including identity, crosscultural and gender norms, racial formation, and exclusion. Writing and film about Asian Americans of East Asian, Southeast Asian, South Asian, Filipino, and mixed ancestry. Recommended background: Prior completion of UW 1020 or equivalent is suggested but not required.

ENGL 2210. Techniques in Creative Writing. 3 Credits.

The craft and technique of creative writing and/or theories of creative writing. Topics vary by semester. Consult the Schedule of Classes for more information.

ENGL 2240. Play Analysis. 3 Credits.

Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature. Literary and theatrical techniques used by playwrights. Same As: CTAD 2240. Credit cannot be earned for this course and TRDA 2240.

ENGL 2250. Dramatic Writing. 3 Credits.

Workshop in playwriting and screenwriting, with emphasis on dramatic structure. (Same as TRDA 2250).

ENGL 2410. Introduction to English Literature I. 3 Credits.

Study of British authors from the Middle Ages to the French Revolution. These may include Chaucer, Shakespeare, Donne, Milton, Swift, Gay, Johnson, and Gray.

ENGL 2410W. Introduction to English Literature I. 3 Credits.

Study of British authors from the Middle Ages to the French Revolution. These may include Chaucer, Shakespeare, Donne, Milton, Swift, Gay, Johnson, and Gray. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2411. Introduction to English Literature II. 3 Credits.

Surveys literature from two of the traditional period units in British Literature, the Romantic Period (roughly 1785 to 1832), and the Victorian Period (roughly 1832 to 1901), with some additional twentieth century texts.

ENGL 2411W. Introduction to English Literature II. 3 Credits.

Surveys literature from two of the traditional period units in British Literature, the Romantic Period (roughly 1785 to 1832), and the Victorian Period (roughly 1832 to 1901), with some additional twentieth century texts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2460. Fiction Writing. 3,4 Credits.

The writing of fiction. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2470. Poetry Writing. 3 Credits.

The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2510. Introduction to American Literature I. 3 Credits.

Historical survey of early American writing through Melville, Whitman, and Dickinson.

ENGL 2510W. Introduction to American Literature I. 3 Credits.

Historical survey of early American writing through Melville, Whitman, and Dickinson. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2511. Introduction to American Literature II. 3 Credits.

Reading of significant works by modern American authors such as Wharton, Chopin, Crane, London, Frost, Morrison. Hughes, and Faulkner.

ENGL 2511W. Introduction to American Literature II. 3 Credits.

Reading of significant works by modern American authors such as Wharton, Chopin, Crane, London, Frost, Morrison. Hughes, and Faulkner. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2560. Intermediate Fiction Writing. 3 Credits.

The writing of fiction. Prerequisite: ENGL 2460 .

ENGL 2570. Intermediate Poetry Writing. 3 Credits.

The writing of poetry. Recommended preparation: ENGL 1210 and two semesters of literature courses.

ENGL 2610. Introduction to Black Literature of America I. 3 Credits.

Survey of significant works of black American literature from the late eighteenth century to the turn of the twentieth century, with a particular emphasis on the slave narrative.

ENGL 2610W. Introduction to Black Literature of America I. 3 Credits.

Survey of significant works of black American literature from the late eighteenth century to the turn of the twentieth century, with a particular emphasis on the slave narrative. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2611. Introduction to Black Literature of America II. 3 Credits.

Influential black writers and literary trends of the twentieth century. How the Great Migration altered black American life and how black literature registered the concerns of the Civil Rights, Black Power, feminist, and anti-war movements.

ENGL 2611W. Introduction to Black Literature of America II. 3 Credits.

Influential black writers and literary trends of the twentieth century. How the Great Migration altered black American life and how black literature registered the concerns of the Civil Rights, Black Power, feminist, and anti-war movements. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2710. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Same As: WGSS 2710.

ENGL 2710W. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2711. Postcolonialism and Migration in Global Anglophone Literature and Film. 3 Credits.

Migration and politics as represented in world Anglophone literature and film; theories and histories of migration, feminist theory, and ethnic studies engaged in conversation with cultural texts.

ENGL 2711W. Postcolonialism and Migration in Global Anglophone Literature and Film. 3 Credits.

Migration and politics as represented in world Anglophone literature and film; theories and histories of migration, feminist theory, and ethnic studies engaged in conversation with cultural texts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 2712. Bollywood Cinema. 3 Credits.

Introduction to the history and aesthetics of popular Hindi film known as Bollywood from the 1950s through the present; gender identities, melodrama, nationalism, modernity, religion, family, sexuality, globalization, and diaspora. Same As: ENGL 1712W.

ENGL 2712W. Bollywood Cinema. 3 Credits.

Introduction to the history and aesthetics of popular Hindi film known as Bollywood from the 1950s through the present; gender identities, melodrama, nationalism, modernity, religion, family, sexuality, globalization, and diaspora. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 1712W.

ENGL 2800. Introduction to Critical Theory. 3 Credits.

Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies. Same As: ENGL 2800W.

ENGL 2800W. Introduction to Critical Theory. 3 Credits.

Topics and techniques of literary and cultural analysis. Introduction to major schools of critical theory, including psychoanalysis, Marxism, feminism, queer theory, and disability studies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 2800.

ENGL 2830. Introduction to Tragedy. 3 Credits.

Tragic works of literature from the Greeks to Beckett.

ENGL 2840. Introduction to Comedy. 3 Credits.

Introduction to comic masterpieces from Chaucer to Tom Stoppard.

ENGL 3099. Variable Topics. 1-12 Credits.

ENGL 3210. Readings in Creative Writing. 3 Credits.

Intensive reading of one to three texts selected by the instructor with the goal of learning to read as a writer and developing close reading skills. Authors and texts vary. May be repeated for credit provided course coverage differs.

ENGL 3240. Introduction to Dramaturgy. 3 Credits.

Fundamentals of classical and contemporary dramaturgical practice, including analyzing plays, doing research, supporting directors and actors in rehearsal, writing program notes, and leading post-show discussions. Same as TRDA 3240.

ENGL 3250. Intermediate Dramatic Writing. 3 Credits.

A workshop developing scripts for both theatre and film. Same as TRDA 3250. Prerequisite: ENGL 2250 . May be repeated for credit with departmental approval.

ENGL 3360. Advanced Fiction Writing. 3 Credits.

Further workshop study of the writing of fiction. Prerequisite: ENGL 2560 . May be repeated for credit with departmental approval.

ENGL 3370. Advanced Poetry Writing. 3 Credits.

Further workshop study of the writing of poetry. May be repeated for credit with permission of the department. Prerequisite: ENGL 2570.

ENGL 3380. Creative Writing Workshop. 3 Credits.

Taught by the Jenny McKean Moore Writer in Washington; for undergraduates and graduate students. May be repeated for credit if taught by a different instructor. Prerequisites: One of the following upper-level creative writing courses: ENGL 2210, ENGL 2240, ENGL 2250, ENGL 2460, ENGL 2470, ENGL 2560, ENGL 2570, ENGL 3210, ENGL 3240, ENGL 3250, ENGL 3360, ENGL 3370, or ENGL 3390.

ENGL 3385. American Memoir. 3 Credits.

Contemporary American memoir as a literary construct; the history of the genre, its relationship to other literary models, and recent developments. Prerequisite: None.

ENGL 3390. Topics in Creative Writing. 3 Credits.

Topics announced prior to the registration period; may be repeated for credit provided the topic differs. Topics may include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; "Literature, Live"; avant-garde and experimental writing.

ENGL 3400. Topics in Literature and Finance. 3 Credits.

Capstone course for English minors in the School of Business. Analysis of economic theories as they pertain to literary works. Topics may vary. Recommended background: Prior completion of English 1315.

ENGL 3410. Chaucer. 3 Credits.

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late fourteenth century. Focus on *The Canterbury Tales*, read in the original Middle English.

ENGL 3410W. Chaucer. 3 Credits.

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late fourteenth century. Focus on *The Canterbury Tales*, read in the original Middle English. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3410.

ENGL 3420. Medieval Literature. 3 Credits.

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

ENGL 3420W. Medieval Literature. 3 Credits.

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3420.

ENGL 3430. The English Renaissance. 3 Credits.

Verse and prose written in the period 1515 to 1625, examined in relation to cultural practices and social institutions that shaped English life. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert, many others.

ENGL 3440. Shakespeare I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3440W. Shakespeare I. 3 Credits.

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3441. Shakespeare II. 3 Credits.

Continuation of ENGL 3440. Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution.

ENGL 3441W. Shakespeare II. 3 Credits.

Continuation of ENGL 3440. Close study of six or seven plays, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3445. Shakespeare on Film. 3 Credits.

Students learn in detail the history of a small but significant subset of American and European film production: adaptations of Shakespeare's plays using the original language.

ENGL 3446. Shakespearean London. 3 Credits.

Early modern London's emergence as a global capital and its influence on Shakespeare's plays. Instructor permission required.

ENGL 3450. Topics in Shakespeare Studies. 3 Credits.

Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, eighteenth-century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

ENGL 3460. Milton. 3 Credits.

Study of the major works in verse and prose, following the course of Milton's career.

ENGL 3470. English Drama I. 3 Credits.

Shakespeare's contemporaries.

ENGL 3471. English Drama II. 3 Credits.

Continuation of ENGL 3470. Historical survey, 1660 to present.

ENGL 3480. Eighteenth-Century British Literature. 3 Credits.

Eighteenth-century British literature, including literature that reflects some of the upheavals of a period that produced the Enlightenment, the French Revolution, the United States of America, and the two-party system.

ENGL 3480W. The Eighteenth Century I. 3 Credits.

Readings in significant eighteenth-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3481. The Eighteenth Century II. 3 Credits.

Continuation of ENGL 3480. Readings in significant eighteenth-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies. Same As: ENGL 3481W.

ENGL 3481W. The Eighteenth Century II. 3 Credits.

Continuation of ENGL 3480. Readings in significant eighteenth-century English and Continental writers—Dryden, Swift, Pope, Johnson, Montesquieu, Voltaire, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3481.

ENGL 3490. Early American Literature and Culture. 3 Credits.

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others.

ENGL 3490W. Early American Literature and Culture. 3 Credits.

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3510. Children's Literature. 3 Credits.

Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

ENGL 3520. American Romanticism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others.

ENGL 3520W. American Romanticism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3530. The British Romantic Period. 3 Credits.

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others. Same As: ENGL 3530W.

ENGL 3530W. The British Romantic Period. 3 Credits.

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3530.

ENGL 3540. Victorian Literature I. 3 Credits.

Major writers between 1830 and 1865: E. Brontë, Dickens; Tennyson, Browning, Arnold; Darwin, Carlyle, Ruskin. Same As: ENGL 3540W.

ENGL 3540W. Victorian Literature I. 3 Credits.

Major writers between 1830 and 1865: E. Brontë, Dickens, Tennyson, Browning, Arnold, Darwin, Carlyle, Ruskin. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3540.

ENGL 3541. Victorian Literature II. 3 Credits.

Major writers between 1865 and 1900: Eliot, Hardy, Conrad, Swinburne, the Rossettis, Morris, Pater, and Wilde.

ENGL 3550. The English Novel I. 3 Credits.

The eighteenth century—Defoe, Richardson, Fielding, Sterne, and others.

ENGL 3551. The English Novel II. 3 Credits.

Continuation of ENGL 3550. The nineteenth century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

ENGL 3551W. The English Novel II. 3 Credits.

Continuation of ENGL 3550. The nineteenth century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3551.

ENGL 3560. American Realism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others.

ENGL 3560W. American Realism. 3 Credits.

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3570. Nineteenth-Century Black Literature. 3 Credits.

Studies in nineteenth-century black literature of the Americas and the transatlantic. Writing from the United States, Latin America, the Caribbean, Britain, and Africa may be included. Topics and emphasis may vary.

ENGL 3610. Modernism. 3 Credits.

The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

ENGL 3620. American Poetry I. 3 Credits.

Close examination of major American poems from the beginnings to the early twentieth century: Poe, Emerson, Whitman, Dickinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3620W.

ENGL 3620W. American Poetry I. 3 Credits.

Close examination of major American poems from the beginnings to the early twentieth century: Poe, Emerson, Whitman, Dickinson, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3620.

ENGL 3621. American Poetry II. 3 Credits.

This course examines important books by twelve American poets from throughout the twentieth century who collectively disrupt the continuity and traditions of English-language poetry, starting with the Georgian, even Horatian lyrics of Robert Frost (just before WW I), through the Modernist constructions of Gertrude Stein, T.S. Eliot, William Carlos Williams, Wallace Stevens, and Langston Hughes, and on through the post-WW II socially-conscious, Confessionalist, and Postmodern poetries of Brooks, Ginsberg, Plath, Bishop, Ammons, and Ashbery. Same As: ENGL 3621W.

ENGL 3621W. American Poetry II. 3 Credits.

This course examines important books by twelve American poets from throughout the twentieth century who collectively disrupt the continuity and traditions of English-language poetry, starting with the Georgian, even Horatian lyrics of Robert Frost (just before WW I), through the Modernist constructions of Gertrude Stein, T.S. Eliot, William Carlos Williams, Wallace Stevens, and Langston Hughes, and on through the post-WW II socially-conscious, Confessionalist, and Postmodern poetries of Brooks, Ginsberg, Plath, Bishop, Ammons, and Ashbery. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3621.

ENGL 3630. American Drama I. 3 Credits.

Nineteenth-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early twentieth century.

ENGL 3631. American Drama II. 3 Credits.

Continuation of ENGL 3630. Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

ENGL 3640. The American Novel I. 3-4 Credits.

Historical and critical study of major works in the American novelistic tradition. From the beginnings through the nineteenth century: Hawthorne, Melville, James, Twain, Dreiser, and others.

ENGL 3640W. The American Novel I. 4 Credits.

Historical and critical study of major works in the American novelistic tradition. From the beginnings through the nineteenth century: Hawthorne, Melville, James, Twain, Dreiser, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3641. The American Novel II. 3 Credits.

Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The twentieth century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

ENGL 3641W. The American Novel II. 3 Credits.

Continuation of ENGL 3640. Historical and critical study of major works in the American novelistic tradition. The twentieth century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3650. The Short Story. 3 Credits.

An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

ENGL 3660. Twentieth-Century Irish Literature I. 3 Credits.

Irish writers from the time of the literary revival in the late nineteenth century to the present. Yeats and other Irish poets and playwrights of his time and after—Synge, O'Casey, Kavanagh, Heaney, and others.

ENGL 3661. Twentieth-Century Irish Literature II. 3 Credits.

Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late nineteenth century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others.

ENGL 3661W. Twentieth-Century Irish Literature I. 3 Credits.

Continuation of ENGL 3660. Irish writers from the time of the literary revival in the late nineteenth century to the present. Joyce through Ulysses and other fiction writers of later generations—O'Brien, Beckett, and others. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3710. Contemporary Drama. 3 Credits.

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

ENGL 3710W. Contemporary Drama. 3 Credits.

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3710.

ENGL 3720. Contemporary American Literature. 3 Credits.

Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres.

ENGL 3720W. Contemporary American Literature. 3 Credits.

Historical, critical, and theoretical study of American literature since the 1960s. Various authors and genres. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3720.

ENGL 3730. Topics in Global Postcolonial Literature and Film. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: WGSS 3730.

ENGL 3730W. Topics in Global Postcolonial Literature and Film. 3 Credits.

Representations of empire and culture in modern Anglophone literature and cinema from around the world; cross-cultural encounter, migration, identity, orientalism, gender, environment, conflict, and globalization. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. May be repeated for credit provided the topic differs. See department for more details.

ENGL 3800. The Literature of Hawaii. 3 Credits.

The history, culture, and politics of the settlement of the Hawaiian Islands through depictions in literature, poetry, film, journalism, archeological excavation reports, and diaries; the diversity of inhabitants on the islands and hybrid communicative forms they have developed.

ENGL 3810. Selected Topics in Literature. 3-4 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Same As: ENGL 3810W.

ENGL 3810W. Selected Topics in Literature. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3810.

ENGL 3820. Major Authors. 3 Credits.

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

ENGL 3820W. Major Authors. 3 Credits.

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3820.

ENGL 3826. Toni Morrison and William Faulkner. 3 Credits.

Commonalities between the fictional and discursive practices of Toni Morrison and William Faulkner; specifically, how their texts reenact and resist racism and patriarchal structures, explore the ways in which memory and the past construct identity, experiment with style.

ENGL 3830. Topics in Literary Theory and Cultural Studies. 3 Credits.

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs. Same As: ENGL 3830W.

ENGL 3830W. Topics in Literary Theory and Cultural Studies. 3 Credits.

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3830.

ENGL 3840. Gender and Literature. 3 Credits.

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

ENGL 3840W. Gender and Literature. 3 Credits.

Symbolic representations of culturally defined roles and assumptions in literature. Male and female gender roles as fundamental to culture; the representation of culture, in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3850. Ethnicity and Place in American Literature. 3 Credits.

The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally diverse American populations, and how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary by instructor.

ENGL 3860. Topics in the History of the English Language. 3 Credits.

The cultural and literary functions of English across time and space. Scope and methodology vary by instructor. Topics may include language and identity, theoretical and linguistic approaches to language, multilingualism, diasporic writing, or history and periodization.

ENGL 3910. Disability Studies. 3 Credits.

Consideration of cultural texts that illustrate or illuminate issues of ability and disability—terms that extend the prism through which human experience may be understood.

ENGL 3912. Disability and the Holocaust. 3 Credits.

Investigating the question of direct links between the medical mass murder of disabled people in German psychiatric institutions to the Holocaust during World War II; studies of contemporary memorialization practices are examined.

ENGL 3915. Literature and Madness. 3 Credits.

A literary history of mental unrest; madness as a condition of culture, as an adaptive cognitive style, and as a cognitive challenge; descriptive, medical, historical, and socio-critical perspectives.

ENGL 3918. Literature and Medicine. 3 Credits.

The experience of illness as determined by historical, social, and psychological contexts; narrative as a mode of both understanding and managing illness, pain, loss, and the injustice of suffering.

ENGL 3920. U.S. Latina/o Literature and Culture. 3 Credits.

Introduction to the basic texts in the Chicana/o, Cuban-American, Dominican-American, and Puerto Rican literary and cultural traditions. Works by U.S. writers of Central American origin are discussed as well.

ENGL 3930. Topics in U.S. Latina/o Literature and Culture. 3 Credits.

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness, and *latinidad*.

ENGL 3930W. Topics in U.S. Latina/o Literature and Culture. 3 Credits.

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and *latinidad*. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 3940. Topics in African American Literary Studies. 3 Credits.

Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

ENGL 3945. African American Poetry. 3 Credits.

African American poetry from the Black Atlantic through contemporary spoken word and web-based experiments in hypertext composition. Topics vary and may include Langston Hughes, Gwendolyn Brooks, poetry manifestoes, poetry and social justice, or eco-poetics of the black experience.

ENGL 3950. Cultural Theory and Black Studies. 3 Credits.

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers. Same As: ENGL 3950W.

ENGL 3950W. Cultural Theory and Black Studies. 3 Credits.

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3950.

ENGL 3960. Asian American Literature. 3 Credits.

How Asian American writers construct their identities in dialogue with shifting ideas of “America.” Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

ENGL 3960W. Asian American Literature. 3 Credits.

How Asian American writers construct their identities in dialogue with shifting ideas of “America.” Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3960.

ENGL 3965. Topics in Asian American Cultural Studies. 3 Credits.

Literary and cinematic texts of Asian diasporic writers, with a focus on Asian American authors, history, and culture; the globalization of Asian American literature.

ENGL 3970. Jewish American Literature. 3 Credits.

One hundred years of Jewish American writing including fiction, nonfiction, autobiography, poetry, and drama. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition. Same As: ENGL 3970W.

ENGL 3970W. Jewish American Literature. 3 Credits.

One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3970.

ENGL 3980. Queer Studies. 3 Credits.

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs. Same As: ENGL 3980W.

ENGL 3980W. Queer Studies. 3 Credits.

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 3980.

ENGL 3990. Literary Studies Workshop. 1 Credit.

Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated once for credit provided the topic differs.

ENGL 4020. Studies in Contemporary Literature. 1-3 Credits.

Theme-based studies of specific issues or figures in twenty-first-century literature.

ENGL 4030. Service Learning with the Pen/ Faulkner Foundation. 3 Credits.

The role of literature in public life; how nonprofits bridge literary citizenship and civic engagement. This course is offered in collaboration with the PEN/Faulkner Foundation, a nonprofit organization that promotes literary achievement and excellence through various events programs.

ENGL 4040. Honors Seminar. 3 Credits.

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches –ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English. Same As: ENGL 4040W.

ENGL 4040W. Honors Seminar. 3 Credits.

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches –ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 4040.

ENGL 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as HIST 4135/ FREN 4135.

ENGL 4220. Creative Writing Senior Thesis. 3 Credits.

Under the guidance of an instructor, students compose an original manuscript of poetry or short fiction accompanied by an essay situating their work in the contemporary context. Restricted to seniors in the BA in English and and BA in creative writing and English programs.

ENGL 4220W. Creative Writing Senior Thesis. 3 Credits.

Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ENGL 4250. Honors Thesis. 3 Credits.

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English.

ENGL 4250W. Honors Thesis. 3 Credits.

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: ENGL 4250.

ENGL 4360. Independent Study. 1-4 Credits.

For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain departmental approval and arrange for supervision by an appropriate member of the faculty.

ENGL 4470. Internship. 1-3 Credits.

Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. Permission of the supervising faculty required prior to enrollment. P/NP grading only. Restricted to juniors and seniors in the English program.

ENGL 5099. Variable Topics. 1-99 Credits.**ENGL 6100. Introduction to Literary Theory. 3 Credits.**

An overview of methodologies for examining texts as linguistic and cultural productions. Methodologies explored may include structuralism, formalism, deconstruction, cultural materialism, postcolonial theory, feminism, gender studies, and queer theory.

ENGL 6120. Advanced Literary Theory. 3 Credits.

The course focuses on a major figure or topic in theory (e.g., Foucault, Lacan, Barthes, Kristeva, Bakhtin, post-Marxist theory, language and power, the canon).

ENGL 6130. Selected Topics in Criticism. 3 Credits.

Topics may include cultural studies, film, gay/lesbian studies, others.

ENGL 6220. Topics in Medieval and Early Modern Studies. 3 Credits.

Topics may include gender and body; postcolonial approaches to the period; surveys of poetry and/or prose with a special thematic coherence.

ENGL 6240. Literature of the British Archipelago. 3 Credits.

The literary and historical texts of early modern and medieval Britain within a pan-insular framework: England in conflict and coexistence with Ireland, Wales, Scotland.

ENGL 6250. Transnational England. 3 Credits.

The early literature of England within a global framework: England, Spain, France, Italy, Turkey, the Levant, the Americas, Africa, India, the Caribbean.

ENGL 6260. Seminar in Medieval and Early Modern Studies. 3 Credits.

Trends and cutting-edge research in medieval and early modern studies.

ENGL 6350. Nineteenth Century I. 3 Credits.

Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6351. Nineteenth Century II. 3 Credits.

Continuation of ENGL 6350. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6352. Nineteenth Century III. 3 Credits.

Continuation of ENGL 6351. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6353. Nineteenth Century IV. 3 Credits.

Continuation of ENGL 6352. Topics in British and American nineteenth-century writing and culture, exploring national traditions and international movements and issues, such as Romanticism, Realism, and others.

ENGL 6450. Twentieth Century I. 3 Credits.

Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6451. Twentieth Century II. 3 Credits.

Continuation of ENGL 6450. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6452. Twentieth Century III. 3 Credits.

Continuation of ENGL 6451. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6453. Twentieth Century IV. 3 Credits.

Continuation of ENGL 6452. Topics in twentieth-century British and American writing and culture, exploring national traditions and international movements and issues, such as literary modernism, anti-modernist and post-modernist currents, others.

ENGL 6510. Writing, Race, and Nation. 3 Credits.

Literary culture as a basis for exploration of intersections of origins and evolution of racial and ethnic identities and national myths and political objectives.

ENGL 6520. Ethnicity and Identity. 3 Credits.

Literary culture is used to explore how individuals, communities, and societies construct self-awareness and knowledge about others for cultural exchange.

ENGL 6530. Conceptualizing Genders. 3 Credits.

Structures of sex and gender difference considered historically and theoretically, including masculinity/femininity, sexualities, and their textual representations.

ENGL 6540. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture. Same as WGSS 6251.

ENGL 6550. Studies in Genre I. 3 Credits.

Questions of genre, considered theoretically and practically. Content varies.

ENGL 6551. Studies in Genre II. 3 Credits.

Continuation of ENGL 6550. Questions of genre, considered theoretically and practically. Content varies.

ENGL 6560. Postcolonialism. 3 Credits.

Exploration of aesthetics and politics through global and postcolonial literature and cinema, primarily from the twentieth and twenty-first centuries. Includes legal, theoretical, literary, and film texts. Restricted to graduate students and junior and senior undergraduate students. Same As: WGSS 6560.

ENGL 6620. Medicine and Society. 3 Credits.

The interaction of medicine and society in ways that touch on philosophy, economics, sociology, and public policy, but that cannot be fully understood in terms of any single perspective. Society's effect on medicine and medicine's effect on society.

ENGL 6630. Literature and Medicine. 3 Credits.

Methods of critical theory applied to issues concerning the practice of medicine. The polar constructs of illness and health, life and death, and life's worth or its waste.

ENGL 6720. Independent Research. 3 Credits.

Written permission of the instructor required prior to enrollment. May be repeated for credit to a maximum of 9 credits.

ENGL 6740. Mastering the Canon. 3 Credits.

Independent reading under a faculty member.

ENGL 6810. Folger Institute Seminars I. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6811. Folger Institute Seminars II. 3 Credits.

Continuation of ENGL 6810. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the graduate advisor before registration.

ENGL 6998. Thesis Research. 3 Credits.**ENGL 6999. Thesis Research. 3 Credits.****ENGL 8998. Advanced Reading and Research. 1-12 Credits.**

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ENGL 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Must be taken as the final 12 credits of the degree. Restricted to doctoral candidates.

ENGLISH FOR ACADEMIC PURPOSES (EAP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EAP 1010. Oral Academic Communication for International Students. 3 Credits.

Preparation for oral communication expectations of the U.S. undergraduate curriculum. Targets a variety of oral genres including in-class discussions, team and individual presentations, and multimodal assignments requiring the use of technology. Restricted to international students.

EAP 1015. Academic Writing for International Students. 3 Credits.

Structured academic writing course with a thematic focus on Washington, DC, culture. Development of academic literacy skills, source-based writing in a variety of genres, and drafting and revising written work. Followed by UW 1020. Restricted to international students.

EAP 1016. Academic Skills Workshop. 1 Credit.

Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree. Same As: EAP 6016.

EAP 1046. Independent Study. 1-4 Credits.

Individualized instruction in specific skill areas. Program director approval required. Credit for this course cannot be applied toward a degree.

EAP 3200. Special Topics in English for Academic Purposes. 3 Credits.

This special topics course targets academic communication in specialized or advanced contexts. Class activities and assignments reflect an analysis of student needs in disciplinary or professional fields. Course content draws on authentic materials and tasks to prepare students for success in written and oral communication.

EAP 6000. Academic Communication. 3 Credits.

Acclimation to the oral communication expectations of graduate school through developing listening and note-taking skills, expanding communicative vocabulary, leading and participating in class discussions, and preparing and delivering informal and formal presentations. Classroom activities directed toward scholarly and professional communication in students' fields of study whenever possible. Credit does not apply to any degree or certificate offered by GW.

EAP 6016. Academic Skills Workshop. 1 Credit.

Development of critical academic skills for international students. Workshop topics may include grammar for academic writing, critical reading, listening and note-taking, academic vocabulary development, and discussion and presentation skills. Credit for this course cannot be applied to a degree. (Same as EAP 1016).

EAP 6110. Academic Writing and Research for International Graduate Students I. 3 Credits.

An introduction to academic writing at the graduate level. Focus on developing rhetorical awareness, working with academic sources, drafting and revising academic writing assignments, using academic vocabulary, and improving grammatical accuracy. Credit for this course does not apply toward any degree or certificate offered by GW.

EAP 6111. Academic Writing and Research for International Graduate Students II. 3 Credits.

An academic writing and research course for international graduate students who demonstrate high proficiency in English. Focus on evaluating and using sources, reading and analysis of academic genres and discourse (including grammar and vocabulary), following appropriate process for writing and revising an independent research paper, small-group discussion, and oral presentations on research. Credit for this course does not apply toward any degree or certificate offered by GW.

EAP 6200. Special Topics in English for Academic Purposes. 3 Credits.

Academic communication in specialized or advanced contexts. Class activities and assignments reflect an analysis of student needs in disciplinary or professional fields. Course content draws on authentic materials and tasks to prepare students for success in written and oral communication.

ENVIRONMENTAL RESOURCE POLICY (ENRP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ENRP 5099. Variable Topics. 1-99 Credits.**ENRP 6085. Topics in Environmental Resource Policy. 1-3 Credits.**

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

ENRP 6097. Practicum in Environmental Resource Policy. 0 Credits.

International students engage in an unpaid internship. Restricted to students enrolled in the MA in environmental resource policy program. Credit cannot be earned for this course and PPPA 6097.

ENRP 6101. Environmental Sciences I: Physical Sciences. 3 Credits.

Basic physical sciences crucial to environmental issues, including chemistry, geology, hydrology, climate science, and cross-media interactions; land, air, and water pollution, climate change, production and consumption of energy, sea level rise, and anthropogenic changes in the cryosphere. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6102. Environmental Sciences II: Life Sciences. 3 Credits.

Basic life sciences crucial to environmental issues, including biology, ecology, environmental health and toxicology, epidemiology, and agriculture; biodiversity, ecosystem services, habitat preservation, deforestation, conservation biology, nutrient cycling, and the impacts of climate change on living systems. Restricted to students in the MA in environmental resource policy; graduate certificate in contexts of environmental policy; and BA/MA in environmental studies and environmental resource policy programs; permission of the instructor may be substituted.

ENRP 6145. Global Environmental Justice and Policy. 3 Credits.

Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

ENRP 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.

May be repeated for credit to a maximum of 6 credits.

ENVIRONMENTAL STUDIES (ENVR)

ENVR 1098. Variable Topics - AP. 3 Credits.**ENVR 1099. Variable Topics. 36 Credits.****ENVR 4195. Environmental Studies Capstone. 3 Credits.**

This capstone seminar provides undergraduate environmental studies majors with the opportunity to build on coursework in disciplines relevant to the major. Course components include discussion of foundational texts in environmental studies and group work on a local environmental theme. Students work with the GW Career Center on professional presentation skills, resume and cover letter writing, and analysis and synthesis skills building.

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EPIDEMIOLOGY (EPID)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EPID 5099. Variable Topics. 1-99 Credits.

EPID 6295. Reading and Research. 1-12 Credits.

May be repeated for credit.

EPID 6998. Thesis Research. 3 Credits.

EPID 6999. Thesis Research. 3 Credits.

EPID 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

EPID 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

EXERCISE AND NUTRITION SCIENCES (EXNS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

EXNS 1099. Variable Topics. 36 Credits.

EXNS 1103. Professional Foundations in Exercise Science. 1 Credit.

Introduction to the science and practice of exercise and human movement as they relate to public health; sub-disciplines of exercise science, research related to the field, and professional and career development. Credit cannot be earned for this course and EXNS 1109.

EXNS 1109. Professional Foundations in Nutrition Science. 1 Credit.

Overview of nutrition science and current challenges in the field. Sub-disciplines of nutrition science and the ways in which they work together to answer important research questions concerning human health. Credit cannot be earned for this course and EXNS 1103.

EXNS 1110. Applied Anatomy and Physiology I. 4 Credits.

Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on bones, joints, muscles, innervation, and blood supply. Laboratory fee.

EXNS 1111. Applied Anatomy and Physiology II. 4 Credits.

Continuation of EXNS 1110. Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on muscles, sensory and motor integration of the nervous system, function of the special senses, and the autonomic system. Laboratory fee. Prerequisites: EXNS 1110.

EXNS 1112. Current Issues in Coaching. 3 Credits.

Examination of current trends and issues in athletics, sport, and coaching from theoretical and applied perspectives. Study of a variety of timely topics using presentations, readings, videos, internet activities, and discussions.

EXNS 1113. Medical Terminology. 3 Credits.

Basic study of communication using medical and scientific language/terminology. Focus on the foundations of scientific and medical vocabulary including prefixes, suffixes, and stems used to form words.

EXNS 1114. Community Nutrition. 3 Credits.

Introduction to community nutrition and public health programs offered on the local, state, national, and international levels, targeting both individuals and groups. Topics include health policies, nutrition programs, nutrition assessment, and principles of nutrition education.

EXNS 1117. Principles of Coaching. 3 Credits.

Study of coach/athlete behavioral patterns and interactions, coaching methods, and interdisciplinary principles applicable to coaching.

EXNS 1118. Sport and Nutrition. 3 Credits.

Nutritional needs for recreational exercise and sports; skills in assessing nutritional needs; development of individual nutrition programs that are sport/activity-specific; and identification and correction of nutrition problems affecting sports performance. Prerequisites: EXNS 2119 or HLWL 1116.

EXNS 1119W. Children and Sport. 3 Credits.

Psychomotor, psychosocial, and physiological factors of children's participation in sports. The importance of sport to children, readiness to compete, adaptations to training, participation motives, social factors, fundamentals of training, nutrition, stress, and child protection. Theoretical aspects applied in a variety of sports settings. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

EXNS 1199. Topics in Exercise and Nutrition Sciences. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

EXNS 2110. Injury Prevention and Control. 3 Credits.

Information and practical experience in the prevention, recognition, and/or treatment of injury, illness, and health conditions; anatomy review, injury recognition skills, and prevention, first aid, and treatment techniques. Prerequisites: EXNS 1110 and EXNS 1111.

EXNS 2111. Exercise Physiology I. 4 Credits.

Function of the human body under the influence of physical activity. Nutrition as a foundation for human performance, energy for physical activity, and comprehensive weight management. Laboratory fee. Prerequisites: EXNS 1110 and EXNS 1111.

EXNS 2112. Exercise Physiology II. 4 Credits.

Response of physiological systems of the body to acute and chronic exercise and neuromuscular adaptations to exercise. Exercise training program design, training in extreme environmental conditions, and training considerations for special populations. Laboratory fee. Prerequisites: EXNS 2111.

EXNS 2113. Kinesiology. 4 Credits.

How the human body functions as a mechanical movement generator; the design and function of joints and muscles and principles of mechanics applied to human movement. Common injuries to the musculoskeletal system, how these injuries might occur, and what effect they have on movement patterns. Laboratory methods including techniques for palpation and evaluation of movement. Laboratory Fees. Prerequisites: ANAT 2181 or BISC 2581 or EXNS 1110.

EXNS 2116. Exercise and Health Psychology. 3 Credits.

The psychological, social, and environmental factors that influence the adoption and maintenance of physical activity/exercise and other health behaviors. The role of physical activity/exercise in the prevention of chronic disease. Emphasis on prominent theories used to understand and predict behavior change towards the initiation and maintenance of health behaviors. Issues specific to public health and diversity such as race/ethnicity, socioeconomic status, and gender are also addressed. Restricted to majors only. Prerequisites: PSYC 1001.

EXNS 2117. Sport Psychology. 3 Credits.

Introduction to current research and theoretical perspectives on psychological and psychosocial components of sport participation and competition. Participation motives, motivation, confidence, anxiety, aggression, and other factors that influence individuals and teams or groups. Prerequisites: PSYC 1001.

EXNS 2117W. Sport Psychology. 3 Credits.

Introduction to current research and theoretical perspectives on psychological and psychosocial components of sport participation and competition. Participation motives, motivation, confidence, anxiety, aggression, and other factors that influence individuals and teams or groups. Students complete written assignments to hone writing skills and apply course material. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSYC 1001.

EXNS 2119. Introduction to Nutrition Science. 3 Credits.

Nutrition science as it relates to human growth and development; dietary guidelines, digestion and absorption of nutrients, appetite, body weight, and chronic disease; how the body uses vitamins, minerals, and energy provided by fats, carbohydrates, and proteins; assessing nutritional status; nutrition on an individual and population level. Prerequisites: BISC 1111; or BISC 1115 and BISC 1125.

EXNS 2120. Assessment of Nutritional Status. 3 Credits.

Methods of assessing dietary intakes, physical activity, anthropometry, body composition, and micronutrient status of individuals; factors affecting selection, reliability, and interpretation of various assessment methods in public health settings. Prerequisites: EXNS 2114 and EXNS 2115; or EXNS 2119.

EXNS 2121. Orthopedic Taping and Bracing. 1 Credit.

Advanced practical application of skills learned in EXNS 2110, including first aid techniques, injury recognition skills, taping, and treatment of injuries. Concurrent enrollment in EXNS 2110 is required for students in the pre-athletic training/sports medicine track.

EXNS 2122. Food Systems in Public Health. 3 Credits.

Systems thinking pertaining to agriculture and food. Defining sustainability in the context of the global food system; the current state of the global food system from farm to fork; effects on health. Creating a healthier, more sustainable system.

EXNS 2123. Nutrition and Chronic Disease. 3 Credits.

Address the relationships between nutrition and chronic disease; obesity, diabetes, hypertension, cardiovascular disease, cancer, inflammatory conditions, musculoskeletal disorders, and neurodegenerative diseases. Prerequisites: EXNS 2114 and EXNS 2115; or EXNS 2119.

EXNS 2124. Lifecycle Nutrition. 3 Credits.

Overview of the science of nutrition as it relates to health throughout the major phases of the human life cycle. Prerequisites: EXNS 2114 and EXNS 2115; or EXNS 2119. Credit cannot be earned for this course and EXNS 6242.

EXNS 3101. Independent Study. 3 Credits.

Outline of intended project must be approved prior to course registration. Restricted to students in the BS programs in exercise science and nutrition science.

EXNS 3102. Applied Sport Psychology. 3 Credits.

Theoretical perspectives and practical aspects of applied sport psychology. Psychological skills and peak mental performance. Development and practical application of mental skills programs for athletes and methods of assessing psychological skills in sports settings. Qualifications and training routes for becoming a sport psychologist and professional and ethical issues. Prerequisites: EXNS 2117.

EXNS 3110. Field Experience - Exercise and Nutrition Sciences. 1-9 Credits.

Application of classroom-based knowledge to practical experience within a professional setting. Permission of the instructor is required prior to enrollment. Restricted to students in the BS programs in exercise science and nutrition science. Prerequisites: EXNS 2112.

EXNS 3111. Exercise and Nutrition Science Research Methods. 3 Credits.

Approaches and techniques used in exercise and nutrition science research, with a focus on human studies; development and critique of study designs, commonly encountered measurement and analysis issues, and human research ethics. Prerequisites: EXNS 2114 and EXNS 2115; or EXNS 2119. Credit cannot be earned for this course and EXNS 6242.

EXNS 3111W. Exercise and Nutrition Sciences Research Methods. 3 Credits.

Approaches and techniques used in exercise and nutrition science research, with a focus on human studies; development and critique of study designs, commonly encountered measurement and analysis issues, and human research ethics. Prerequisites: EXNS 2114 and EXNS 2115; or EXNS 2119. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

EXNS 3117. Injury Assessment. 4 Credits.

Students gain skills and practical experience in the assessment of injuries. Includes anatomy review, evaluation techniques and procedures, referral skills, and appropriate documentation. Prerequisites: EXNS 2110.

EXNS 3118. Therapeutic Modalities in Sports Medicine. 4 Credits.

Explanation and demonstration of the use of therapeutic modalities on the healing process, including discussion of the use of therapeutic modalities to enhance the rehabilitation process after athletic injury. Laboratory fee. Prerequisites: EXNS 3117 or permission of instructor.

EXNS 3119. Therapeutic Exercise in Sports Medicine. 4 Credits.

Explanation and demonstration of the use of therapeutic exercise on the rehabilitation process. Discussion and development of practical skills in techniques of therapeutic exercise and equipment to enhance the exercise routine after athletic injury. Prerequisites: EXNS 3117 or permission of instructor.

EXNS 3121. Medical Issues in Sports Medicine. 3 Credits.

Topics in general medical issues and pharmacology as they relate to the athletic training profession. Prerequisites: EXNS 1110 and EXNS 1111.

EXNS 3123W. Psychology of Injury and Rehabilitation. 3 Credits.

Psychological, social, and environmental factors that influence injury susceptibility, reaction to injury, and adherence to rehabilitation; basic assessment and intervention techniques to promote and facilitate adherence to rehabilitation. Restricted to students in the BS and minor programs in exercise and nutrition sciences. Prerequisites: PSYC 1001. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

EXNS 3125. Athletic Training Practicum. 3 Credits.

Students gain practical/clinical experience in athletic training and medical skills.

EXNS 3199. Advanced Topics in Exercise and Nutrition Sciences. 3 Credits.

Topics vary by semester. Consult the Schedule of Classes for more information.

EXNS 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and PUBH 3995.

EXNS 4110. Current Issues in Exercise Science. 3 Credits.

Capstone course for senior exercise science majors in their final spring semester. Students are required to understand and apply identified competencies from the core exercise science curriculum. Restricted to seniors in the BS in exercise science program in their final spring semester.

EXNS 4112. Nutrition Science Senior Capstone Seminar. 1 Credit.

Students are required to understand and apply identified competencies from the core nutrition science curriculum. Restricted to seniors in the BS in nutrition science program in their final spring semester.

EXNS 4199. Advanced Topics in Exercise and Nutrition Sciences. 3 Credits.

Topics vary by semester. Consult the Schedule of Classes for more details.

EXNS 6202. Advanced Exercise Physiology I. 3 Credits.

Examination of acute and chronic cardiovascular and pulmonary adaptations to exercise training. Focus on mechanisms that affect oxygen delivery and utilization during aerobic exercise. Responses to exercise in extreme environmental conditions.

EXNS 6203. Advanced Exercise Physiology II. 3 Credits.

Metabolic and neuromuscular adaptations that occur in response to acute and chronic exercise. Biochemical pathways responsible for energy production during rest and exercise, and how these pathways adapt with chronic training. Neural, hormonal, and nutritional factors that influence exercise performance. Laboratory fees. Prerequisites: EXNS 6202 or permission of instructor.

EXNS 6204. Biostatistical Methods and Research Design. 3 Credits.

Basic principles, concepts, and procedures of research, sampling, and statistical design. Probability, hypothesis testing, and application of basic statistical techniques using calculators and statistical software packages.

EXNS 6207. Psychological Aspects of Sport and Exercise. 3 Credits.

Psychological, sociological, and environmental factors related to the adoption of exercise behavior and maintenance and achieving peak sport performance. The influence of psychology on exercise and sport behaviors, and techniques for changing and/or optimizing such behaviors using a person-centered, individual approach. Issues specific to public health and diversity including race, socioeconomic status, ethnicity, and gender are emphasized throughout the course.

EXNS 6208. Physical Activity: Physiology and Epidemiology. 2 Credits.

Introduction to health issues resulting from physical inactivity (or disuse). Basic principles of energy metabolism and both basic and leading edge methods for physical activity assessment. Topics include major physiological systems' adaptation to exercise training and to de-training and how this adaptation may vary by age and sex; the relationship between disuse and major chronic diseases across the age spectrum; and individual and community-based intervention strategies to modify behavior and ameliorate the putative effects of a sedentary lifestyle. Study of the role of the built environment as an environmental "toxin" using the basic principles of environmental health risk assessment. Prerequisites: EXNS 2111.

EXNS 6209. Advanced Concepts in Nutrition Science. 3 Credits.

Topics in nutrition and public health. Emerging issues, challenges, and controversies in nutrition science; the role of diet composition and physical activity in the maintenance of health and the development of chronic disease; and effectively communicating scientific findings and identifying key knowledge gaps in nutrition science literature.

EXNS 6220. Power Training for Sports Performance. 2 Credits.

Effective training programs for sports that require explosive performance. Emphasis on training methods that develop speed and power, such as plyometrics and Olympic weightlifting. Provides information on specific competencies for students interested in pursuing certification as a strength and conditioning specialist. Prerequisites: EXNS 2111 or equivalent.

EXNS 6221. Science and Theory of Training. 3 Credits.

Physiological adaptations to resistance training, with a primary focus given to the neuromuscular system. Functional and structural changes that occur in skeletal muscle following strength and power training. Programmatic concerns when developing a resistance training regimen for an athletic population.

EXNS 6222. Current Topics in Strength and Conditioning. 1-2 Credits.

Current scientific findings related to the field of strength and conditioning. Examination of how resistance training programs affect athletic performance in terms of increased strength, power, endurance, and resistance to injury. The health benefits of resistance training in non-athletic populations. Prerequisites: EXNS 6202 or permission of the instructor.

EXNS 6223. Biomechanical Analysis. 3 Credits.

Application of mechanical analysis techniques to the human body in motion. Statics and dynamics with emphasis on the link segment model, incorporating angular velocity and angular acceleration. Motion analysis systems and computer systems. Prerequisites: (EXNS 1110 or BISC 2581) and EXNS 2113. Recommended background: PHYS 1011.

EXNS 6232. Independent Study. 1-3 Credits.

Students gain or enhance public health knowledge and explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of instructor or advisor required. Restricted to students in the MS in exercise science program.

EXNS 6233. Graduate Internship. 1-6 Credits.

Fieldwork, internship, and/or instructional practice related to the field of study as pre-approved by the advisor. May be repeated for credit up to a maximum of 6 credits with prior permission of the advisor. Restricted to students in the MS in exercise science program.

EXNS 6242. Nutrition Throughout the Life Cycle. 2 Credits.

The science of nutrition as it relates to health throughout the human life cycle. Changes in human metabolic processes and nutrient needs during the course of the aging process. Nutrition-related disorders. Restricted to students in the MPH program. Prerequisites: PUBH 6619 or permission of the instructor.

EXNS 6261. Thesis Seminar. 3 Credits.

Required for students planning to write a thesis. Principles, concepts, and procedures of research design, including interpreting the scientific literature, designing a statistical plan, applying basic statistical techniques, and communicating scientific findings to professional and general audiences. Students develop a research protocol.

EXNS 6299. Topics in Exercise Science. 1-3 Credits.

Topic to be announced in the Schedule of Classes.

EXNS 6810. Advanced Metabolism. 3 Credits.

Regulation of metabolic pathways and energy metabolism; carbohydrate metabolism, lipid metabolism, and protein metabolism. Regulation of metabolic pathways to match energy demand and the role of metabolic dysregulation in metabolic disorders. Prerequisites: EXNS 6202 or PUBH 6619.

EXNS 6998. Thesis Research. 3 Credits.

Students work independently to conduct research under the oversight of a faculty research committee. Restricted to students in the MS in exercise science program.

EXNS 8102. Writing a Research Grant Application. 1 Credit.

Prepares students to complete a competitive research grant application. Introduction to different sources of funding and funding mechanisms as well as the different eligibility requirements for these funding mechanisms. Restricted to PhD students in GW SPH. Prerequisites: EXNS 6204 and PUBH 6003.

EXNS 8106. Advanced Concepts in Applied Human Physiology. 3 Credits.

Details of the major physiological systems: cardiovascular, respiratory, muscular, and neural systems. Integration and regulation of physiological systems to physiological demands and pathological changes in metabolic disorders.

EXNS 8108. Laboratory Techniques in Human Physiology and Nutrition. 3 Credits.

Introduction of lab techniques in human measurement and the scientific theory underlying their application. Focus on assessment of diet, body composition, calorimetry, cardiovascular homeostasis, muscular strength and endurance in human assessment. Prerequisites: EXNS 6202 or PUBH 6619 or with permission of the instructor.

EXNS 8110. Seminar in Exercise Physiology and Applied Nutrition. 2 Credits.

The ways in which exercise and diet aid in fighting chronic disease, with a focus on obesity treatment and prevention. Common weight loss strategies are analyzed for efficacy from nutritional and physical activity perspectives. Restricted to students in the PhD in exercise physiology and applied nutrition program.

EXNS 8999. Dissertation Research. 1-12 Credits.

Dissertation research.

FILM STUDIES (FILM)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FILM 1099. Variable Topics. 1-36 Credits.**FILM 2151. Film Theory. 3 Credits.**

A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee.

FILM 2152. Genres of Film. 3 Credits.

An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee.

FILM 2153. History of World Cinema I. 3 Credits.

A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2154. History of World Cinema II. 3 Credits.

Continuation of FILM 2153. A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee.

FILM 2155. Screenwriting. 3 Credits.

Introduction to the art and craft of screenwriting—concept, genre, character, structure, dialogue, scene/sequence construction, and, ultimately, the preparation of scripts and treatments for a variety of screen formats.

FILM 2156. Advanced Screenwriting. 3 Credits.

Advanced phases of screenwriting culminating in the preparation of a full-length screenplay, with contextual study of contemporary, international, and classical films toward a fuller appreciation of movies as a cultural whole.

FILM 3099. Variable Topics. 1-12 Credits.**FILM 3390. Screenwriting. 3 Credits.**

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FILM 5099. Variable Topics. 1-99 Credits.

FINANCE (FINA)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FINA 1099. Variable Topics. 1-36 Credits.**FINA 3001. Intermediate Finance. 3 Credits.**

Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. Prerequisite: BADM 3501.

FINA 3101. Investment and Portfolio Management. 3 Credits.

Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk-reward and computer-aided analysis. Prerequisite: BADM 3501.

FINA 3201. Exploring Finance with Simulation. 3 Credits.

Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Prerequisite: BADM 3501.

FINA 3201W. Exploring Finance with Simulation. 3 Credits.

Corporate financial analysis as explored through the FINGAME financial simulation software. Focus on intertemporal decision making for capital budgeting and financing of a simulated firm. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BADM 3501.

FINA 3301. Money and Capital Markets. 3 Credits.

The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. Prerequisite: BADM 3501.

FINA 3401. A Brief History of Finance. 3 Credits.

History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Same As: FINA 3401W.

FINA 3401W. A Brief History of Finance. 3 Credits.

History of financial events and practices and how finance has changed over time; how these events have shaped current practices and the impact of ethical issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: FINA 3401.

FINA 4001. Advanced Financial Management. 3 Credits.

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Prerequisite courses may be taken concurrently. Prerequisites: BADM 3501; and FINA 3301 or FINA 3001. Same As: FINA 4001W.

FINA 4001W. Advanced Financial Management. 3 Credits.

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. No alternative to this course will be accepted to fulfill the GWSB Signature course requirement. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite courses may be taken concurrently. Prerequisites: BADM 3501; and FINA 3301 or FINA 3001.

FINA 4101. Applied Financial Securities Analysis. 3 Credits.

Practical security analysis techniques and investing approaches employed by professional investment managers. Prerequisite: BADM 3501.

FINA 4121W. Exploring Finance with Simulation. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4201. Real Estate Investment. 3 Credits.

Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions. Prerequisite: BADM 3501.

FINA 4301. Financial Derivatives. 3 Credits.

The defining properties of and uses for financial derivatives. Institutional features; forward and futures contracts, option contracts, and swap agreements; and valuation methodologies. The proper use of financial derivatives and the potential for unintended consequences. Prerequisites: BADM 3501. Recommended background: undergraduate students in finance with exposure to another discipline such as mathematics, physics, computer science, economics, or statistics.

FINA 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: BADM 3501.

FINA 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FINA 4995. Independent Study. 1-15 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: BADM 3501.

FINA 5099. Variable Topics. 1-99 Credits.**FINA 6220. Business Financial Management. 3 Credits.****FINA 6221. Financial Decision Making. 3 Credits.**

Theory and practice of business finance, emphasizing the impacts of long- and short-term uses and sources of funds on the firm's market value. Prerequisite: MBAD 6234 or MBAD 6235.

FINA 6222. Capital Formation. 3 Credits.

Determinants of saving and investment and resultant funds flow are evaluated. Special emphasis on the level and risk structure and term structure of interest rates. The role and management of financial institutions is stressed. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6223. Investment Analysis and Portfolio Management. 3 Credits.

Risk-reward analysis of security investments, including analysis of national economy, industry, company, and market; introduction to portfolio management; emphasis on theory and computer methods. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6224. Financial Management. 3 Credits.

Advanced case studies in domestic and international financial management; working capital policy, capital budgeting, financing with debt and equity, dividend policy, valuation, project finance, venture capital, and mergers and acquisitions. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6230. Urban Development Economics. 3 Credits.**FINA 6231. Seminar: Investment and Portfolio Management. 3 Credits.****FINA 6234. New Venture Financing: Due Diligence and Valuation Issues. 3 Credits.**

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Prerequisites: MBAD 6234 or MBAD 6235. (Same as MGT 6293).

FINA 6235. Futures Markets: Trading and Hedging. 3 Credits.

Organization and regulation of futures markets. Alternative strategies for trading of futures contracts for possible hedging uses. High risk-high return investment alternatives. The use of futures markets to manage risks. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6236. Options. 3 Credits.

Pricing of options on financial instruments. Role of options in risk management, trading strategies, hedging implications for national and international investors, financial engineering, and structure and regulation of option markets. Recommended: FINA 6221. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6237. Private Wealth Management and Personal Financial Advising. 3 Credits.

Income and estate taxation, retirement plans and pensions, life and disability insurance, investment portfolio management, and personal finances. Prerequisites: MBAD 6234 or MBAD 6235. Recommended background: ACCY 6401 and knowledge of Excel.

FINA 6238. Financial Engineering. 3 Credits.

Valuation and risk management theory for bonds, forward contracts, swaps, options, exotic options, and interest rate options. Development of financial software, including Monte Carlo simulation modeling. Case studies of innovative solutions to investment, corporate finance, and financial institution management problems. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6239. Applied Portfolio Management. 3 Credits.

Synthesis of the theoretical concepts of securities analysis and portfolio management with the application of analyzing securities and building an actual portfolio. Prerequisites: (MBAD 6234 or MBAD 6235) and permission of instructor.

FINA 6240. Real Estate Development. 3 Credits.

Examination of the forces that shape real estate development; market analysis methods and techniques to evaluate project feasibility; the institutional and legal framework within which real estate development occurs and that influences controls, land value, and development potential. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6241. Financing Real Estate. 3 Credits.

Principles of real estate finance; evaluating different methods of financing real estate; sources of real estate funding with emphasis on securitization. Incentives provided by governments. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6242. Real Estate Valuation and Investment. 3 Credits.

Understanding the valuation of different types of real estate from different viewpoints. Analysis of the risks and opportunities of investing. Solid theoretical framework is augmented with practical examples and applications. Prerequisites: MBAD 6234 or MBAD 6235.

FINA 6243. Strategic Planning for Walkable Urban Real Estate Companies. 3 Credits.

Introduction to the various facets of the real estate industry. Students gain practical training in strategic planning by conducting a consulting assignment for a DC-based real estate company.

FINA 6245. Land Development Law. 3 Credits.**FINA 6247. Urban Development Economics. 3 Credits.****FINA 6248. Real Estate Development Cases. 3 Credits.**

Case study analysis of large-scale commercial real estate developments to gain comprehension of financial, political, legal, and technical complexities and constraints inherent in the real estate development process. Prerequisite: FINA 6221 or permission of instructor.

FINA 6250. Securities Regulation and Financial Scandals. 3 Credits.

Philosophy and framework of laws governing the sale of securities, including stocks, bonds, and investment contracts; financial scandals and the role that changes in securities law and housing policy has played in such events.

FINA 6271. Financial Modeling and Econometrics. 4 Credits.

Applied statistical and econometric analysis and modeling in finance. Methodologies include descriptive and inferential statistics, multivariate regression, and time series analysis. Empirical studies are reviewed, and a series of research projects are undertaken. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6272. Global Financial Markets. 4 Credits.

Theories explaining domestic and international interest rate and exchange rate structures. Roles of financial institutions and markets are investigated and forecasting methodologies are applied. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6273. Cases in Financial Management and Investment Banking. 4 Credits.

Computer modeling for analysis and forecasting of a firm's financial statements to reflect possible future performance. Application and integration of financial accounting and financial analysis, using a different case study each week. Financial issues faced by companies and their commercial and investment bankers as tactical and strategic decisions are made about organic growth, growth through merger and acquisition, and corporate reorganization. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6274. Corporate Financial Management and Modeling. 4 Credits.

Causal connections between decisions made by business firms, their expected performance, and the resulting current valuation of the firm's common stock. Factors affecting the level and structure of interest rates, which are incorporated by many financial models, theories, and decisions. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6275. Investment Analysis and Global Portfolio Management. 4 Credits.

Financial markets and instruments viewed from the investor's perspective. Analysis of the value of equity and fixed-income securities and the construction of efficient portfolios in a global financial market. Issues of market efficiency, tax structures, and investment funds; computer-based models. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6276. Financial Engineering and Derivative Securities. 4 Credits.

Mathematical and theoretical foundations to value-derivative securities, including options, futures, and swaps; hedging and trading applications of these contracts. Arbitrage trading across cash and derivative markets and its role in maintaining equilibrium prices. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6277. Comparative Financial Market Regulation and Development. 4 Credits.

Theory and current status of comparative regulation of domestic and international financial institutions and markets. Effects on country economic development and international trade. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6278. Financial Theory and Research. 4 Credits.

Theoretical constructs of business investment and financing decisions and of financial asset pricing structures in domestic and international environments. Analytical and numerical models are developed, and empirical studies are evaluated. Prerequisite: Master of Science in Finance degree candidacy.

FINA 6279. Real Estate Finance and Fixed-Income Security Valuation. 4 Credits.

Application of financial theory to real estate investment: the housing market, mortgage valuation and securitization, commercial properties, CMBS, and REITs. Fixed-income security valuation with focus on theory and data applications on interest rate movements, fixed-income security and derivative pricing, and credit risk. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6280. Financial Institution Management and Modeling. 4 Credits.

Analysis of the financial performance and condition of a bank, toward understanding of the financial environment in which banks operate and regulation of the banking system. Application of asset/liability management principles and statistical and mathematical models employed in bank risk management. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6281. Cases in Financial Modeling and Engineering. 4 Credits.

Through the use of real-world examples from various aspects of finance, students are exposed to the modeling of complex financial instruments and techniques used in market and credit risk management. Underlying mathematics and theoretical constructs are explored and solidified through modeling exercises that make use of analytical solutions and numerical methods. As a practical course, students are asked to implement models. Examples may be motivated by corporate finance, corporate and investment banking, asset management, or other activities. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6282. Advanced Financial Econometrics and Modeling. 4 Credits.

Testing of several types of applied financial econometric models typically used in practice. Advanced quantitative techniques applied to aspects of financial markets, the behavior of agents, and market and credit risk management. Various software packages used to implement and program models. Prerequisites: Master of Science in Finance degree candidacy.

FINA 6290. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

FINA 6297. International Management Experience. 3 Credits.

Same as IBUS 6297/ MGT 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

FINA 6298. Directed Readings and Research. 2-4 Credits.**FINA 6299. Thesis Seminar. 3 Credits.****FINA 6999. Thesis Research. 3 Credits.****FINA 8311. Seminar: Public and Private Sector Institutions and Relationships. 3 Credits.**

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

FINA 8321. Seminar: Financial Markets Research. 3 Credits.

Market efficiency, utility testing, the capital asset pricing model, the arbitrage pricing theory, the option pricing model, and aggregate market volatility.

FINA 8322. Seminar: Corporate Finance Research. 3 Credits.

Capital budgeting, capital structure issues, dividend policy, microeconomic foundations, mergers, and agency theory.

FINA 8323. Seminar: Continuous-Time Finance. 3 Credits.

Review of the stochastic calculus methods needed for continuous-time pricing models. The most important continuous-time models, including pricing of derivative securities, consumption-portfolio selection models, continuous-time capital asset pricing models, consumption-based capital asset pricing models, continuous-time arbitrage pricing theory, and different yield curve models.

FINA 8324. Seminar: Financial Markets and Institutions. 3 Credits.

Multi-period asset pricing, term structure of interest rates, market imperfections and institutional factors, auctions, manipulation, derivative markets, market microstructure, and financial institutions.

FINA 8397. Doctoral Seminar. 1-3 Credits.**FINA 8998. Advanced Reading and Research. 1-12 Credits.**

Doctoral candidates preparing for general examination.

FINA 8999. Dissertation Research. 1-12 Credits.

Doctoral candidates performing research. Restricted to doctoral candidates.

FORENSIC PSYCHOLOGY (FORP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORP 5099. Variable Topics. 1-99 Credits.**FORP 6101. Psychology and the Legal System I. 3 Credits.**

Focuses on the paradigm differences in the mental health and legal systems and the challenges associated with integrating the two. Provides the students with an overview of the American legal system and the American mental health system. Discusses various areas of the intersection of the two systems in criminal, civil, juvenile, and family law settings. The role and ethics of the mental health professional in legal settings is addressed.

FORP 6102. Psychology and the Legal System II. 3 Credits.

Students are introduced to basic legal research with an emphasis on developing an ability to read and understand primary legal materials. Legal concepts of criminal competence and legal insanity are discussed. Constitutional notions of due process and fair treatment as they pertain to the mentally ill, developmentally disabled and children are reviewed with an emphasis on their evolution and current trends. The concept of dangerousness as it applies in both criminal civil commitment and sex offender commitment proceedings is reviewed. Prerequisite: FORP 6101.

FORP 6103. Theories of Criminal Behavior. 3 Credits.

Theories of criminal behavior; psychodynamic, biological, genetic, social learning, behavioral, and cognition; developmental and cultural issues in criminal behavior; sociological theories; violence and aggression; sex offenses and the role of substance abuse in criminal behavior. Restricted to students in the forensic psychology program.

FORP 6104. Psychopathology. 3 Credits.

The etiology and classification of mental disorders; manifestations, symptoms, and basic treatment issues within the framework of the DSM-5 diagnostic manual; disorders and categories that are a primary focus in forensic settings. Restricted to students in the forensic psychology program.

FORP 6105. Basics of Psychological Assessment. 3 Credits.

Introduction to the field of psychological assessment; test design, methodology, psychometrics, and report design; survey of frequently used objective and projective measures in the areas of cognitive, personality, and emotional functioning and their forensic application. Restricted to students in the forensic psychology program.

FORP 6106. Ethics in Forensic Psychology. 3 Credits.

Professional, ethical, and legal issues in forensic psychology practice; professional and ethical behavior as defined by applicable ethical codes; ethical dilemmas or conflicts between psychology and the law. Restricted to students in the forensic psychology program.

FORP 6107. Research and Statistics. 3 Credits.

Research methods, techniques, and implementation; basic descriptive and inferential statistics in psychology; interpreting published studies and normative data in assessments. Restricted to students in the MA in forensic psychology program.

FORP 6108. Consultation and Testimony. 3 Credits.

The role of the forensic practitioner in providing services within the legal system and other related organizations; evidentiary issues with regard to expert testimony; techniques for successfully presenting psychological testimony; effective consultation with other disciplines, including attorneys, mental health providers, and criminal justice personnel. Restricted to students in the forensic psychology program.

FORP 6109. Evaluation and Treatment of Offenders. 3 Credits.

Approaches to classification of offenders; dangerousness and psychopathy; treatment approaches in different settings within the criminal justice system; history of offender treatment and the relative merits of different treatment models. Restricted to students in the forensic psychology program.

FORP 6110. Forensic Psychological Assessment. 3 Credits.

Forensic evaluations, including competency to stand trial, criminal insanity defenses, pre-sentencing, and risk of dangerousness evaluations; communicating assessment results to the courts or other referral sources; selecting and administering specialized forensic assessment instruments; legal and ethical responsibilities. Restricted to students in the forensic psychology program. Prerequisites: FORP 6105.

FORP 6111. Evaluation and Treatment of Sex Offenders. 3 Credits.

Measures used in assessing sex offenders; predicting dangerousness and recidivism; theories concerning interpersonal and intrapsychic presentations in such areas as deviant arousal and cognitive distortions; treatment modalities; legal and ethical difficulties arising from mandatory treatment and long-term commitment. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6112. Substance Abuse Evaluation and Treatment. 3 Credits.

Underlying ideas of the pathology of addiction; psychodynamic, genetic and biological, and environmentally-focused theories; current assessment and intervention techniques; current treatments including psychopharmacological, psychodynamic and cognitive-behavioral approaches. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6113. Victimology. 3 Credits.

The psychology of the victim within social and cultural contexts; violent, sexual, and psychological victimization; relationship between prior victimization as a precursor in criminal behavior; prevention, intervention, and policy issues. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6114. Issues in Family Law. 3 Credits.

Psycho-legal issues concerning divorce, child custody, guardianship, and intrafamily violence and sex offending; dispute resolution methods as an alternative to litigation with a particular emphasis on divorce mediation; child custody evaluation and the evaluation of the elderly; ethical and legal difficulties. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6115. Children and Adolescents in the Legal System. 3 Credits.

The differences between the treatment of juvenile and adults offenders in the legal system; history and role of the juvenile justice system from both legal and mental health perspectives; developmental aspects of the offending juvenile; the role of the psychologist in court proceedings. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6117. Interrogation and Interviewing. 3 Credits.

Techniques of interrogation and interviewing in both criminal- and terrorism-related investigations. Cultural aspects of interviewing, the problem of false confessions, and the use of the polygraph. Legal and ethical issues surrounding interrogations, including the use of coercive techniques. Restricted to students in the MA in forensic psychology program. Prerequisites: FORP 6101, FORP 6103 and FORP 6104.

FORP 6118. Psychological Profiling. 3 Credits.

The strengths and limitations of psychological profiling in criminal investigations. The main psychological principles upon which criminal profiling is based and crime scene analysis and its relationships to both the demographic and psychological characteristics of a pool of unknown offender suspects. Methods to identify potential serial offenses. Legal and ethical issues with regard to the use of profiling. Restricted to students in the MA in forensic psychology program. Prerequisites: FORP 6101, FORP 6103 and FORP 6104.

FORP 6119. Police Psychology. 3 Credits.

Psychological aspects of working within or for police agencies; personality assessment for suitability for police work, the stress involved in the work with attendant adverse psychological consequences, and continuing assessment of police officers after critical incidents; ethical and practical problems for the mental health professional when working within or for a police organization and services available for troubled officers. Restricted to students in the forensic psychology program or with departmental permission.

FORP 6120. Counterintelligence. 3 Credits.

Counterintelligence considered from the perspectives of intelligence agencies, terrorist groups, and industry. The interconnection of psychological factors, motivations, strategic intent, and defense measures. Current and potential threats, including cybersecurity and cognition security. Restricted to Students in the MA in forensic psychology program or with permission of the department.

FORP 6128. Terrorism and Counterterrorism. 3 Credits.

Examination of the history and current status of terrorism and counterterrorism; psychological constructs motivating terrorist activity and countering the terror of terrorism; current scientific studies of the interplay between psychological factors, cultural norms, and religious ideations; and potential and future threats related to internet crime. Restricted to students in the MA in forensic psychology program.

FORP 6129. Investigative Psychology. 3 Credits.

The application of psychological research and principles to the processes for detecting, identifying, locating, apprehending, and bringing offenders to justice; various approaches to the field; relevant legal and ethical issues. Restricted to students in the forensic psychology program or with the permission of the department. Prerequisites: FORP 6101, FORP 6103 and FORP 6104.

FORP 6130. Practicum/Externship. 1 Credit.

Students undertake 250 hours of externship training tailored to their professional interests. The course may be completed over multiple semesters; students enroll for 1 credit in the semester in which they complete the required training hours, and for 0 (zero) credits in all other semesters during which they work toward, but do not complete, requirements. Restricted to students in the forensic psychology program. Prerequisites: FORP 6101, FORP 6103 and FORP 6104.

FORP 6131. Individuals with Mental Illness in the Legal System. 3 Credits.

Challenges presented when individuals with mental illness become involved with the criminal justice system; practical and aspirational goals the criminal justice system employs when addressing this population. Restricted to students in the forensic psychology program or with the permission of the department.

FORP 6150. Advanced Topics in Forensic Psychology. 12 Credits.

Current topics in forensic psychology. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisites: FORP 6101, FORP 6103, and FORP 6104.

FORENSIC SCIENCES (FORS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FORS 2102. Introduction to Forensic Science I. 3 Credits.

The application of science to the criminal justice system; crime scene processing, crime scene reconstruction, investigation of fires and explosions, impression evidence, trace evidence, and computer forensics. Completion of two semesters of a laboratory science other than astronomy and permission of the instructor are required prior to enrollment.

FORS 2104. Introduction to Forensic Sciences II. 3 Credits.

The application of science to the criminal justice system; personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisites: two semesters of a laboratory science other than astronomy and permission of instructor.

FORS 2104W. Introduction to Forensic Sciences. 3 Credits.

Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and FORS 2104.

FORS 2151. Crime Scene Investigation. 4 Credits.

Examination, analysis, and reconstruction of crime scenes; principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence.

FORS 2190. Topics in Forensic Science. 3 Credits.

. Restricted to juniors. Prerequisites: BISC 1005 or BISC 1006; and CHEM 1003 or CHEM 1004.

FORS 5099. Variable Topics. 1-99 Credits.**FORS 6004. Fundamentals of Forensic Science I. 3 Credits.**

This course surveys crime scene investigation techniques, medicolegal death investigation, and patterned evidence examination. This satisfies the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of crime scene investigation, physical evidence concepts, and pattern evidence. This course helps students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of firearms and toolmarks, fingerprints, and questioned documents. Lectures are given by faculty members and guest lecturers who are subject matter experts on the topic presented. This course includes a four hour laboratory (fingerprints). This is a required course for MFS and CSI students. This course, along with FORS 6005 Fundamentals of Forensic Science II, replaces FORS 6213, Elements of Forensic Science (3 Credits). Prerequisite: None.

FORS 6005. Fundamentals of Forensic Science II. 3 Credits.

This course surveys the traditional crime laboratory (criminalistics) disciplines—specifically forensic drug chemistry, forensic toxicology, trace evidence, fire debris, explosives, and forensic molecular biology. This satisfies the 10 hours instruction for a FEPAC accredited MFS degree in the core topics of analytical chemistry and instrumental methods of analysis, drug chemistry/toxicology, microscopy and materials analysis, and forensic biology. This course helps students prepare for the American Board of Criminalistics ("ABC") examination in the disciplines of forensic biology, trace evidence, fire debris, controlled substances, and toxicology/blood alcohol determinations.

FORS 6010. Bloodstain Pattern Analysis I. 3 Credits.

Human blood in flight and the patterns it makes on target surfaces. Crime scene investigation, crime scene analysis, and crime scene reconstruction. Laboratory fee. Restricted to graduate students. Recommended background: FORS 6251 and FORS 6256.

FORS 6011. Bloodstain Pattern Analysis II. 3 Credits.

Continuation of the concepts learned in FORS 6010. Serving as an expert witness; refining blood pattern analysis and documentation skills; effectively communicating observations, analysis, and conclusions in the courtroom. Laboratory fee. Restricted to graduate students. Prerequisites: FORS 6010. Recommended background: FORS 6251 and FORS 6256.

FORS 6020. Ethics, Professional Responsibility, and Quality Assurance. 2 Credits.

Issues of forensic science laboratory professional responsibility, including ethics, public policy, and quality assurance. Satisfies 10 hours of instruction for a Forensic Science Education Programs Accreditation Commission (FEPAC) accredited MFS degree in the core topics of ethics and professional responsibility and quality assurance; also assists in preparation for the American Board of Criminalistics examination in the area of ethics. Taken online during the summer session.

FORS 6201. Forensic Biology. 3 Credits.

Principles of the forensic analysis of blood and other biological materials. Specific procedures and techniques used in forensic biology and serology. Laboratory fee.

FORS 6203. Examination of Questioned Documents. 3 Credits.

Theory and principles of handwriting and handprinting, duplicating processes, paper manufacture and fiber analysis; studies of paper and methods of examining questioned documents. Laboratory fee.

FORS 6204. Firearms and Toolmark Identification. 3 Credits.

Methods for identifying firearms, bullet cartridge casings, toolmarks, gunshot residue, obliterated serial numbers, tire marks, and footprints. Laboratory fee.

FORS 6206. Trace Evidence Analysis. 3 Credits.

Principles that govern the analysis of trace evidence, including recovery, transference, interpretation, and comparison. Assessment of evidentiary value, reporting, and court testimony. Laboratory fee.

FORS 6207. Photography in the Forensic Sciences. 3 Credits.

Basic use of forensic photography, including selection and use of equipment, photographs as evidence, close-up work, and common misconceptions. Laboratory fee.

FORS 6210. Advanced Instrumental Analysis. 3 Credits.

Theory and practice of modern instrumental methods used in forensic laboratories, including mass spectrometry, optical spectroscopy, microscopy, chromatographic and electrophoretic separations. It is a required course for MFS students with concentration in Forensic Chemistry and Forensic Toxicology. Recommended background: undergraduate analytical methods.

FORS 6213. Elements of Forensic Sciences. 3 Credits.**FORS 6215. Science of Fingerprints. 3 Credits.**

A general overview of the history and biology of and principles underlying the science of fingerprints. Latent print development methods, recording, classification, and methodology of comparison of fingerprints and palm prints to include latent prints. Subject matter is covered at an introductory level; additional study is required to develop expertise as a latent fingerprint examiner.

FORS 6216. Development of Latent Prints. 3 Credits.

This Advanced Fingerprint Science Course provides the students an increased understanding of the main principles of fingerprint identification: uniqueness and persistence. The course is broken down into three main sections, which address the chemistry behind processing fingerprints, the anatomy and physiology of friction ridge skin and the extensive research that has been conducted in the field of fingerprint science. The students are required to complete a skills processing exam to assess their understanding and ability to develop latent prints on items of evidence. In addition, there is a written examination covering the topics of biology and development of friction ridge skin and a final comprehensive exam. Upon conclusion of this course, each student should have a firm grasp of why friction ridge skin can be used as a means of identification. Recommended background: FORS 6215.

FORS 6217. Fingerprint Comparisons. 3 Credits.

In-depth study of analysis, comparison, evaluation, and verification (ACE-V) methodology; assessing the quality and quantity of information and establishing a tolerance for comparison using the effects of distortion; uniqueness and persistence; anatomy and embryology of friction ridge skin. Laboratory fee. Prerequisites: FORS 6215.

FORS 6219. Digital Image Processing. 3 Credits.

Digital images of marginal value can be processed to reveal details which had been in the original, but were difficult to see. These changes must be done in ways to survive court challenges. Best practices for doing so are provided. Prerequisites: FORS 6207 or permission of the instructor. Recommended background: graduate level work in MS/CSI, MFS/FRA, MS/FRA or Grad Cert in Forensic Investigations; graduate-level work in crime scene investigation and/or friction ridge analysis, or in the graduate certificate program in forensics investigations.

FORS 6224. Criminal Law for Forensic Scientists. 3 Credits.

This course provides an overview of criminal law offenses, criminal law procedures, issues of evidence recovery, admissibility of scientific evidence, and expert testimony, with an emphasis on the interaction between the criminal process and forensic science. A moot court experience is integral to this course. (This course combines and replaces Crim Law I and III.).

FORS 6225. Statistics for Forensic Scientists. 3 Credits.

Statistics with a focus on forensic applications. Emphasis on the Bayesian approach. Logical, probabilistic statistical reasoning skills, and R software skills. Course content is the basis for an examination question on the comprehensive examination. Prerequisite: An undergraduate statistics course.

FORS 6231. Principles of Toxicology. 3 Credits.

Concepts of toxicology, including its historical development and modern applications, drug disposition, mechanisms of toxicity; factors that influence toxicity and toxicity evaluation.

FORS 6232. Analytical Toxicology. 3 Credits.

Principles and procedures used in the isolation, identification, and quantitation of drugs of abuse from human samples.

FORS 6234. Medicinal Chemistry I. 3 Credits.

Theory and principles of classification, synthesis, and structure activity relationships of drugs. Discussion of the complex chemical events that take place between administration of a drug and its action on the user, with emphasis on drugs of abuse.

FORS 6235. Medicinal Chemistry II. 3 Credits.

Chemical, pharmacological, toxicological, and pathological characteristics of commonly abused drugs, including ethanol, barbiturates, narcotics, stimulants, and hallucinogens.

FORS 6236. Forensic Toxicology I. 3 Credits.

Biological, chemical, and pharmacological principles that underlie forensic toxicology. Prerequisites: FORS 6235 or permission of the instructor.

FORS 6237. Forensic Toxicology II. 3 Credits.

Lectures, student seminars, and projects dealing with topics of current interest in forensic toxicology. Prerequisites: FORS 6236 or permission of the instructor.

FORS 6238. Forensic Chemistry I. 3 Credits.

Examination of glass and soils. Laboratory exercises include refractive index measurements using immersion methods; polarized light observations of minerals; x-ray diffraction analysis of minerals; and classical chemical and physical methods of analysis. Laboratory fee.

FORS 6239. Forensic Chemistry II. 3 Credits.

Examination of arson accelerants, textile fibers, plastics, and paints. Laboratory exercises include infrared spectrometry and pyrolysis-gas-liquid chromatography of polymeric materials, as well as classical chemical and physical methods of analysis. Laboratory fee. Prerequisites: FORS 6238 or permission of the instructor.

FORS 6240. Forensic Drug Analysis. 3 Credits.

Examination of dosage forms of drugs. Laboratory exercises include color spot tests, crystal tests, infrared spectrometry and gas chromatography-mass spectrometry. Laboratory fee.

FORS 6241. Forensic Molecular Biology I. 3 Credits.

Techniques of molecular biology applied to the collection, examination, analysis, and interpretation of biological evidence.

FORS 6242. Forensic Molecular Biology II. 3 Credits.

Advanced methods of forensic molecular biology. Laboratory examinations and classifications of dried blood and other biological materials through a variety of nuclear and mitochondrial markers. Laboratory fee. Prerequisites: FORS 6241 and permission of the instructor.

FORS 6243. Forensic Molecular Biology III. 3 Credits.**FORS 6246. Human Genetic Variation. 3 Credits.**

The genetic variation in human populations as a framework for measurement and analysis of genetic diversity and evolutionary process. Consideration of the possible roles of cultural change leading to adaptive/selective events. Same as ANTH 6406.

FORS 6247. Population Genetics. 3 Credits.

Origin, maintenance, and possible significance of genetic variation in populations. Selection, genetic drift, and population structure are emphasized. Both theoretical and applied aspects of population genetics are discussed. Same as BISC 6228.

FORS 6250. Crime Scene Investigation for Lab Personnel. 3 Credits.

A condensed offering of the subject matter of FORS 6251–FORS 6252. FORS 6250 cannot be taken for credit toward the crime scene investigation concentration. Laboratory fee.

FORS 6251. Crime Scene Investigation I. 3 Credits.

Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6252. Crime Scene Investigation II. 3 Credits.

Continuation of FORS 6251. Examination, analysis, and reconstruction of crime scenes. Principles from biology, chemistry, and physics applied to identification, documentation, preservation, and collection of physical evidence. Laboratory fee.

FORS 6254. Forensic Psychiatry. 3 Credits.

Introduction to the constructs of dynamic psychiatry, psychiatric treatment, and the nomenclature of mental disorders. Consideration of expert testimony, direct examination, and cross-examination in hospitalization and criminal cases.

FORS 6255. Investigation of Child Abuse. 3 Credits.

This course integrates medical, scientific, psychological, sociological and legal information for investigators and professionals involved in the field of child abuse. Special emphasis is placed on the application of research-supported data to situations involving the murder, abuse and exploitation of children.

FORS 6256. Forensic Pathology. 3 Credits.

Terminology and scientific techniques used in medico-legal investigations, sudden or unexpected deaths, homicides, suicides, accidental deaths, and trauma.

FORS 6257. Medicolegal Death Investigation. 3 Credits.

Medical, scientific, sociological, and legal methodologies applied to forensic investigations. Aspects of death scene analysis by a medical examiner, including autopsy procedures, unidentified remains, child death investigations, and mass disaster investigations. Laboratory fee. Prerequisites: FORS 6256 and permission of the instructor.

FORS 6258. The Investigation of Sexual Assault and Other Sex Crimes. 3 Credits.

This course integrates medical, psychological, sociological and legal information for investigators and professionals involved in the field of sex crime investigation. Special emphasis is placed on the application of research-supported data to situations involving the sexual exploitation and victimization of adults.

FORS 6290. Selected Topics. 3 Credits.

Current issues in research, investigation, and law.

FORS 6291. Computer Forensics III: Advanced Techniques. 3 Credits.

Further examination of methods and techniques used to conduct and report high-technology crime investigations. Open only to students enrolled in the department or by approval of the program director. Laboratory fee. Prerequisite: FORS 6278.

FORS 6292. Graduate Seminar. 1 Credit.

Students in designated forensic sciences degree programs must register for this course in their first semester and again after completion of the required independent research project.

FORS 6295. Research. 1-12 Credits.

Research on problems approved by the department, under the supervision of an appropriate member of the program faculty. Admission by permission only.

FORS 6298. Forensic Sciences Practicum. 1-3 Credits.

Internship experience in a forensic science laboratory or criminal justice agency, under the supervision of an appropriate member of the program faculty. Students must preregister for this course. Admission by permission only.

FORS 6998. Thesis Research. 3 Credits.**FORS 6999. Thesis Research. 3 Credits.**

FRENCH (FREN)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

FREN 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

FREN 1001. Basic French I. 4 Credits.

Handling the immediate context of daily experience in spoken and written French: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

FREN 1002. Basic French II. 4 Credits.

Speaking and writing in French about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: FREN 1001. Laboratory fee.

FREN 1003. Intermediate French I. 3 Credits.

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (e.g., repeating or relaying messages, giving reports, summarizing). Prerequisite: FREN 1002 . Laboratory fee.

FREN 1004. Intermediate French II. 3 Credits.

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: FREN 1003 . Laboratory fee.

FREN 1006. French Language and Culture I. 3 Credits.

Offered through the GW Paris Business Studies Program.

FREN 1007. French Language and Cultures II. 3 Credits.

Continuation of FREN 1006. Offered through the GW Paris Business Studies Program.

FREN 1099. Variable Topics. 1-36 Credits.**FREN 2005. Language, Culture, and Society I. 3 Credits.**

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Laboratory fee. Prerequisite: FREN 1004.

FREN 2006. Language, Culture, and Society II. 3 Credits.

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of contemporary subjects. Short texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Laboratory fee. Prerequisite: FREN 2005.

FREN 2049. French for Graduate Students. 0 Credits.

No academic credit. Tuition is charged at the rate of 3 credits. Restricted to graduate students preparing for reading examinations.

FREN 2500. Cultural Politics of Food in France. 3 Credits.

The construction of French national identity through representations of food in literature and film. Taught in English.

FREN 3010W. Advanced French Language, Structure, and Composition. 3 Credits.

Refining rhetoric in French, integrating notions from linguistics. Improving written and spoken French through new perspectives into the language itself. Register, borrowings, idiomatic expressions, and stylistic variation between French and English. Prerequisites: FREN 2006. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FREN 3020. Contemporary France. 3 Credits.

Emphasis on advanced oral work. Discussion of French culture and civilization, based on contemporary writings and video documents. Prerequisite: FREN 2006. Laboratory fee.

FREN 3030. Business and Commercial French. 3 Credits.

Structure and language of French economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Preparation for the certificate of the Paris Chamber of Commerce. Prerequisite: FREN 2006.

FREN 3099. Variable Topics. 1-12 Credits.**FREN 3100. Introduction to French Literature. 3 Credits.**

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: FREN 2006.

FREN 3100W. Introduction to French Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods; close reading approach and introduction to literary vocabulary. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: FREN 2006.

FREN 3210. Medieval and Early Modern French Literature in Context. 3 Credits.

Texts of the Middle Ages to the seventeenth century studied in their historical, social, and cultural contexts. Topics may include feudal society and the literature of courtly love; humanism, Rabelais, and Renaissance poetry; women and salon writing; Versailles, absolutism, and classical theater. Prerequisite: FREN 3100W.

FREN 3220. Modern French Literature. 3 Credits.

Texts of the eighteenth century to the present in historical, social, and cultural contexts. Topics may include philosophes and the rise of social consciousness; the French Revolution and Romanticism; dada and surrealism; existentialism and World War II; decolonization and francophone literature. Prerequisite: FREN 3100W.

FREN 3290. Textual Analysis. 3 Credits.

Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature. Prerequisite: FREN 3100W.

FREN 3300. Topics in French and Francophone Literatures and Cultures in Translation. 3 Credits.

Dynamics of French-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required.

FREN 3400. Studies in Genre. 3 Credits.

Study in narrative, dramatic, or lyric form. Topics vary by semester. May be repeated for credit provided topic differs. See department for details. Prerequisite: FREN 3100W.

FREN 3500. Race, Religion, and Identity in France. 3 Credits.

The intersection of race, religion, and identity in France from an historical perspective; key concepts of French universalism and secularism in relation to different minority groups. Resources may include literature, film, historical documents, and sociological studies. May be taught in French or English. Recommended background: Prior completion of FREN 3100W.

FREN 3520. The Age of Classicism. 3 Credits.

Drama, philosophy, criticism, poetry, and fiction of the seventeenth century. Topics may include préciosité, baroque, Jansenism, classicism, and rationalism in the context of the major social, political, and religious movements of the period. Prerequisite: FREN 3100W.

FREN 3530. The Age of Enlightenment. 3 Credits.

The major novelists, dramatists, and philosophes of the eighteenth century. The works of Montesquieu, Voltaire, Rousseau, and Diderot and their relationship to the social, political, and philosophical thought of the period. Prerequisite: FREN 3100W.

FREN 3550. Studies in Twentieth-Century French Literature. 3 Credits.

Major literary movements of the twentieth century: avant-garde, surrealism, existentialism, nouveau roman, and nouveau théâtre. Prerequisite: FREN 3100W.

FREN 3560. Topics in Contemporary Francophone Literature and Cinema. 3 Credits.

Analysis of relations between France and its former colonies as manifested in the literature and cinema of France and the Francophone world. Race and gender relations; exile; nationalism; and identity and place as seen through various literary and cinematic responses to the discourses of metropolitan France by its former colonies. Prerequisite: FREN 3100W.

FREN 3600. Special Topics in French Literature. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for details. Prerequisite: FREN 3100W.

FREN 3600W. Special Topics in French Literature and Culture. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: FREN 3100W.

FREN 3700. History of French Cinema. 3 Credits.

French cinema from its inception to the New Wave; the relationship of filmmaking and audience reception to the evolution of French society and political institutions; the language of cinema as it evolves according to periods and genres and as critics and filmmakers create a theoretical discourse specific to film.

FREN 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ HIST 4135. Prerequisite: FREN 3100W.

FREN 4470. Writing Women. 3 Credits.

Dynamics of gender in French literature and culture with emphasis on women as agents and objects of representation; gender roles in the formation of social biases, norms, and power structures. Texts range from the Middle Ages to the present. Prerequisite: FREN 3100W.

FREN 4500. Studies in Medieval French Literature. 3 Credits.

Readings and analysis of the major literary texts from the 11th through the 15th centuries. Chansons de geste, courtly literature, fabliaux, drama, lyric and didactic poetry. Prerequisite: FREN 3100W.

FREN 4510. French Literature of the Renaissance. 3 Credits.

Sixteenth century prose and poetry in the context of cultural and historical movements. Topics may include humanism; concepts of self and subjectivity; the wars of religion; the discovery of the New World; court and city life; the private and public spheres; religious and secular love. Prerequisite: FREN 3100W.

FREN 4540. Nineteenth-Century French Literature and Culture. 3 Credits.

Key aspects of nineteenth-century French literature in its historical, cultural, and political context. Major authors and literary movements studied through the lens of a particular theme, which varies from year to year. Prerequisite: FREN 3100W.

FREN 4600. Special Topics in French Literature. 3 Credits.

Examination of French and Francophone literature organized around a single theme. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisite: FREN 3100W.

FREN 4650. Lustful Women in French Medieval Literature. 3 Credits.

The representation of lustful women in French medieval texts and arts. We read some of the most important novels and short stories of the Middle Ages, such as *La Châtelaine de Vergy*, *Tristan et Yseut*, and *Les Lais de Marie de France*. Prerequisite: FREN 3100W.

FREN 4700. Race Matters: Literature, Culture, and Identity in Contemporary France. 3 Credits.

An interdisciplinary examination of cultural, political, and economic realities for Black populations in France. Prerequisite: FREN 3100W.

FREN 4800. Independent Study. 1-4 Credits.

Admission by permission of department chair and instructor. May be repeated for credit. Prerequisite: French 3100W.

FREN 4910. Proseminar: Readings for the Major. 3 Credits.
Required of all majors as preparation of the senior essay. Specific topic in the history of French literature varies by year. Restricted to French majors in their senior year. Prerequisite: French 3100W.

FREN 4920W. Proseminar II. 3 Credits.

Continuation of FREN 4910. Required of all majors; preparation of the senior essay. The specified topic in the history of French literature varies by year. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

FREN 5099. Variable Topics. 1-99 Credits.

GENOMICS AND BIOINFORMATICS (GENO)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GENO 6223. Bioinformatics. 2 Credits.

The application of bioinformatics concepts and methods through the use of molecular biology databases and tools, covering molecular evolution, and protein sequence, structural, functional analysis. Recommended background: Prior completion of an undergraduate course in biochemistry. Same As: BIOC 6223.

GENO 6236. Medical Genomics. 2 Credits.

The structure and function of genes and genomes; genomic theories, methods, and data analysis including bioinformatics and database mining. Same As: BIOC 6236.

GENO 6237. Proteomics and Biomarkers. 2 Credits.

Experimental proteomics, protein/proteome analysis, bioinformatics of proteomics, systems biology, and structural genomics. Prerequisite: GENO 6236. Recommended background: Prior completion of a course in bioinformatics or one related to computer science. Same As: BIOC 6237.

GENO 8231. Introduction to Genomics, Proteomics, and Bioinformatics. 3 Credits.

Implementation of genomics, proteomics and bioinformatics approaches to biological systems. Students must have completed a course in biochemistry and molecular biology prior to enrollment. Prerequisites: BMSC 8210 and BMSC 8212. Credit cannot be earned for this course and BMSC 8231.

GENO 8234. Genomics and Precision Medicine Seminar. 1 Credit.

Current and emerging topics with presentations and discussions facilitated by leading experts from GW and outside institutions; student-led journal club and oral presentation opportunities. May be repeated for credit. Prerequisites: BMSC 8210, BMSC 8212 and BMSC 8230.

GENO 8998. Advanced Readings and Research. 3-12 Credits.

Restricted to doctoral candidates preparing for the qualifying examination. May be repeated for credit.

GENO 8999. Dissertation Research. 3-12 Credits.

Restricted to doctoral candidates. May be repeated for credit.

GEOGRAPHY (GEOG)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOG 1000. Dean's Seminar. 3 Credits.

GEOG 1001. Introduction to Human Geography. 3 Credits.

A systematic survey of human geography; spatial perspectives on demographic, social, cultural, economic, and political changes around the world.

GEOG 1002. Introduction to Physical Geography. 4 Credits.

A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, and resource geography. Laboratory fee.

GEOG 1003. Society and Environment. 3 Credits.

An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

GEOG 1099. Variable Topics. 1-36 Credits.

GEOG 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

GEOG 2104. Introduction to Cartography and GIS. 3 Credits.

Fundamentals of cartography; geographic data structure and information systems. Laboratory fee.

GEOG 2120. World Regional Geography. 3 Credits.

Practical approach to the themes, concepts, and tools appropriate for in-depth examination of the geography of the world's. Historical and physical regional geographies; contemporary regional issues; and intra- and interregional issues.

GEOG 2124. Urban Transportation. 3 Credits.

The relationship between freight and passenger transportation systems and urban land use patterns and structure.

Prerequisite: GEOG 1001.

GEOG 2125. Transportation Systems and Networks. 3 Credits.

The structure and evolution of transportation networks and their impact on regional development.

GEOG 2127. Population Geography. 3 Credits.

Patterns of world population; factors contributing to population pressures, growth, and migrations.

GEOG 2129. Biogeography. 3 Credits.

The spatial and temporal patterns of biological diversity and the processes that cause those patterns. Combines ecology, evolutionary biology, paleontology, and climatology.

GEOG 2129W. Biogeography. 3 Credits.

The spatial and temporal patterns of biological diversity and the processes that cause those patterns. Combines ecology, evolutionary biology, paleontology, and climatology. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GEOG 2133. People, Land, and Food. 3 Credits.

The relationship between humans and their food sources through exploration of nutritional dynamics, food sourcing, agricultural land use, and food markets.

GEOG 2134. Energy Resources. 3 Credits.

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations.

Prerequisite: GEOG 1002.

GEOG 2134W. Energy Resources. 3 Credits.

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1002.

GEOG 2136. Water Resources. 3 Credits.

Analysis of the global spatial patterns, development, use, and quality of water resources. Prerequisite: GEOG 1002.

GEOG 2137. Environmental Hazards. 3 Credits.

Examination of environmental hazards with an emphasis on physical geography, economics, and the basics of geographic information systems (GIS).

GEOG 2140. Cities and Societies. 3 Credits.

The design and function of cities in the United States; contemporary, economic, political, and social change.

Prerequisite: GEOG 1001.

GEOG 2140W. Urban Geography. 3 Credits.

The design and function of cities in the United States; contemporary, economic, political, and social change. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

Prerequisite: GEOG 1001.

GEOG 2141. Cities in the Developing World. 3 Credits.

Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues. Prerequisite: GEOG 1001.

GEOG 2144. Explorations in Historical Geography. 3 Credits.

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as AMST 2144.

GEOG 2147. Military Geography. 3 Credits.

An examination of environmental and locational factors and their impact on military planning and operations.

GEOG 2148. Economic Geography. 3 Credits.

Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance.

Prerequisite: GEOG 1001.

GEOG 2196. Field Methods in Geography. 3 Credits.

For geography and environmental studies majors in their junior or senior year. Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee.

GEOG 3099. Variable Topics. 1-12 Credits.

GEOG 3105. Techniques of Spatial Analysis. 3 Credits.

Quantitative methods, tools, and approaches in spatial analysis to describe and test hypotheses about observations that have a spatial component. Prerequisites: GEOG 2104; and STAT 1051 or STAT 1053.

GEOG 3106. Intermediate Geographic Information Systems. 3 Credits.

Principles of geographic information systems and their use in spatial analysis and information management. Prerequisites: GEOG 2104.

GEOG 3107. Introduction to Remote Sensing. 3 Credits.

Remote-sensing techniques using digital satellite imagery and aerial photography; application to rural and urban settings, vegetation, and environmental monitoring. Prerequisites: GEOG 3105.

GEOG 3108. Weather and Climate. 3 Credits.

Fundamental physical principles that govern the Earth's climate; the science of global climate change and the impact of anthropogenic and natural phenomenon on the climate. Prerequisite: GEOG 1002.

GEOG 3128. Geomorphology. 3 Credits.

The influence of landforms and landscapes on human activities and the impact of humans on landscapes throughout history. Prerequisites: GEOG 1002 or GEOL 1005.

GEOG 3132. Environmental Quality and Management. 3 Credits.

The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: GEOG 1002.

GEOG 3133. Social-Ecological Systems. 3 Credits.

Exploration of social processes and ecological dynamics by using interdisciplinary approaches that borrow tools and techniques from the social and natural sciences, as well as traditional knowledge systems. Prerequisites: GEOG 1001; and GEOG 1002 or GEOG 1003.

GEOG 3143. Urban Sustainability. 3 Credits.

Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: GEOG 1001.

GEOG 3143W. Urban Sustainability. 3 Credits.

Relationship between urban spaces and the environment through the lens of sustainability. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1001.

GEOG 3145. Cultural Geography. 3 Credits.

Themes, concepts, and tools appropriate for an in-depth geographic examination of the Earth's cultural landscape and of culture as a process. Prerequisite: GEOG 1001.

GEOG 3145W. Cultural Geography. 3 Credits.

Themes, concepts, and tools appropriate for an in-depth geographic examination of the Earth's cultural landscape and of culture as a process. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GEOG 1001. Same As: GEOG 3145.

GEOG 3146. Political Geography. 3 Credits.

The uneven distribution and exercise of political power in the world; interrelationships among the human and physical environment and political systems. Prerequisite: GEOG 1001.

GEOG 3154. Geography of the Middle East and North Africa. 3 Credits.

Cultural and physical regional patterns of the Middle East and North Africa. Prerequisites: GEOG 1001 or GEOG 1002.

GEOG 3161. Geography of Latin America. 3 Credits.

Examination of spatial characteristics of physical and cultural phenomena in Latin America.

GEOG 3164. The Geography of Africa. 3 Credits.

Human and environmental geography of Africa south of the Sahara desert, including study of patterns and processes, culture and environment, and development issues. Prerequisites: GEOG 1001 or GEOG 1002.

GEOG 3165. Geography of South Asia. 3 Credits.

An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

GEOG 3189. Readings in Geography I. 1-12 Credits.

. Prerequisites: 12 credits of geography and permission of the instructor.

GEOG 3190. Readings in Geography II. 1-12 Credits.

Continuation of GEOG 3189. Prerequisites: 12 credits of geography and permission of the instructor.

GEOG 3193. Environmental Law and Policy. 3 Credits.

An introduction to selected pieces of major environmental legislation. The role of the courts and bureaucracy in implementing and interpreting legislation and their impacts on decision making. Designed for students with no training in law. Prerequisites: None.

GEOG 3194. Special Topics in Physical Geography. 3 Credits.

Topics covering physical principles of the Earth's physical geography and natural environment including the hydrosphere, atmosphere, biosphere, and lithosphere. Enrollment requires permission of the instructor.

GEOG 3195. Special Topics in Human Geography. 3 Credits.

Topics in human geography including population, urban, cultural, political and economic issues amongst others. Enrollment requires permission of the instructor.

GEOG 3196. Special Topics in Techniques. 3 Credits.

Topics covering specific skills in geographic information systems and field methods. Enrollment requires permission of the instructor.

GEOG 3197. Special Topics in Regional Geography. 3 Credits.

Various topics in regional geography, including world regional geography as well studies of specific regions of interest. Enrollment requires permission of the instructor.

GEOG 3198. Special Topics. 3 Credits.

Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: GEOG 1001 or GEOG 1002.

GEOG 3218. Arctic Systems. 3 Credits.

Arctic regions examined from an interdisciplinary perspective, linking different elements of physical and human geography; Arctic climate, oceans, landscapes, and ecosystems; key issues involving interaction between humans and the environment; climate change and its effects in the Arctic. Prerequisite: GEOG 1002.

GEOG 3810. Planning Cities. 3 Credits.

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Same as AMST 3810. Prerequisite: GEOG 1001.

GEOG 4195. Proseminar in Geographic Thought. 3 Credits.

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

GEOG 4195W. Proseminar in Geographic Thought. 3 Credits.

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Permission of the advisor required prior to enrollment.

GEOG 4199. Internship. 1-3 Credits.

Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. May be repeated for credit to a maximum of 6 credits. Prerequisites: 12 credits of geography courses and permission of the instructor.

GEOG 4307. Digital Image Processing and Analysis. 3 Credits.

Land use/land cover change analysis using satellite and aircraft platforms. Digital image processing techniques, analysis, and applications. Prerequisites: GEOG 2104, GEOG 3105, and GEOG 3107.

GEOG 4308. Programming for Geospatial Applications. 3 Credits.

Fundamental concepts for creating Python scripts in ArcGIS; guidelines for proper Python syntax, troubleshooting common errors, and using loops to test for conditions and execute different code based on the results. Prerequisites: GEOG 2104, GEOG 3105, and GEOG 3106.

GEOG 4309. GIS for Emergency Management. 3 Credits.

Introduction to the theoretical principles of geographic information systems and examination of its history, current uses, and potential for emergency management through case studies, guest lectures, and hands-on training on various GIS products. Prerequisites: GEOG 3106.

GEOG 4310. Geovisualization and Cartography. 3 Credits.

Introduction to cartographic design from gathering data to the final visualization; specific components involved in mapmaking, including purpose, generalization, and symbolization. Prerequisites: GEOG 2104 and GEOG 3106. Same As: GEOG 6310.

GEOG 4311. Open Source Solutions for Geospatial Project Management. 3 Credits.

Geospatial project management, from design through implementation. Students work exclusively with open source technology for data capture, management, analysis, and communication; open source solutions and the effectiveness and sustainability of project management. Prerequisite: GEOG 3106. Same As: GEOG 6311.

GEOG 5099. Variable Topics. 1-99 Credits.**GEOG 6201. Geographic Thought. 3 Credits.**

For first-year master's students, a survey of geographic thought and theories. Emphasis on contemporary issues in geography and on the development of research.

GEOG 6207. Urban Planning and Development. 3 Credits.

Selected problems in urban and regional planning: applications of zoning, environmental controls, and other techniques for achieving sustainable urban development.

GEOG 6208. Land Use and Urban Transportation Planning. 3 Credits.

Relationships between land use and the movement of goods and people. Examination of land use and transportation planning principles, issues, and techniques. Roles of public and private interests in land use and transportation planning and management.

GEOG 6218. Arctic Systems. 3 Credits.

Aspects of Arctic regions from an interdisciplinary perspective that links elements of physical and human geography; Arctic climate, oceans, landscapes, and ecosystems; interaction between humans and environment; climate change. Prerequisite: GEOG 1002.

GEOG 6219. Seminar: Climatology. 3 Credits.

Inadvertent climate modification due to urbanization and impacts on environmental and human health.

GEOG 6220. Seminar: Climatic Change. 3 Credits.

Examination of natural and human-induced climatic change, at global, regional, and local scales.

GEOG 6222. Seminar: Resources and the Environment. 3 Credits.

Topics related to the spatial variations and interrelationships of resources and the environment; applications of geographic information systems and remote sensing. Prerequisite: permission of instructor.

GEOG 6223. Seminar: Population and Health. 3 Credits.

Interrelationships between population characteristics and dynamics and impacts on human health.

GEOG 6224. Seminar: Political Geography. 3 Credits.

Examination of political factors in location theory and analysis of the nature of political territories and conflict.

GEOG 6225. Seminar: Transportation and Development. 3 Credits.

Transportation and communication in the organization of space.

GEOG 6226. Water Resources Policy and Management. 3 Credits.

The history and practice of water resources policy and management in an integrated context; the impact of urban and agricultural runoff on water quality; provision of wastewater and water quality services; water supply, water allocation, and scarcity; and modification of waterbodies for the purposes of flood control, hydropower, navigation, and recreation.

GEOG 6230. Seminar: Environmental Issues in Development. 3 Credits.

A consideration of the geographical dimensions of the links between development and the environment.

GEOG 6232. Migration and Development. 3 Credits.

Analysis of migration's impact on development at various scales for both the sending and receiving localities.

GEOG 6233. Social-Ecological Systems. 3 Credits.

Exploration of social processes and ecological dynamics using interdisciplinary approaches that borrow tools and techniques from the social and natural sciences and traditional knowledge systems.

GEOG 6243. Seminar: Urban Geography. 3 Credits.

Topics concerning social, political, economic, and environmental issues in U.S. cities.

GEOG 6244. Urban Sustainability. 3 Credits.

Urban sustainability and environmental issues in developed and developing cities.

GEOG 6245. Water Resources Policy and Management. 3 Credits.

This course examines the history and practice of water resources policy and management in the context of integrated water resource management. Thus, the course addresses management issues and policy responses to such topics as the impacts of urban and agricultural runoff on water quality; provision of wastewater and water quality services; water supply, water allocation and scarcity; and modification of waterbodies for the purposes of flood control, hydropower, navigation, and recreation. In addition, non-human water requirements: e.g. for fish and wildlife, as well as the need to preserve the natural ecosystems that provide and sustain water resources are central to each discussion. Management and policy issues in the United States and worldwide at a range of scales (local, state, federal and international) will be examined. In the course of these examinations, students gain an understanding of how current issues such as growing populations, increasing affluence, and climate change may impact water resource policy and management.

GEOG 6250. Geographical Perspectives on Development. 3 Credits.

Theory and debates surrounding economic development in a globalizing world, with case studies.

GEOG 6261. Geographical Perspectives on Latin America. 3 Credits.

Natural resources, the environment, and population dynamics through time.

GEOG 6262. Geographical Perspectives on the Middle East. 3 Credits.

Examination of selected topics related to political, economic, social, cultural, and geographic patterns and processes in the region.

GEOG 6265. Geography of Russia and Its Neighbors. 3 Credits.

A deeper understanding of Post-Soviet geography with a focus on the physical and environmental characteristics of the region, geography of natural and human resources, ethnic, cultural and religious diversity, characteristics of economic and political regions, and recent geopolitical developments.

GEOG 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ SOC 6290/ STAT 6290.

GEOG 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ SOC 6291/ STAT 6291.

GEOG 6292. Qualitative Methods in Geography. 3 Credits.

Qualitative research methods, including questionnaires, focus groups, in-depth interviews, repeat photography, observation, reflective mapping, coding, and map interpretation that help appreciate the human experience and build upon ways to produce knowledge.

GEOG 6293. Special Topics. 3 Credits.

Consideration of geographic aspects of topical social or environmental problems. May be repeated for credit provided the topic differs. Credit cannot be earned for this course and IAFF 6118.

GEOG 6295. Research. 1-12 Credits.

May be repeated for credit.

GEOG 6299. Internship. 1-3 Credits.

GEOG 6300. Geography Capstone Internship. 3 Credits.

This course provides hands-on experiential learning in a local government agency, NGO, or corporation while allowing the candidate to use his/her geographical skills in a real world setting. Restricted to graduate students in the geography program. Prerequisite: GEOG 6201.

GEOG 6303. Introduction to Remote Sensing. 3 Credits.

Theoretical, technical, and applied aspects of remote sensing as a tool for monitoring and managing Earth's resources.

GEOG 6304. Geographical Information Systems I. 3 Credits.

Fundamentals of cartography; geographic data structure and geographic information systems.

GEOG 6305. Geospatial Statistics. 3 Credits.

Nature of geographical inquiry and the analytical and statistical methods used in the study of spatial processes and patterns.

GEOG 6306. Geographical Information Systems II. 3 Credits.

Advanced principles of geographic information systems and their use in spatial analysis and information management. Prerequisites: GEOG 6304 and GEOG 6305.

GEOG 6307. Digital Image Processing. 3 Credits.

This course introduces students to the theoretical, technical and applied aspects of remote sensing as a tool for monitoring and managing earth resources. This course provides students with the knowledge for analyzing and applying remotely sensed data for problem solving as it applies to land cover. Prerequisite: GEOG 6304.

GEOG 6308. Programming for Geospatial Applications. 3 Credits.

Fundamental concepts for creating Python scripts in ArcGIS; guidelines for proper Python syntax, techniques to troubleshoot common errors, and using loops to test for conditions and execute code based on results. Prerequisites: GEOG 6304 and GEOG 6305.

GEOG 6309. GIS for Emergency Management. 3 Credits.

This course introduces students to the theoretical principles of geographic information systems and examines its history, current uses and potential for emergency management through case studies, guest lectures and hands-on training on various GIS products. Prerequisite: GEOG 6304.

GEOG 6310. Geovisualization and Cartography. 3 Credits.

Introduction to cartographic design; components of mapmaking, including purpose, generalization, and symbolization; spatial thinking and effective audience-specific communication. Prerequisite: GEOG 6304.

GEOG 6311. Open Source Solutions for Geospatial Project Management. 3 Credits.

Geospatial project management, from design through implementation. Students work exclusively with open source technology for data capture, management, analysis, and communication; open source solutions and the effectiveness and sustainability of project management. Prerequisite: GEOG 6304. Same As: GEOG 4311.

GEOG 6998. Thesis Research. 3 Credits.

GEOG 6999. Thesis Research. 3 Credits.

GEOLOGY (GEOL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GEOL 1001. Physical Geology. 4 Credits.

Lecture and laboratory. Introduction to the principal features of the composition and structure of the earth. The nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Credit cannot be earned for this course and GEOL 1005.

GEOL 1002. Historical Geology. 4 Credits.

Lecture and laboratory. Introduction to the history of the earth. Sedimentary environments, plate tectonics, origin of life, and evolution.

GEOL 1005. Environmental Geology. 4 Credits.

Lecture and laboratory. Introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments. Population evolution, natural hazards, and mineral resources.

GEOL 1099. Variable Topics. 1-36 Credits.

GEOL 2106. Oceanography. 3 Credits.

The ocean with its many environments represents the last largely unexplored frontier on earth. Origin of the ocean systems and plate tectonics, ocean habitats and their biota, marine hydrology and ocean currents; air-sea interaction and climate control; ocean mapping techniques; environmental regulations covering marine resources. Laboratory fee. Prerequisite: GEOL 1001 or GEOL 1005.

GEOL 2111. Mineralogy. 4 Credits.

Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and ore minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Laboratory fee. Prerequisites: GEOL 1001 or GEOL 1005; or permission of the instructor.

GEOL 2112. Igneous and Metamorphic Petrology. 4 Credits.

Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an introduction to petrologic analysis of igneous and metamorphic mineral systems. Prerequisite: GEOL 2111 or permission of the instructor. Laboratory fee.

GEOL 2122. Structural Geology. 3 Credits.

Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisites: GEOL 1001 or GEOL 1002 or GEOL 1005.

GEOL 2151. Introduction to Paleontology. 3 Credits.

Review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Prerequisites: GEOL 1002.

GEOL 2190. Special Topics in Geology. 1-3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

GEOL 2333. Evolution and Extinction of Dinosaurs. 3 Credits.

The 165-million-year history of dinosaurs; different groups and their evolution, end-Cretaceous extinction event, the origin of birds, and the biology of the group. Prerequisites: BISC 1111 and BISC 1112; or GEOL 1001 and GEOL 1002; or GEOL 1002 and GEOL 1005. Credit cannot be earned for this course and BISC 2333.

GEOL 3099. Variable Topics. 1-12 Credits.**GEOL 3118. Volcanology. 3 Credits.**

Fundamental principles and geologic processes associated with volcanism. Eruptive styles, processes leading to magma production and transport, triggering mechanisms, plate tectonic settings, volcanic hazards, and disaster mitigation. Case histories of selected volcanic eruptions examined in detail. Laboratory fee. Prerequisites: GEOL 2111 or permission of the instructor.

GEOL 3119. Field Experience in Volcanology. 1 Credit.

Weeklong field exercise at a major volcanic center in the western United States; field-based interpretation and analysis of volcanic and related rocks. Classroom discussion focuses on the processes responsible for volcanism. Deposit for expenses is required. Recommended background: Prior completion or concurrent enrollment in GEOL 2112 and GEOL 3118.

GEOL 3123. Crustal Dynamics. 3 Credits.

Basic plate tectonic processes and features; the plate tectonic paradigm in historical evolutionary framework. Students present an original research project orally and in writing. Prerequisite: GEOL 2122. Laboratory fee.

GEOL 3128. Sedimentology and Stratigraphy. 3 Credits.

Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 1001.

GEOL 3129. Sedimentology and Stratigraphy Lab. 1 Credit.

Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Prerequisite: GEOL 2112.

GEOL 3131. Global Climate Change. 3 Credits.

Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change.

GEOL 3138. Hydrogeology. 3 Credits.

Principles and theory of basic and applied hydrology: surface water hydrology, geology of groundwater systems, groundwater flow, surface water-groundwater interactions, contamination and remediation technologies, conservation, management, and regulations. Laboratory fee. Prerequisites: GEOL 2111 and GEOL 2122; and MATH 1221 or MATH 1231; or permission of the instructor.

GEOL 3140. Geochemistry. 3 Credits.

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous geochemistry; geochemical cycles. Prerequisites: GEOL 1001 or GEOL 1005; and CHEM 1111 and CHEM 1112. (Same as CHEM 3140).

GEOL 3189. Geophysics. 3 Credits.

Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: GEOL 2122 or permission of instructor.

GEOL 3191. Geology of Energy Resources. 3 Credits.

Principles of geology applied in energy exploration, exploitation, and production; the geology of energy resources in ocean basins; borehole and surface geophysical applications and reconnaissance mapping techniques; management and regulation of energy resources; sustainability, efficiency, and conservation issues. Laboratory fee. Prerequisites: GEOL 2122 or permission of the instructor.

GEOL 4195. Geological Field Methods. 4 Credits.

Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains and the plate tectonic processes responsible for their formation emphasized. Field trip fee. Prerequisites: GEOL 2111 and GEOL 2122.

GEOL 4195W. Geological Field Methods. 4 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GEOL 4199. Undergraduate Research or Reading. 1-12 Credits.

Problems approved by the staff. May be repeated for credit.

GEOL 5099. Variable Topics. 1-99 Credits.

GERMANIC LANGUAGE AND LITERATURE (GER)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students

- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GER 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

GER 1001. First-Year German I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing German. Laboratory fee.

GER 1002. First-Year German II. 4 Credits.

Continuation of GER 1001. Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1001. Laboratory fee.

GER 1003. Second-Year German I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1002. Laboratory fee.

GER 1004. Second-Year German II. 4 Credits.

Continuation of GER 1003. Fundamentals of speaking, understanding, reading, and writing German. Prerequisite: GER 1003. Laboratory fee.

GER 1005. Intensive Beginning German I. 8 Credits.

Intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to GER 1001–GER 1002). Recommended for majors. Laboratory fee.

GER 1006. Intensive Beginning German II. 8 Credits.

Continuation of GER 1005. Intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to GER 1003–GER 1004). Prerequisite: GER 1002 or GER 1005. Recommended for majors. Laboratory fee.

GER 1099. Variable Topics. 1-36 Credits.

GER 2009. Intermediate German I. 3 Credits.

Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisites: GER 1004 or GER 1006; or permission of the instructor.

GER 2010. Intermediate German II. 3 Credits.

Continuation of GER 2009. Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisites: GER 1004 or GER 1006; or permission of the instructor.

GER 2091. Introduction to German Literature—in English I. 3 Credits.

Survey of German literature 1700 to 1830, including the Enlightenment through Sturm und Drang, classicism, and romanticism.

GER 2092. Introduction to German Literature—in English II. 3 Credits.

Continuation of GER 2091. Survey of German literature 1830 to 1950, including Young Germany through realism, naturalism, expressionism, and the literature of the Third Reich years (exile literature and inner emigration).

GER 2101. Readings in Contemporary German I. 3 Credits.

Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: for GER 2101, GER 1004 or GER 1006.

GER 2102. Readings in Contemporary German II. 3 Credits.

Continuation of GER 2101. Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: GER 2101.

GER 2109. Advanced Conversation and Composition. 3 Credits.

Introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisites: GER 2010 or permission of the instructor.

GER 2109W. Advanced Conversation and Composition. 3 Credits.

An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisites: GER 2010 or permission of the instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and GER 2109.

GER 2110. Germany in the Age of Globalization. 3 Credits.

Continuation of GER 2109. An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisites: GER 2010 or permission of the instructor.

GER 2110W. Germany in the Age of Globalization. 3 Credits.

Continuation of GER 2109. An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: GER 2010 or permission of the instructor.

GER 2111. Business German. 3 Credits.

Introductory course preparing students to function in business-related communicative situations, with an emphasis on language skills necessary for work in areas such as marketing and finance. Prerequisites: GER 2010 or permission of the instructor.

GER 2161. German Culture—in English I. 3 Credits.

The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts.

GER 2162. German Culture—in English II. 3 Credits.

Continuation of GER 2161. The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts.

GER 2165. Twentieth-Century German Literature—in English. 3 Credits.

Survey of the major trends in the works by modernist, exile, postwar, and contemporary German writers such as Kafka, Thomas Mann, Duerrenmatt, and Grass.

GER 3099. Variable Topics. 1-12 Credits.**GER 3181. History of German Cinema—in English. 3 Credits.**

A detailed historical and cultural survey of German cinema from the first moving picture devices (1895) to the expressionistic classics of the 1920s and the collapse of the Nazi film industry in 1945. All films are subtitled.

GER 3182. The Fairy Tale from the Grimms to Disney. 3 Credits.

Survey of the changing form, structure, and meaning of the fairy tale in its traditional contexts, modern transformations and critical interpretations, with readings by nineteenth-century European collectors and twentieth-century critics. Taught in English.

GER 3183. Berlin Before and After the Wall. 3 Credits.

The political, social, and cultural developments in Berlin from 1945 to the present through a reading of selected primary documents, historical analyses, and short literary texts.

GER 3184. German Thought—in English. 3 Credits.

An overview of German ideas about culture, religion, society, and politics from the sixteenth century to the present. Readings from such writers as Luther, Leibniz, Kant, Schiller, Hegel, Marx, Nietzsche, Freud, Weber, Heidegger, Adorno, and Habermas.

GER 3185. Literary Voices and the Fascist Experience—in English. 3 Credits.

A survey of writers anticipating as well as reflecting on Germany's plunge into the totalitarian abyss of fascist politics, including H. Mann, Kafka, Juenger, Brecht, Werfel, Thomas Mann, Lenz, Frisch, Duerrenmatt, and various forms of Holocaust poetry.

GER 3186. German Women Writers of the 19th and 20th Centuries. 3 Credits.

The changing literary and social roles of German women of the 19th and 20th centuries, examined through selected readings of women's literary production and culture.

GER 3187. German Cinema after 1945. 3 Credits.

The evolution of German cinema after 1945 in relation to social and political developments in the two German states; the national and international influences on the development of East and West German film and on film since German unification. Taught in English.

GER 3188. The Lives of East Germans. 3 Credits.

Consideration of what it meant to grow up and live in the German Democratic Republic and the changes and challenges to East German identity since unification. The course draws upon historical, political, and sociological studies as well as literary and filmic representations of East German experience.

GER 3189. Dealing with the Communist Past in Germany and Eastern Europe. 3 Credits.**GER 4171. The Age of Goethe—in German. 3 Credits.**

Readings of major works of Weimar classicism in their historical and cultural context.

GER 4172. From Romanticism to Realism. 3,4 Credits.

Readings in German romanticism (Kleist, Hoffmann), literature of the "young Germany" movement (Büchner), and realism (Keller, Storm).

GER 4173. Naturalism to Expressionism. 3 Credits.

Study of various literary movements between 1880 and 1914: naturalism, impressionism, symbolism, and expressionism (Hauptmann, Hesse, Thomas Mann, Kafka).

GER 4174. Inside/Outside the Third Reich. 3 Credits.

Analysis of literary developments inside the Nazi state (propaganda literature, literature of resistance, and inner immigration) and the literature of exile (Seghers, Remarque).

GER 4175. Literature of two Germanies. 3 Credits.

Evolution of East and West German literatures after World War II, their separate developments and ultimate unification.

GER 4176. Contemporary German Literature. 3 Credits.

Analysis of works by former East and West German writers after unification as well as the generation of young German writers, who came of age after or around the time of unification. Emphasis on memoirs, family narratives, essays, and films examining Germany's transition from fascism and socialism to democracy.

GER 4195. Special Topics. 1-3 Credits.

May be repeated for credit provided the topic differs.

GER 4197. Senior Honors Thesis I. 3 Credits.

Senior honors thesis on a topic related to German language, literature, or culture. Required of and open only to honors candidates in the department.

GER 4198. Senior Honors Thesis II. 3 Credits.

Continuation of GER 4197. Senior honors thesis on a topic related to German language, literature, or culture. Required of and open only to honors candidates in the department.

GER 5099. Variable Topics. 1-99 Credits.

GOVERNMENT CONTRACTS (GCON)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

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GCON 6290. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details. Recommended background: GCON 6502 and GCON 6503.

GCON 6501. Capstone Research and Writing Project. 3 Credits.

Students produce an original project to demonstrate accumulated learning and professional development in the government contracts field. Course requirements are fulfilled through completion of either a research thesis of approximately 6,000 words or alternate projects determined in consultation with the program director. Restricted to For Master of Science in Government Contracts candidates.

GCON 6502. Formation of Government Contracts. 3 Credits.

Survey of the law pertaining to government procurement, including an analysis of the unique features of government contracting and a discussion of the functions of Congress, the executive branch, and the courts in the procurement process. Focus on the contract formation process, including techniques for awarding contracts and litigation and protests involving awards. (Same as LAW 6502).

GCON 6503. Performance of Government Contracts. 3 Credits.

Substantive problems that most frequently arise during the performance of government contracts. Interpretation of specifications and the most generally used contract clauses; analysis of the rights of the parties when performance in accordance with the terms of the contract is not obtained. Analysis of the methods that can be used by the parties to a government contract to obtain legal relief, including detailed coverage of the disputes procedure, actions for breach of contract, and forms of equitable and extraordinary relief. (Same as LAW 6503).

GCON 6504. MSGC Capstone Scholarly Writing. 1 Credit.

A research and writing project completed under the supervision of the law school that integrates students' cumulative learning experiences in and demonstrates their understanding of government contract law and business. The project addresses a current acquisition issue of interest to the student. Students are expected to produce a final paper for submission to a relevant scholarly journal for publication. Restricted to Master of Science in Government Contracts candidates.

GCON 6505. Marketing for the Government Marketplace. 3 Credits.

The key elements of the business environment that affect marketing for the federal government. Important characteristics of government versus consumer and business markets; segmentation, targeting, and positioning; brand equity and the importance of building strong brands. Key issues and decisions associated with the marketing mix (products, pricing, distribution, and promotion). Application of marketing principles and theories to federal government contracting opportunities.

GCON 6506. Pricing Issues in Government Contracts. 3 Credits.

Fundamentals of government contracts cost and pricing. The regulatory, accounting, estimating and financial foundations of cost and pricing, including Federal Acquisition Regulation ("FAR") Part 15, FAR Part 31, and Cost Accounting Standards ("CAS"). Topics examined from both contractor and government perspectives include evaluating cost and pricing of government contract proposals, negotiating fair and reasonable contract prices, evaluating requests for equitable adjustment and claims that arise in government contract performance, and settlement proposals in terminations for convenience. Case studies and class presentations allow students to practice and enhance their skills based on practical issues that arise in the cost and pricing arena.

GCON 6508. Comparative Public Procurement. 2 Credits.

Comparative study of laws, regulations, and procedures dealing with public procurement, with a focus on common issues and challenges facing government procurement systems throughout the world; approaches of the U.S. federal system compared to those of various international organizations. Restricted to students in the MS in government contracts program. Prerequisite: GCON 6515.

GCON 6509. State and Local Procurement. 2 Credits.

Common procurement methods and solutions used in state and local governments and comparison with those used in federal procurement systems; the distinct evolution of state and federal procurement legal systems and whether they should be more closely connected. Restricted to students in the MS in government contracts program. Prerequisite: GCON 6515.

GCON 6510. Foreign Government Contracting. 2 Credits.

Special legal and policy issues resulting from the emergence of a highly globalized public procurement market; export controls, anti-corruption requirements, and unique legal rules for certain types of foreign assistance. Restricted to students in the MS in government contracts program. Prerequisite: GCON 6515.

GCON 6511. Federal Grants Law. 2 Credits.

The federal financial assistance system and specific legal issues arising with respect to management of federal grants and cooperative agreements. Restricted to students in the MS in government contracts program.

GCON 6512. Government Procurement of Intellectual Property Seminar. 2 Credits.

Intellectual property law in terms of its challenges to federal government procurement rules; competing policy demands for innovation, transparency, and sound public investment in the intersection of intellectual property law and federal procurement rules. Restricted to students in the MS in government contracts program.

GCON 6513. Procurement Reform. 2 Credits.

Emerging issues in U.S. public procurement law; reforms regarding integrity, transparency, and competition; European procurement law as a comparative counter-example to U.S. law. Restricted to students in the MS in government contracts program. Prerequisite: GCON 6515. Credit cannot be earned for this course and GCON 6509.

GCON 6514. Anti-Corruption and Compliance. 2 Credits.

Domestic and international anti-corruption laws; traditional U.S. bribery and gratuity laws and the implementation and enforcement of these laws and programs; international anti-corruption efforts in enforcement and through international instruments. Restricted to students in the MS in government contracts program.

GCON 6515. Advanced Writing for Government Contracts. 2 Credits.

Understanding and analyzing the fundamental parts of the writing process to achieve greater mastery of written communication. Students reflect on their own writing process, identify areas for improvement, and develop advanced practical skills. Restricted to students in the MS in government contracts program. Prerequisites: GCON 6502 and GCON 6503.

GREEK (GREK)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GREK 1001. Beginning Classical Greek I. 4 Credits.

Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors.

GREK 1002. Beginning Classical Greek II. 4 Credits.

Continuation of GREK 1001. Study of the grammar, vocabulary, and structure of ancient Greek. Reading of Homer and selected ancient authors. Prerequisite: GREK 1001.

GREK 1099. Variable Topics. 16 Credits.**GREK 2001. Intermediate Classical Greek I. 3 Credits.**

Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: GREK 1002 .

GREK 2002. Intermediate Classical Greek II. 3 Credits.

Continuation of GREK 2001. Reading of ancient Greek prose or poetic works, such as selections from Homer, Plato, and Euripides. Review of grammar. Topics vary by year. Permission of the instructor may be substituted for the prerequisite. Prerequisite: GREK 2001.

GREK 2002W. Intermediate Classical Greek II. 3 Credits.

Continuation of GREK 2001. Reading of ancient Greek prose or poetic works, such as selections from Homer, Plato, and Euripides. Review of grammar. Topics vary by year. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Permission of the instructor may be substituted for the prerequisite. Prerequisite: GREK 2001.

GREK 3001. Major Greek Authors I. 3 Credits.

Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 .

GREK 3001W. Major Greek Authors II. 3 Credits.

Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GREK 2002 .

GREK 3002. Major Greek Authors II. 3 Credits.

Continuation of GREK 3001. Selections from a wide variety of Greek drama and poetry, suited to the needs of the class. Topics vary by year. May be repeated for credit with permission of instructor. Prerequisite: GREK 2002 or permission of the instructor.

GREK 3002W. Major Greek Authors II. 3 Credits.

Continuation of GREK 3001. Selections from a wide variety of Greek drama and poetry, suited to the needs of the class. Topics vary by year. May be repeated for credit with permission of instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: GREK 2002.

GREK 3099. Variable Topics. 1-12 Credits.**GREK 5099. Variable Topics. 1-99 Credits.**

GWTEACH (GTCH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

GTCH 1001. GWTeach Step 1: Inquiry Approaches to Teaching. 1 Credit.

First experiential course in the GWTeach program. Introduces the basics of teaching, with a focus on using inquiry to teach lessons. Includes teaching experiences in a local elementary school.

GTCH 1002. GWTeach Step 2: Inquiry-based Lesson Design. 2 Credits.

Builds on the basics of teaching learned in GTCH 1001, with a focus on inquiry-based lesson design, teaching with technology, classroom management, and analyzing student performance data. Includes teaching experiences in a local middle school. Prerequisites: GTCH 1001.

GTCH 2003. Step 1 and 2 Hybrid: Inquiry Approaches to Teaching and Lesson Design. 3 Credits.

Combination of GTCH 1001 and GTCH 1002, with emphasis on inquiry lesson design, teaching with technology, classroom management, and analyzing student performance. Includes teaching experiences in a local middle school.

GTCH 3101. Knowing and Learning in Mathematics and Science. 3 Credits.

Introduction to models of knowing and learning for classroom practice. Focus on secondary mathematics and science.

GTCH 3102. Classroom Interactions. 3 Credits.

Use of curriculum and technology in the classroom. Interplay between teachers, students, content, and the world beyond schools. Design, implement, and evaluate outcomes of instructional activities. Includes local high school teaching experiences. Prerequisites: GTCH 1001 and GTCH 1002; or GTCH 2003.

GTCH 3103. Project-Based Learning. 3 Credits.

Design of full units of connected lessons. Integration of mathematics and science content. Intensive field-based high school teaching experiences in a local school are embedded into the course. Restricted to Students in the GWTeach program with junior or senior standing or with permission of the instructor. Prerequisites: GTCH 3102. Recommended background: This is a service learning course, for more information email gwteach@gwu.edu.

GTCH 3201. Perspectives on Math and Science. 3 Credits.

Topics and episodes in the history of science and math. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Same As: PHIL 3201.

GTCH 3201W. Perspectives on Mathematics and Science. 3 Credits.

Topics and episodes in the history of mathematics and science. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Prerequisites: GTCH 1001 or permission of the instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

GTCH 3202. Research Methods in Mathematics and Science. 3 Credits.

Designing experiments to answer scientific questions and reduce systematic and random errors; using statistics to interpret experimental results. Application and implementation of science and math research in K-12 classrooms. Restricted to students in the GWTeach program with sophomore or higher standing and others with permission of the instructor. Prerequisites: GTCH 1001 and 1002; or GTCH 2003.

GTCH 3203. Functions and Modeling. 3 Credits.

Designed to strengthen and expand knowledge of secondary mathematics topics and address the unique needs of future math teachers. Explores models using linear, exponential, polynomial, and trigonometric functions. Euclidean geometry. Prerequisites: GTCH 1001 and MATH 1231 or permission of the instructor.

GTCH 3500. Topics in STEM Teaching. 1 Credit.

Issues in STEM research and education. Topics vary by semester. May be repeated for credit if topic differs. Consult the Schedule of Classes for more details. Restricted to GWTeach and minor in STEM teaching students with permission of the GWTeach Associate Director.

GTCH 3600. Pedagogy for Learning Assistants. 2 Credits.

For learning assistants in large undergraduate science courses. Integrating educational theory, pedagogy, and practice to facilitate productive classroom interactions. Credit cannot be earned for this course and CPED 6100.

GTCH 4000. Apprentice Teaching. 7 Credits.

Culminating experience for teacher certification. Twenty-five hours per week of field experience in a local school teaching in content certification area are required. Students attend a weekly seminar to discuss topics related to the profession of teaching. Restricted to GWTeach apprentice teachers with junior or senior standing. Prerequisites: GTCH 3101 and GTCH 3102; or GTCH 3103.

HEALTH AND WELLNESS (HLWL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HLWL 1099. Variable Topics. 1-36 Credits.

Variable topics.

HLWL 1101. Special Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details.

HLWL 1102. Stress Management. 3 Credits.

A holistic view of stress management, including mind, body, spirit, and emotions; dominant stressors and how they affect health and wellness.

HLWL 1103. Issues in Men's Health. 3 Credits.

Issues in men's health ranging from the physical and emotional to the spiritual and occupational.

HLWL 1104. Outdoor and Environmental Education. 3 Credits.

A conceptual and experiential introduction to outdoor education, environmental education, wilderness travel, and outdoor leadership. Materials fee.

HLWL 1105. Yoga and the Meaning of Life. 3 Credits.

The historical teachings that have contributed to the physical, psychological, and spiritual practices of yoga.

HLWL 1106. Drug Awareness. 3 Credits.

Analysis of the complex role that drugs play in contemporary society and the ethical, legal, socioeconomic, and health issues that surround their therapeutic and recreational use.

HLWL 1108. Weight and Society. 3 Credits.

Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

HLWL 1108W. Weight and Society. 3 Credits.

Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HLWL 1109. Human Sexuality. 3 Credits.

Biological and developmental aspects of human sexuality; psychological and emotional aspects of sexual behavior; sexual identity; social forces affecting sexual issues; and research trends in the area of human sexuality.

HLWL 1110. Issues in Alternative Medicine. 3 Credits.

Various modalities of alternative/complementary/integrative therapy; critical analysis and evaluation of the many dimensions of these approaches.

HLWL 1112. Issues in Women's Health. 3 Credits.

An introduction to health promotion and disease prevention pertaining especially to diseases, disorders, and conditions that are more prevalent among or unique to women or for which risk factors or interventions may differ for women and men. Topics are covered from epidemiological, sociocultural, historical, and behavioral perspectives.

HLWL 1114. Personal Health and Wellness. 3 Credits.

Survey of the various components involved in personal health and wellness, such as personal fitness, sexuality, mental health, and environmental health; application of knowledge through the use of decision making and behavior modification skills.

HLWL 1116. Lifestyle Nutrition. 3 Credits.

Introduction to nutrition that enables the student to make healthful food choices to enhance quality of life and prevention of chronic disease. Topics may include label reading, vegetarian diets, eating for exercise, and interpreting nutrient recommendations.

HLWL 1117. Lifetime Fitness. 3 Credits.

Core elements of personal fitness as applied to daily life. Emphasis on the development of functional fitness skills that can be practiced both in and out of the classroom.

HLWL 5099. Variable Topics. 1-99 Credits.

HEALTH CARE QUALITY (HCQ)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HCQ 5099. Variable Topics. 1-99 Credits.

HCQ 6200. Introduction to Health Care Quality. 3 Credits.

An overview of the US health care system and the influence of health policy development and implementation on health care quality. Introduction to fundamental concepts of health care quality, patient safety, leadership, and change management.

HCQ 6201. Building a Quality Culture. 3 Credits.

Application of leadership and organizational change theories and principles to the implementation of quality and patient safety initiatives. Focus on strategies for developing the culture and infrastructure needed to support patient safety and continuous quality improvement.

HCQ 6202. Health Care Quality Landscape. 3 Credits.

Analysis of quality and patient safety challenges in US health care with a focus on political and environmental influences.

HQC 6203. Quality Improvement Science. 3 Credits.

An introduction to quality improvement and patient safety theories, models, methods and tools and their application to quality and safety improvement challenges in health care.

HQC 6204. Health Care Quality Analysis. 3 Credits.

Application of measurement, data management and statistical analysis principles to quality improvement and patient safety challenges. Focus on the importance and design of effective measures and the selection of appropriate analysis tools.

HQC 6205. Patient Safety Systems. 3 Credits.

An examination of the epidemiology and sources of error in health care, risk assessment, and the design of processes and systems to improve patient safety. Focus on the application of process and technology-based systems to reduce the incidence of error.

HQC 6206. Health Information, Quality and Outcomes. 3 Credits.

Approaches to medical informatics to support managerial, patient care, and quality improvement decision making in clinical practice, considering ethical, legal, and social dimensions of health care.

HQC 6275. Leadership and Change. 3 Credits.

A capstone course focusing on the concept of leading change within the contexts of health professionals, health systems, and health policy. Organizational, management, and change theories as well as characteristics of personal and professional change leadership are explored in relation to expectations for successful executive leadership and performance in today's dynamic health care environments.

HEALTH CARE SCIENCE (HCS)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HCS 1011. Applied Anatomy and Physiology. 4 Credits.

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HCS 1012. Mathematics-Health Providers. 2 Credits.**HCS 1099. Variable Topics. 1-36 Credits.****HCS 2100. Clinical Medicine Review. 5 Credits.****HCS 2101. Environmental Biostatistics. 3 Credits.****HCS 2102. Food and Water Sanitation. 3 Credits.****HCS 2103. Academic Curriculum Tutorial. 1-12 Credits.****HCS 2135. Clinical Assessment II. 4 Credits.****HCS 2140. Clinical Decision Making. 2 Credits.****HCS 2153. Gynecology Outpatient: Nurse Practitioners. 1-12 Credits.**

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HCS 2154. Clinical Geriatrics. 1-12 Credits.**HCS 2158. Cardiothoracic Med Elect-PA's. 4 Credits.****HCS 2159. Dermatology Elective for Physician Assistants. 4 Credits.**

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HCS 2160. Medical Inpatient. 5 Credits.**HCS 2161. Sports Medicine for Physician Assistants. 1-12 Credits.**

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HCS 2163. Medical Outpatient. 1-12 Credits.**HCS 2166. Surgical Inpatient. 1-12 Credits.****HCS 2168. Urology. 2 Credits.****HCS 2169. Obstetrics and Gynecology. 1-12 Credits.****HCS 2172. Pediatric Outpatient. 1-12 Credits.****HCS 2173. Special Project Elective - PA/MPH Students. 4 Credits.**

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HCS 2175. Primary Care Preceptorship. 1-12 Credits.**HCS 2176. EMed Elective For PA's. 4 Credits.****HCS 2177. General Medicine Elective for Physician Assistants. 4-6 Credits.**

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HCS 2178. Emergency Medicine. 1-12 Credits.**HCS 2180. Practicum in Environmental Health. 7 Credits.**

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HCS 2186. Orthopaedics Elective for Physician Assistants. 4 Credits.

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HCS 2187. Radiology Elective for Physician Assistants. 4 Credits.

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HCS 2188. Shock Trauma Elective for Physician Assistants. 4 Credits.

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HCS 2189. Alcohol Rehabilitation Unit. 2 Credits.

HCS 2190. Dermatology. 1,2 Credit.

HCS 2191. Eye, Ear, Nose, and Throat. 4 Credits.

HCS 2192. Orthopaedics. 4 Credits.

HCS 2194. Practicum in Gerontology and Geriatric Care. 1-12 Credits.

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HCS 2195. Ophthalmology. 4 Credits.

HCS 2197. Current Topics in Bioethics. 1 Credit.

HCS 2198. Psychiatry. 4 Credits.

HCS 4199. Independent Study. 1-12 Credits.

HCS 5099. Variable Topics. 1-99 Credits.

HCS 6201. Practicum in Geriatric Care. 1 Credit.

HCS 6202. Introduction to Health Policy. 1 Credit.

HCS 6203. Spirituality, Healing, and Art in Medicine. 1 Credit.

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HCS 6208. Clinical Experience in Urban Health Care. 1 Credit.

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HCS 6228. Preclinical Primary Care Apprenticeship. 2 Credits.

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HCS 6230. Statistical Applications for Health Professionals. 3 Credits.

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HCS 6231. Research Design. 3 Credits.

HCS 6232. Methods in Reading Medical Literature. 1 Credit.

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HCS 6233. Epidemiology/Med Decision Makng. 1 Credit.

HCS 6274. Graduate Clinical Practicum. 3 Credits.

HCS 6502. Organztn/Financing-Health Care. 3 Credits.

HCS 6504. Med Law-the Attending Physician. 3 Credits.

HCS 6505. Biomedical Ethics. 5 Credits.

HCS 6506. Medical Humanities. 1-12 Credits.

HCS 8360. Family Practice Preceptorship. 1-12 Credits.

HCS 8361. Rural Family Practice Precepтр. 1-12 Credits.

HCS 8362. Rural Family Practice Precepтр. 1-12 Credits.

HCS 8369. Issues in Health Care. 2 Credits.

HCS 8390. Extramural HCS Elective. 1-12 Credits.

HCS 8391. Extramural HCS Elective. 1-12 Credits.

HCS 8392. Extramural HCS Elective. 1-12 Credits.

HCS 8393. Extramural HCS Elective. 1-12 Credits.

HCS 8394. Extramural HCS Elective. 1-12 Credits.

HEALTH SCIENCES PROGRAMS (HSCI)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSCI 1101. Careers in Health Care. 1 Credit.

Introduction to health professions and an orientation to the U.S. health care system; training and educational pathways required for various health professions.

HSCI 1102. Medical Terminology I. 3 Credits.

First in a two-course series introducing medical vocabulary and terms related to the anatomy, physiology, pathology, and treatment of select systems; the gastrointestinal, respiratory, cardiovascular, blood, lymphatic, integumentary, skeletal, and muscular systems. Recommended background: Prior completion of a course in biology.

HSCI 1103. Medical Terminology II. 3 Credits.

Second in a two-course series covering medical vocabulary and terms related to the anatomy, physiology, pathology, and treatment of select systems; the nervous, urinary, reproductive, endocrine, ophthalmic, and otolaryngologic systems. Prerequisite: HSCI 1102. Recommended background: prior completion of a course in biology.

HSCI 1106. Introduction to Biotechnology for Health Sciences. 3 Credits.

Concepts in biotechnology with special emphasis on issues and advances in medicine and health care. Restricted to Students in SMHS.

HSCI 1107. Introduction to Sterile Processing. 3 Credits.

Concepts and terminology in perioperative care; basic surgical instrumentation, inventory control, and sterile processing standards. Restricted to SMHS students. Prerequisites: HSCI 1101, HSCI 1102 and HSCI 1103.

HSCI 1108. Introduction to Food and Nutrition. 3 Credits.

Introduction to food and nutrition and their impact on health and wellness; nutrients and metabolism, dietary and food practices, obesity, nutrient requirements across the lifespan, access to proper nutrition, and commercial messages in nutrition and advertising. Prerequisites: HSCI 1102 and HSCI 1103.

HSCI 1109. Introduction to Surgical Sciences. 3 Credits.

Introduction to surgical technology; terminology, sterilization processes, surgical instrumentation, techniques, and basic case management. Restricted to SMHS students. Prerequisites: HSCI 1102 and HSCI 1103.

HSCI 1110. Concepts of Pathophysiology and Health. 3 Credits.

Introduction to concepts of pathophysiology and health with special emphasis on issues and advances in nursing and health care. Restricted to students in the Health Sciences program. Prerequisites: HSCI 1102 and HSCI 1103.

HSCI 1114. Foundations of Nursing I. 3 Credits.

Fundamental concepts of nursing with perspectives on the nursing profession as a cornerstone of the contemporary healthcare landscape.

HSCI 1115. Foundations of Nursing II. 3 Credits.

Builds on material introduced in HSCI 1114. Application of nursing theory, assessment, and critical thinking to navigate common conditions and issues facing the contemporary healthcare landscape. Recommended background: Prior completion of HSCI 1114.

HSCI 2050. Foundations of Health Equity. 3 Credits.

The cross-cutting nature of the social determinants of health and clinical and biomedical implications in practice and research settings.

HSCI 2100. Writing and Composition in the Health Sciences. 3 Credits.

Basic writing mechanics and methods for developing paragraphs and essays; conceptualizing papers, such as crafting outlines and assessing sources; and basics of APA style. Students practice analyzing writing through peer review exercises.

HSCI 2101. Psychosocial Aspects of Health and Illness. 3 Credits.

Comprehensive introduction to the psychological and social aspects of health and wellness. Emphasis on the development of communication skills and the establishment of caring relationships. Discussions of special situations such as working with dying patients and patients with self-destructive behaviors.

HSCI 2102. Pathophysiology. 3 Credits.

Biomedical and scientific framework for the understanding of human disease mechanisms and biologic processes. Overview of infectious, immunologic, cardiovascular, genetic, respiratory, gastrointestinal, neoplastic, reproductive, renal, hematologic, neurologic, and musculoskeletal diseases.

HSCI 2103. Health Policy and the Health Care System. 3 Credits.

Incorporates economic theory and policy analysis methodology to analyze the impact of changes in the health care system on the practice of health sciences professionals and the quality and process of health care. Development of critical thinking skills through review of current medical literature.

HSCI 2104. Management of Health Science Services. 3 Credits.

Application of management and organizational principles to the delivery of services provided by health sciences disciplines. Issues addressed include information systems, leadership, team building, fiscal management, human resources management, quality improvement, and management of conflict and change.

HSCI 2105. Current Issues in Bioethics. 3 Credits.

Basic issues, approaches, and requirements of ethically acceptable decision making with patients, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care.

HSCI 2107. Health Care in Literature. 3 Credits.**HSCI 2108. Quality Improvement in Health Care. 3 Credits.**

Analysis of the structures in place to enhance the quality of health care delivery and political and economic influences that affect quality improvement programs. Assessment of specific interventions to enhance health care from the perspectives of providers and patients.

HSCI 2109. Trends and Innovations in Health Care. 3 Credits.

Examination of new technologies, health care delivery models, and the phenomenon of sophisticated consumers. Assessment of the impact of science, technology, ethics, and government on the provision of health care.

HSCI 2110. Disease Prevention and Health Promotion Concepts. 3 Credits.

Students create a proposal to engage a local community in program planning to achieve health equity. The emphasis is on achieving health equity through disease prevention and health promotion to advance community, population, and public health.

HSCI 2111. Development of the Health Care Professions. 3 Credits.

The evolution of the health care professions; basic information pertinent to all aspects of the support and delivery of health care services; and legal and professional considerations related to health occupations.

HSCI 2112. Writing in the Health Sciences. 3 Credits.

Introduction to the health sciences literature. Emphasis is on construction, evaluation and organization of written communication of health sciences information.

HSCI 2112W. Writing in the Health Sciences. 3 Credits.**HSCI 2113. Informatics in the HSCI. 3 Credits.**

Introduction to health care informatics, including management and clinical information systems and their role in administration, clinical, and research arenas in health care.

HSCI 2114. Health Care in Developing Nations. 3 Credits.

An introduction to health concerns in the developing world. Students explore interventional approaches for such issues as malaria, HIV/AIDS, clean water, maternal and women's health, and childhood mortality.

HSCI 2117. Introduction to Statistics for Health Sciences. 3 Credits.

Foundational concepts in descriptive and inferential statistics, including probability, sampling distribution, estimation, correlation, t-Test, simple linear regression, and chi-square. Application of statistical concepts and methods within the health sciences.

HSCI 2118. Global Women's Health. 1 Credit.

The social, cultural, and economic conditions affecting health outcomes for women and girls across the globe. Through a human rights lens, students explore the core women's health issues outlined by the World Health Organization (WHO).

HSCI 2130. Primary Care Skills Practicum. 2 Credits.**HSCI 2131. Adult Primary Care Practicum. 2 Credits.**

Clinical course on caring for adults with common primary care problems and understanding concepts of health promotion and disease prevention. Students conduct in-depth examinations of specific primary care problems; review current pathophysiology literature; explore pharmacologic and non-pharmacologic treatment modalities; and diagnose and manage acute and chronic problems prominent in ambulatory health clinics serving the general adult population. A minimum of 80 clinical hours is required.

HSCI 2132. Primary Care Mental Health Practicum. 2 Credits.

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HSCI 2133. Specialized Clinical Experience. 2 Credits.

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HSCI 2190. Independent Study in Clinical Health Sciences. 1-12 Credits.

Independent study and special projects involving student-defined learning objectives. Permission of the faculty member directing the study is required prior to enrollment.

HSCI 2195. Special Topics in Health Sciences. 1-3 Credits.

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HSCI 2503. Survey of Medical Terminology. 1 Credit.

Basic medical terminology and vocabulary commonly used in health care. For pre-medical students and other pre-health professions. Restricted to SMHS students.

HSCI 3100. Applied Health Equity in Washington, DC. 1 Credit.

Introduction, through community engagement, to the historical health disparities and long-term health inequities faced by many low-income Black residents of Washington, DC. Recommended background: Prior completion of an introductory public health course.

HSCI 3101. General Chemistry I. 4 Credits.

First course in a two-course series in general chemistry with corresponding lab activities. Focus on fundamental laws, theories, and mathematical concepts of chemistry. Students must have program standing or permission of the instructor to enroll.

HSCI 3102. General Chemistry II. 4 Credits.

Second course in a two-course series in general chemistry with corresponding lab activities. Focus on fundamental laws, theories, and mathematical concepts of chemistry. Students must have program standing or permission of the instructor to enroll. Prerequisites: HSCI 3101 with a minimum grade of C-.

HSCI 3103. Organic Chemistry I. 4 Credits.

First in a two-course series. Introduction to the structure, reactivity, and properties of organic compounds. Includes corresponding laboratory activities. Restricted to students in the post-baccalaureate certificate in pre-medicine program. Prerequisites: HSCI 3101 and HSCI 3102 or equivalent with a minimum grade of C-.

HSCI 3104. Organic Chemistry II. 4 Credits.

Continuation of HSCI 3103. Metabolic pathways provide the cellular framework for energy acquisition and utilization in living systems. Emphasis on the critical role that organic compounds play in these processes. Restricted to students in the post-baccalaureate certificate in pre-medicine program. Prerequisites: HSCI 3101, HSCI 3102, and HSCI 3103 or equivalent with a minimum grade of C-.

HSCI 3105. Biochemistry. 3 Credits.

Concepts and principles of biochemistry applicable to health care. Methods and approaches are correlated with the biochemical basis of human disease. Prerequisite: HSCI 3103.

HSCI 3106. Microbiology for Health Sciences. 3 Credits.

Principles of microbiology with emphasis on microorganisms that impact health and cause human disease. Topics include an overview of microbiology and aspects of medical microbiology, identification and control of pathogens, disease transmission, host resistance, and immunity. Prerequisites: One course in biology or chemistry or anatomy and physiology; or MLS 2000 or MLS 2001.

HSCI 3107. Introduction to Biochemical Pharmacology. 1 Credit.

The theory of drug action; practical issues that must be addressed when translating knowledge from molecular and cellular research into drug discovery and development. Restricted to students in the post-baccalaureate pre-medicine certificate program. Recommended background: Concurrent enrollment in HSCI 3105.

HSCI 3108. Microbiology for Health Sciences Laboratory. 1 Credit.

Practical study of bacteria, yeasts, molds, protozoa, and viruses in relation to the health professions. Prerequisites: BISC 1111 and BISC 1112. Recommended background: Prior completion of 3 credits in microbiology lecture or concurrent registration in HSCI 3106.

HSCI 3117. Principles of Biostatistics for Health Sciences. 3 Credits.

Biostatistics for health science professionals. Concepts and methods, including confidence intervals, ANOVA, multiple and logistic regression, and non-parametric analyses. Scientific literature is used to provide a comprehensive context in which analytical evidence is employed to support practices in the health sciences. Prerequisites: HSCI 2117 or permission of the instructor.

HSCI 3201. Biology I. 4 Credits.

First course in a two-course series. Develops a foundation in cellular and molecular biology, metabolism, genetics, evolution, and population biology. Includes a corresponding laboratory component. Restricted to students in the post-baccalaureate certificate in pre-medicine program or approval of the instructor.

HSCI 3202. Biology II. 4 Credits.

Continuation of HSCI 3201. Develops a foundation in the principles of cellular communication and the form and function of the human body with a corresponding laboratory component. Restricted to students in the post-baccalaureate certificate in pre-medicine program or with the approval of the instructor. Prerequisites: HSCI 3201 or equivalent with a grade of C- or above.

HSCI 3301. Physics I. 4 Credits.

Classical physics, including mechanics, Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3302. Physics II. 4 Credits.

Continuation of HSCI 3301 Physics I, including electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Didactic lectures augmented by a corresponding hands-on laboratory component.

HSCI 3401. Current Topics in Health Care I. 1 Credit.

First in a two-course sequence designed for students who plan to become health care professionals; issues in health care delivery, roles and scope of practice in health care professions, and current topics health care.

HSCI 3402. Current Topics in Health Care II. 1 Credit.

Second in a two-course sequence designed for students who plan to become health care professionals. Continuing coverage of health care delivery, current topics in health care, and how issues raised apply to the needs of a diverse population. Prerequisite: HSCI 3401.

HSCI 3501. Human Anatomy and Physiology I. 4 Credits.

First in a two-course sequence. The structure and function of cells, tissue, organs, and systems in the human body. Restricted to SMHS students.

HSCI 3502. Human Anatomy and Physiology II. 4 Credits.

Second in a two-course sequence. The structure and function of cells, tissue, organs, and systems in the human body. Restricted to SMHS students. Prerequisite: HSCI 3501.

HSCI 4102. Human Physiology in Extreme Environments. 3 Credits.

The course examines human physiology and the pathophysiology of acute illnesses and injuries, and evaluates appropriate mitigation strategies associated with living and working in extreme environments.

HSCI 4103. Health Care Law/Regulation. 3 Credits.**HSCI 4105. Case Studies in Health Care. 3 Credits.****HSCI 4106. Introduction to Epidemiology for Health Sciences. 3 Credits.**

An introduction to epidemiological methods and their applications in the prevention and control of illness, community and clinical interventions, and health services.

HSCI 4112. Research and Writing in Health Sciences. 3 Credits.

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HSCI 4112W. Research and Writing in Health Sciences. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HSCI 4198. Mentored Research I. 3 Credits.

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HSCI 4199. Mentored Research II. 3 Credits.

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HSCI 5099. Variable Topics. 1-99 Credits.**HSCI 6212. Teaching Strategies in the Health Professions. 3 Credits.**

Application of teaching and learning principles in the design of education in health professions. Illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program development and the enhancement of teaching and assessment skills.

HSCI 6213. Curriculum Development in the Health Professions. 3 Credits.

Curriculum design and assessment skills in medical and health science settings. Recommended background: prior completion of HSCI 6212 or experience with principles of adult learning.

HSCI 6223. Topics in Health Care Leadership. 3 Credits.

Theories and styles of leadership, including organizational management and values, strategic planning, communication strategies, managing change, and negotiating conflict in the context of the health care delivery system. Credit cannot be earned for this course and COHM 6235.

HSCI 6231. Advanced Pediatric Health Needs. 3 Credits.

Service delivery to children with disabilities from infancy through early schooling. Emphasis on learning disabilities, ADHD, sensory processing disabilities, and intellectual disabilities with co-occurring developmental and emotional disorders.

HSCI 6233. Pathology-Hlth Sci Students I. 1 Credit.**HSCI 6234. Pathology-Hlth Sci Students II. 3 Credits.**

Basic concepts and language of pathology, infectious diseases, and fundamental disease processes. Emphasis on pathogenesis and dynamics of disease. Causation, evolution, and morphology of pathological changes in the principal diseases of each organ system.

HSCI 6240. Issues and Trends in the Health Care System. 3 Credits.

Analysis of key contemporary issues in U.S. health and social policy that affect the design and structure of the health care system. The health policy process and initiatives that shape care delivery.

HSCI 6241. The Health Care Enterprise. 3 Credits.

An overview of global business principles related to health care systems: the management of patient-centered care delivery, marketing, finance and fiscal management principles, information technology, and quality improvement. Credit cannot be earned for this course and COHM 6245.

HSCI 6261. Foundations in Clinical and Translational Research. 3 Credits.

Overview and analysis of the translational research principles and practice through the application of basic, clinical, community health and health services research concepts.

HSCI 6262. Transdisciplinary Sem/Pract.. 3 Credits.

Transdisciplinary analysis of key translational research concepts delivered in a practicum and workshop framework. Individualized experiential practicum to address educational and experiential gaps.

HSCI 6263. Biostatistics Translational Research. 3 Credits.

Basic concepts and methods of biostatistics applied to translational research. Topics include distributions, populations and sample selection, variables, interaction and confounding, hypothesis formulation, correlation, t-tests, ANOVA, regression, and ch.

HSCI 6264. Epidemiology Translational Research. 3 Credits.

Basic concepts and methods of epidemiology and their application in measuring, studying and improving the health of populations applied to applications for translational research.

HSCI 6265. Grantsmanship in Translational Research. 3 Credits.

Writing grant proposals to fund clinical research, with an emphasis on translational research proposals. Emphasis is on persuasive communication, conceptually based hypotheses and research methods and the grant application process, including communicating.

HSCI 6270. Research Methods for the Health Professions I. 3 Credits.

Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.

HSCI 6271. Research Methods for the Health Professions II. 3 Credits.

Methodological issues of basic, applied, and clinical research. Students develop the knowledge and skills to critically appraise and synthesize research results, analyze qualitative and quantitative data, evaluate evidence-based methods, develop research questions, and identify appropriate inquiry methodologies. Students become familiar with all elements of a research proposal, including those relating to the use of human subjects and informed consent.

HSCI 6273. Bioinformatics for Genomics. 3 Credits.

Bioinformatics tools for different analytical situations; strengths and limitations of the most common bioinformatics strategies. Generalizing acquired knowledge and its underlying principles and techniques to other types of big data applications for the purpose of interpretation of results.

HSCI 6275. Transdisciplinary Research Proposals. 3 Credits.

The integration of competencies acquired throughout the program. The development and submission of a transdisciplinary research proposal that responds to a Call for Proposals from an external sponsor, such as the National Institutes of Health.

HSCI 6285. Principles of Collaboration and Team Science. 3 Credits.

Approaching health, technology, social, and environmental problems with cross-disciplinary engagement and collaboration. Foundational and practical principles and their impact on collaborative and team science engagements. Restricted to PhD candidates in translational health sciences; permission of the instructor may be substituted.

HSCI 6287. Biology of HIV/AIDS. 3 Credits.

The basic science, pathogenesis, natural history, and laboratory identification of the human immunodeficiency virus.

HSCI 6291. Advanced Topics in Health Sciences. 1-3 Credits.

Topics vary depending on current issues of interest and faculty availability. Open to undergraduates with permission of the instructor.

HSCI 6297. Independent Study for Health Professionals. 1-5 Credits.

Independent study involving analysis of a clinical topic, a patient education project, or an on-site mentored clinical research practicum.

HSCI 8212. Teaching Strategies in the Health Professions. 3 Credits.

Application of teaching and learning principles in the delivery of education in health professions; practices grounded in andragogy, contributing to curriculum program development and the enhancement of teaching and assessment skills. Restricted to SMHS students. Recommended background: experience in health care or practice as a health care professional. Credit cannot be earned for this course and HSCI 6212.

HSCI 8213. Curriculum Development in the Health Professions. 3 Credits.

Curriculum development and assessment skills in medical and health science settings. Restricted to SMHS students. Recommended background: experience in health care or practice as a health care professional. Credit cannot be earned for this course and HSCI 6213.

HEALTH SERVICES MANAGEMENT AND LEADERSHIP (HSML)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HSML 5099. Variable Topics. 1-99 Credits.**HSML 6202. Introduction to Health Services Delivery. 2 Credits.**

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

HSML 6203. Introduction to Health Management. 2 Credits.

Introduction to management theory essential for those seeking management positions in organizations providing health care or public health services. Application of the problem-solving method; extensive use of cases.

HSML 6204. Quality and Performance Improvement. 2 Credits.

Theory of quality and performance improvement in health services organizations and systems. Emphasis on the Deming method of continuous quality improvement (CQI); Six Sigma; International Organization for Standardization (ISO) standards; Baldrige criteria; accreditation programs. Prerequisite: HSML 6203.

HSML 6206. Quality and Performance Improvement. 2 Credits.

Application of epidemiology and analytical methods to improve population health, enhance decision-making, and introduce operations management. The concepts and procedures complement HSML courses for information management and finance. Prerequisites: 2 or 3 semester hours in introductory statistics.

HSML 6207. Health Services Information Applications. 2 Credits.

Organization and management of information technology in modern health care organizations with an emphasis on the acute care hospital. Use of information technology in hospital clinical, support, and administrative departments.

HSML 6208. Medical Informatics. 2 Credits.

Comprehensive study of the role and impact of IT in health services organizations. Specific emphasis on the role IT plays from managerial and clinical perspectives. Topics include ROI, privacy, error reduction, change management, and decision support systems. Prerequisite: HSML 6207.

HSML 6209. Health Services Finance. 2 Credits.

Application of health finance theory to health services organizations and systems. Budgeting process, understanding profit and loss, managing resources including accounts receivable, labor and supplies. The budget as a tool for analyzing operational changes. Prerequisites: HSML 6209.

HSML 6210. Health Services Financial Applications. 2 Credits.

Application of health finance theory to health services organizations and systems. Budgeting process, understanding profit and loss, managing resources including accounts receivable, labor and supplies. The budget as a tool for analyzing operational changes. Prerequisites: HSML 6209.

HSML 6211. Health Economics. 2 Credits.

Economics of the health care sector. An economic analysis of public policy alternatives in the health industry. Roles of the physician, hospital, insurance, and other health care markets are examined.

HSML 6212. Community Health Management and Advocacy. 2 Credits.

Concepts and techniques to planning, managing, and advocating for community health programs and services. Focus on social contract, the Precede-Proceed Model and principles of community-oriented primary care. Students study or conduct a community health promotion project. Prerequisites: HSML 6202 and HSML 6203.

HSML 6213. Health Services, Marketing, and Planning. 2 Credits.

Concepts of strategic planning and marketing as they apply to health services organizations. Particular emphasis on uses of planning and marketing techniques in managing departments and individual health services programs. Prerequisites: HSML 6202 and HSML 6203.

HSML 6215. Health Law for Managers. 2 Credits.

Sources of law and legal processes affecting health services. Administrative law and agency processes. Legal aspects of torts and contracts for physicians, staff, patients, and health services organizations and systems. Trends in health services law. Prerequisites: HSML 6202 and HSML 6203.

HSML 6216. Human Resources Management and Organizational Behavior. 2 Credits.

Theory and application of human behavior, human resource management, and labor relations policies, concepts and practices as they affect health services organizations. Primary focus is on managing people at work and developing management skills. Prerequisites: HSML 6202 and HSML 6203.

HSML 6218. Seminar: Health Services Management and Leadership. 2 Credits.

Intensive qualitative and quantitative analyses of major problem areas in health system administration and planning using the case study method. Cases cover the broad spectrum of health policy, planning and management of the health services system. Serves as the capstone course for health services students. Taken in the last semester on campus.

HSML 6221. TransLdrshp/HealthServDelivery. 2 Credits.

Current leadership thought and competencies focusing on leadership styles, motivation, change management, innovation, creativity, emotional intelligence, organizational learning, and corporate culture. Prerequisite: HSML 6203.

HSML 6222. Group Leadership and Team Facilitation. 2 Credits.

Applies management and leadership theory to small groups, e.g. committees, patient care teams, process improvement groups, task forces, etc. Methods to establish, organize, develop, and manage teams for problem-solving. Students are assigned to interdisciplinary teams as facilitators and receive feedback on their performance. Part of medical Center's service learning program—ISCOPES (Interdisciplinary Student Community-Oriented Prevention Enhancement Service). Equivalent courses may be accepted for the prerequisite. Prerequisites: HSML 6204 and HSML 6212.

HSML 6231. Management of Acute Care Hospitals. 2 Credits.

Organizing and managing acute care hospitals. Relationships and procedures of clinical, support, and administrative departments. Process analyses and applications of the Deming method of continuous quality improvement. Requirements of the Joint Commission on Accreditation of Healthcare Organizations. Prerequisites: HSML 6202, HSML 6204 and HSML 6209; or permission of the instructor.

HSML 6232. Institution and Systems Management Applications. 2 Credits.

Readings and guest speakers. Focus on management theory applied in freestanding and multi-institutional health services units. Lessons learned by health services executives are shown through vignettes and presentation of experiences. Seminar Format. Prerequisites: HSML 6202 and HSML 6203; or permission of the instructor.

HSML 6233. Delivery of Behavioral Health Services. 2 Credits.

Study of the organizations and systems to deliver behavioral health services; emphasis on organizing, managing, and financing treatment and rehabilitation facilities. Fall Prerequisites: HSML 6202, HSML 6204 and HSML 6209.

HSML 6234. Physician Practice Management. 2 Credits.

Theory and principles of practice management. Emphasis on the fundamentals of organizing, staffing, and controlling a physician practice. Financial applications and resource consumption. Prerequisites: HSML 6202, HSML 6204 and HSML 6209.

HSML 6236. Post-Acute Care Management and Leadership. 2 Credits.

Overview of the ways in which different sectors/healthcare participants are reimbursed and regulated. The changing post-acute care industry as it evolves to handle increasing demands for services.

HSML 6237. Managing the Skilled Nursing Facility. 3 Credits.

Organizing, financing, and managing the skilled nursing facility. Determining residents' needs and developing appropriate services. Accreditation Standards. Government regulations and licensing requirements. Prerequisites: HSML 6202, HSML 6204, HSML 6209 and HSML 6236.

HSML 6238. Ambulatory Care Management. 2 Credits.

Organizing and managing ambulatory care. Models, financing, institutional affiliations, estimating and planning for ambulatory care, and using medical group practice as part of comprehensive services delivery. Prerequisites: HSML 6202, HSML 6204 and HSML 6209.

HSML 6239. Managed Care. 2 Credits.

Health maintenance organizations (HMOs), preferred provider organizations (PPOs), and utilization management (UM) in fee-for-service plans. Formation, organization, contractual arrangements, and medical management of managed care regarding costs, utilization, quality, and access are analyzed from the perspectives of managed care organizations, employers, providers, and public policy. Role of government in managed care, competition and marketing of managed care plans, and relationships between plans and providers. Efficacy of managed care in public and private sectors. Prerequisites: HSML 6202, HSML 6204 and HSML 6209.

HSML 6241. Compliance and Risk Management in Health Services Delivery. 2 Credits.

Application of concepts and techniques for organizing and implementing compliance, risk management, and patient safety programs within the context of quality and performance improvement. Emphasis on organizational values as a condition to success. Recent compliance requirements (e.g., HIPAA). Equivalent courses may be accepted for the prerequisites. Prerequisites: HSML 6202 and HSML 6203.

HSML 6244. Supply Chain Management in Health Services. 2 Credits.

Theory and application of distribution management of materials, services, and information in health services organizations. Suppliers, inventory control, negotiating and managing contracts, joint and shared purchasing. Prerequisites: HSML 6204 and HSML 6206.

HSML 6245. Disaster Management for Health Care Organizations. 2 Credits.

The role and importance of health care organizations in all four phases of the disaster management life cycle (i.e., preparedness, mitigations, response, and recovery).

HSML 6246. Service Line and Project Management. 2 Credits.

Theory and application of management science techniques to manage and improve effectiveness of service lines, programs, and projects in health services. Business case development, planning, project management tools, and program evaluation. Prerequisites: HSML 6204.

HSML 6247. Consulting in Health Care. 2 Credits.

Theory and practice of health care consulting – what it is, how it is practiced, how it operates as a business, and concepts of “best practices.” Prerequisites: HSML 6202 and HSML 6203; or permission of the instructor.

HSML 6254. Seminar: Ethics in Health Services Management. 2 Credits.

Managerial implications of ethical issues in health services delivery: administrative and institutional ethics; professional codes; conflicts of interest, impaired professionals, end-of-life decisions, experimentation, and new technology; resource allocation.

HSML 6255. Leadership and Ethics I. 1.5 Credit.

Using the Myers-Briggs Type Indicator (MBTI), students determine their leadership style and practice the skills of effective leadership. Consideration of ethical principles and practices and how those practices are used by leaders. Restricted to Executive Master of Health Administration degree candidates.

HSML 6256. Leadership and Ethics II. 3 Credits.

Using the Emotional Quotient Inventory (EQI), students continue to uncover their leadership style and practice the skills of highly effective leaders. Examination of ethical principles and practices, change management, and coping mechanisms used and managed by leaders. Restricted to Executive Master of Health Administration degree candidates. Prerequisites: HSML 6255.

HSML 6258. Health System Analysis. 3 Credits.

For MHA@GW students, a concentrated on-site study of either an exemplary health system in the United States or the national health system of another country. The objective is to use critical analysis to examine and assess the structure, function, and operations of the system. Restricted to For students in the Executive Master of Health Administration degree program. Prerequisites: HSML 6255.

HSML 6259. Organization Research Project and Portfolio Presentation. 1.5 Credit.

This immersion experience provides MHA@GW students with the opportunity to synthesize the content from the program's eight learning modules and three prior immersion experiences into a coherent whole, allowing students to critically assess their growth and development as a health care leader. Corequisite: HSML 6281 Restricted to students in the MHA@GW program. Prerequisites: HSML 6255, HSML 6256 and HSML 6258.

HSML 6263. Advanced Health Financial Applications. 2 Credits.

Advanced quantitative application of health care finance and current best practices as applied to the health care industry.

HSML 6264. Health Care Management and Strategy. 5 Credits.

Detailed examination of the core principles of management and strategy that are required by persons holding management and leadership roles in health care delivery organizations.

HSML 6265. Medical Informatics and Decision Management. 5 Credits.

Fundamental principles and concepts of health care informatics and decision management, with a primary focus on clinical applications within the framework of improving quality, productivity, and satisfaction. Taught online. Restricted to students in the executive master of health administration program. Prerequisite: HSML 6264.

HSML 6266. Health Care Financial Management. 5 Credits.

The financial operations of health care organizations, including financial reporting, cost management, sources of revenue, and budgeting. Restricted to students in the executive master of health administration program.

HSML 6267. Community and Population Health. 5 Credits.

Identification and analysis of the trends, policies, and practices that affect population and community health. The ways in which engagement with the community by healthcare organizations can address health needs. Prerequisites: HSML 6264, HSML 6265, and HSML 6266.

HSML 6268. Health Economics and Quantitative Methods. 5 Credits.

A multidisciplinary course designed around two important and closely related components: quantitative methods; and the key health economics concepts, applications, and tools relevant to health care managers who are seeking to better understand, respond to, and influence a constantly evolving health care marketplace. Restricted to For students in the executive MHA program. Prerequisites: HSML 6264, HSML 6265, HSML 6266 and HSML 6267.

HSML 6269. Quality and Performance Improvement. 5 Credits.

Theory of quality and performance improvement in health services organizations and systems. Emphasis on the Deming method of continuous quality improvement (CQI). Lean; Six Sigma; IHI quality improvement program; Baldrige criteria; patient safety; and quality tools Restricted to Limited to Master of Health Administration degree students. Prerequisites: HSML 6268.

HSML 6270. Research in Health Services Administration. 2,3 Credits.

Field research. Primarily for advanced students; open to others with consent of instructor. May be repeated for credit.

HSML 6271. Residency. 3 Credits.

Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required.

HSML 6273. Residency. 3 Credits.

Work experience guided by a qualified preceptor; periodic written progress reports and a written major report or selected field projects as required.

HSML 6274. Fellowship. 3 Credits.

Work experience guided by a qualified preceptor on selected management and planning issues and problems occurring in health services facilities, programs, and agencies. Primarily for advanced master's and doctoral students; open to other students by arrangement. May be repeated for credit.

HSML 6275. Fellowship. 3 Credits.

Work experience guided by a qualified preceptor on selected management and planning issues and problems occurring in health services facilities, programs, and agencies. Primarily for advanced master's and doctoral students; open to other students by arrangement. May be repeated for credit. Prerequisites: 6274.

HSML 6280. Health Law and Policy. 5 Credits.

The relationship between the federal legal system and health care system in the United States; the roles of federal, state, and private stakeholders. Restricted to students in the MHA@GW program. Prerequisites: HSML 6264, HSML 6265, HSML 6266, HSML 6267, HSML 6268 and HSML 6269.

HSML 6281. Systems Thinking and Learning. 4 Credits.

The concepts of systems thinking and learning and their application to the management of health care organizations; general systems theory, hard and soft systems, complexity and complex adaptive systems, change management, idealized redesign, design innovation, organizational resilience, high reliability organizations, and learning organizations. Restricted to students in the MHA@GW degree program. Prerequisites: HSML 6264, HSML 6265, HSML 6266, HSML 6267, HSML 6268, HSML 6269 and HSML 6280.

HSML 6282. Organizational Research Project I. 1 Credit.

The first of a two-course sequence required of all MHA@GW program students. Students prepare to undertake the organizational research project that is one of two program deliverables. Corequisite: HSML 6269. Restricted to students in the MHA@GW degree program.

HSML 6283. Organization Research Project II. 1 Credit.

The second of a two-course sequence required of all MHA@GW program students. Students prepare to undertake the organizational research project that is one of two program deliverables. Corequisite: HSML 6280. Restricted to students in the MHA@GW degree program. Prerequisite: HSML 6282.

HSML 6285. Readings in Health Services Management. 3 Credits.

Supervised readings in special areas of health services management. Primarily for advanced students; open to others by arrangement. May be repeated for credit.

HSML 6286. Readings in Health Services Management. 3 Credits.

Supervised readings in special areas of health services management. Primarily for advanced students; open to others by arrangement. May be repeated for credit.

HSML 6290. Health IT Project Management. 5 Credits.

Overview of the various knowledge areas of IT project management with a focus on health; fundamental principles and concepts; implementation; improving quality, productivity, and satisfaction. Restricted to students in the MS in management of health informatics and analytics program. Prerequisite: HSML 6265.

HSML 6291. Population and Community Health Analytics. 5 Credits.

Concepts of population and community health; informatics and analytics for assessing population health; and best approaches to using and communicating population and community health data for decision makers and policy makers. Restricted to students in the MHIA@GW program. Prerequisites: HSML 6264, HSML 6265 and HSML 6290.

HSML 6293. The Internet of Medical Things. 3 Credits.

Study of IoMT, an emerging field that leverages connected devices, data, and technology for broader impact on patient health; key components, stakeholders, business issues and opportunities; and impact on business, technology, security, analytics, innovation, and regulation. Restricted to students in the healthinformatics@GW program (MHIA). Prerequisites: HSML 6264, HSML 6265, HSML 6290 and HSML 6291.

HSML 6294. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration. Restricted to students in the MHIA@GW program. Prerequisites: HSML 6292 and HSML 6293.

HSML 6295. Predictive Analytics. 3 Credits.

How clinical, claims, demographic, and community-level data can be used to inform decisions by patients, physicians, provider organizations, payers, and public agencies; common statistical learning methods used to predict quantitative and qualitative outcomes. Restricted to students in the MS in management of health informatics and analytics program.

HSML 6296. Health Innovations and Entrepreneurship. 5 Credits.

Introduction to emerging classes of health care information technologies and the unique challenges that the industry presents in terms of planning, implementation, and adoption of new technologies. Restricted to students in the MS in management of health informatics and analytics program. Prerequisite: HSML 6280.

HSML 6297. Health Informatics Simulation. 1.5 Credit.

Synthesis of program components into an operational application of a current health care issue from a health informatics perspective using fundamental principles and concepts of health care informatics and decision management. Restricted to students in the MS in management of health informatics and analytics program. Prerequisites: HSML 6255, HSML 6264, HSML 6265, HSML 6280, HSML 6290, HSML 6291, HSML 6293, HSML 6294, and HSML 6295.

HSML 6299. Topics in HSML. 1-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated for credit.

HEBREW (HEBR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HEBR 1001. Beginning Hebrew I. 4 Credits.

Active presentation of Hebrew as it is spoken and written today. Emphasis on comprehension, speaking, reading, and writing skills.

HEBR 1002. Beginning Hebrew II. 4 Credits.

Continuation of HEBR 1001. An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee.

HEBR 1099. Variable Topics. 16 Credits.**HEBR 2001. Intermediate Hebrew I. 4 Credits.**

Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: HEBR 1001- HEBR 1002 . Laboratory fee.

HEBR 2002. Intermediate Hebrew II. 4 Credits.

Continuation of HEBR 2001. Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: HEBR 1001- HEBR 1002 . Laboratory fee.

HEBR 3001. Hebrew Conversation and Writing. 3 Credits.

Reading and writing at the intermediate to mid-high level, with stress on conversation and oral comprehension. Contemporary cultural and social aspects presented through selections from nonfiction and short fiction, films, and TV programs. Prerequisite: HEBR 2002 or permission of instructor.

HEBR 3099. Variable Topics. 1-12 Credits.**HEBR 3101. Modern Hebrew Literary Classics in Translation. 3 Credits.**

Hebrew prose and poetry from the beginning of the Hebrew literary renaissance to contemporary Israeli literature. Emphasis on authors' treatments of tradition and modernity, dynamics of gender and ethnicity, the representation of war and peace, and the construction of literary center and periphery. Same As: HEBR 3101W.

HEBR 3101W. Modern Hebrew Literary Classics in Translation. 3 Credits.

Hebrew prose and poetry from the beginning of the Hebrew literary renaissance to contemporary Israeli literature. Emphasis on authors' treatments of tradition and modernity, dynamics of gender and ethnicity, the representation of war and peace, and the construction of literary center and periphery. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HEBR 3101.

HEBR 3102. Israeli Society and Culture: Literary Perspectives. 3 Credits.

Study of literature reflecting contemporary issues such as the conflict between the Builders Generation and their children; cultural contacts of Ashkenazim and Sephardim; image of the Arab; impact of the Holocaust; and Zionist ideals.

HEBR 3103. Israeli Cinema (in English). 3 Credits.

Film considered as both an artistic and a historical medium that reflects and comments on the history, politics, and culture of Israel. The kinds of issues that Israeli films raise and the cinematic style that distinguishes them.

HEBR 3104W. Gender and Sexuality in Israel. 3 Credits.

The roles of gender and sexuality in shaping Zionist and Israeli culture, myths, and ideals through examination of cultural works ranging from twentieth-century Hebrew literature to Israeli queer and feminist cinema; the intersection of gender and sexuality with the major political and social issues of Israeli society. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HEBR 3105. Special Topics. 3 Credits.**HEBR 3301. Modern Hebrew Fiction. 3 Credits.**

Study of selected modern Israeli short stories and poems. Prerequisites: HEBR 3001 or permission of the instructor.

HEBR 3301W. Modern Hebrew Fiction. 3 Credits.

Study of selected modern Israeli short stories and poems. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: HEBR 3001 or permission of the instructor.

HEBR 3302. The Israeli Media. 3 Credits.

Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisites: HEBR 3001 or permission of the instructor.

HEBR 3302W. The Israeli Media. 3 Credits.

Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: HEBR 3001 or permission of the instructor.

HEBR 3901. Directed Project. 1-3 Credits.

Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Enrollment by permission of the instructor and department.

HEBR 4001. Advanced Hebrew Literature I. 3 Credits.

Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisites: HEBR 3301 or permission of the instructor.

HEBR 4001W. Advanced Hebrew Literature I. 3 Credits.

Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: HEBR 3301 or permission of instructor.

HEBR 4002. Advanced Hebrew Literature II. 3 Credits.

Continuation of HEBR 4001. Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisites: HEBR 3301 or permission of the instructor.

HEBR 5099. Variable Topics. 1-99 Credits.

HISTORY (HIST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HIST 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

HIST 1011. World History, 1500-Present. 3 Credits.

An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

HIST 1020. Approaches to Women's History. 3 Credits.

Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as WGSS 1020.

HIST 1099. Variable Topics. 1-36 Credits.**HIST 1110. Foundations of Europe to 1715. 3 Credits.**

Course examines more than 4,000 years of human history, and the processes, ideas, and events from ancient Mesopotamia to 1715 that formed European societies and culture, emphasizing primary sources and their interpretation.

HIST 1120. Europe in the World Since 1715. 3 Credits.

Introduction to the history of Europe from the early eighteenth century to the mid-twentieth century, emphasizing primary sources and their interpretation.

HIST 1120W. European Civilization in its World Context. 3 Credits.

European history from the early eighteenth century to the present; mutual influence and impact between Europe and the rest of the world. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 1121. The War of Ideas in European and International History, 1750-Present. 3 Credits.

The ideas that made people fight, from the French Revolution to the worldwide uprisings of the 1960s and beyond. Key texts whose ideas of freedom and slavery, tradition and progress, state authority and revolutionary violence changed the world. The political, economic, and social contexts and effects of these texts.

HIST 1310. Introduction to American History from the Pre-Columbian Era to 1877. 3 Credits.

The political, social, economic, and cultural history of the United States from pre-Columbian America to 1877.

HIST 1311. Introduction to American History since 1877. 3 Credits.

The political, social, economic, and cultural history of the United States. Since 1877.

HIST 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. Consult the schedule of classes for more details. Instructor's permission is required.

HIST 2001. Special Topics. 3-4 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2005. Majors' Introductory Seminar. 3 Credits.

Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Same As: HIST 2005W.

HIST 2005W. Majors' Introductory Seminar. 3 Credits.

Introduction to the analytical and writing expectations of the history major. Topics vary by semester. Consult the Schedule of Classes for more details. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HIST 2005.

HIST 2006. Digital History. 3 Credits.

How the Internet and electronic technology have transformed the ways in which historians conduct research, present their work, and record, store, organize, and disseminate their findings; computational tools for data analysis.

HIST 2010. Early American Cultural History. 3 Credits.

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same As: AMST 2010.

HIST 2011. Modern American Cultural History. 3 Credits.

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict. Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as AMST 2011.

HIST 2015. Global Economic History From the Industrial Revolution to the Present. 3 Credits.

How governments and international organizations relied on market mechanisms and expert planning to spur economic growth, while at the same time creating new problems; Industrial Revolution, imperialism, Great Depression, postwar welfare state, economic development, and recent financial crises.

HIST 2016. Capitalism and Inequality from the Industrial Revolution to Present. 3 Credits.

History of global inequality and how it relates to capitalism. Introduces students to modern economic history through the lens of inequality.

HIST 2020. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Same As: AMST 2020, AMST 2020W, HIST 2020W.

HIST 2020W. Washington, DC: History, Culture, and Politics. 3 Credits.

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2020, AMST 2020W, HIST 2020.

HIST 2050. History of Jewish Civilization: From the Bible to Modernity. 3 Credits.

Introduction to the richness and diversity of Jewish civilization from antiquity to the present. Examination of evolving notions of "who" or "what" is Jewish. Key concepts including "chosenness," community, peoplehood, diaspora, redemption, and Torah. How the boundaries of Jewishness have been formed, contested, and revised over time; how Jews managed to retain their identity throughout their millennial history of migration, dispersion, and persecution; what unites Jewish civilization; and whether a unified Jewish history over centuries and continents can be traced, as distinct from multiple "histories" of the Jews in the myriad times and places in which they lived. Emphasis on analysis of primary texts and cultural objects along with contextual understanding of Jews and Judaism.

HIST 2051. Antisemitism from Origins to the Present. 3 Credits.

Thematic and theoretical survey of the history of antisemitism from the late antique period to the twentieth century.

HIST 2060. Modern Jewish History. 3 Credits.

Survey of Jewish history from the seventeenth century to the present, focusing on Europe, America, and the Middle East. The myriad political, economic, and intellectual challenges of modernity to Jewish life and how Jews responded to these challenges through various religious and secular movements and with new concepts of identity and community.

HIST 2061. Ghetto: History of a Concept. 3 Credits.

The history of the ghetto from the sixteenth century to the present. Case studies from Europe and the United States illustrate the different stages in the genealogy of the ghetto as a word, concept, metaphor, and place.

HIST 2105. Majors' Introductory Seminar: Europe. 3 Credits.

HIST 2105W. Majors' Introductory Seminar: Europe. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2112. History of Ancient Greece. 3 Credits.

A political and social survey of Bronze Age Minoan and Mycenaean civilizations, the Iron Age, Archaic Period, Classical Greece through Alexander the Great. (Same as CLAS 2112).

HIST 2113. The Roman World to 337 A.D.. 3 Credits.

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same As: CLAS 2113.

HIST 2114. Sport and Society in Ancient Greece. 3 Credits.

The place of athletics and sports in ancient Greek civilization. Religious, political, and economic contexts of athletics. Issues of class, gender, nationalism, and ethnicity.

HIST 2124. Nineteenth-Century Europe. 3 Credits.

Exploration of primary source documents and works of professional historians to introduce important issues of nineteenth-century European history.

HIST 2125. Twentieth-Century Europe. 3 Credits.

Diplomatic, political, and cultural developments from the turn of the century to the present.

HIST 2131. History of England Since 1689. 3 Credits.

Development of English civilization and its impact on Western culture.

HIST 2141. History of France Since 1789. 3 Credits.

Breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

HIST 2160. History of Germany. 3 Credits.

Political, social, and cultural development.

HIST 2180. Russia to 1801. 3 Credits.

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power; political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 2181. Russia Since 1801. 3 Credits.

Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era; contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 2301. Topics in U.S. History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

HIST 2305. Majors' Introductory Seminar: United States. 3 Credits.

HIST 2305W. Majors' Introductory Seminar: United States. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

The period 1824-1950 as a crucial era in American history; popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem.

HIST 2312. The American Civil War and Reconstruction, 1850-1877. 3 Credits.

Examination of the political crises of the 1850s to determine how and why the issue of slavery led to the American Civil War; the war's important battles, including how generals and common soldiers shaped outcomes; Reconstruction and the aftermath of the war, including how it shapes politics and race relations to the present day.

HIST 2313. History of the American West. 3 Credits.

A history of the trans-Mississippi West from first settlement by American Indians to the present; the pre-contact West, the coming of the Spanish, American settlement, the Indian Wars, women in the West, labor and racial conflict, and the West in the twentieth century.

HIST 2320. U.S. Media and Cultural History. 3 Credits.

History and analysis of twentieth-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. (Same as AMST 2320).

HIST 2321. U.S. History, 1890-1945. 3 Credits.

A survey of modern U.S. history from the late nineteenth century to the end of WWII. Emphasis on politics, public policy, and culture. Basic readings include biography, autobiography, and contemporary novels.

HIST 2322. U.S. History since 1945. 3 Credits.

Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, "silent" '50s, and disrupted '60s.

HIST 2340. U.S. Diplomatic History. 3 Credits.

American foreign relations in the twentieth century.

HIST 2340W. U.S. Diplomatic History. 3 Credits.

American foreign relations in the twentieth century. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2341. History of FBI Counterintelligence. 3 Credits.

The issues, controversies, and personalities that have played critical roles in the history of FBI foreign counterintelligence development.

HIST 2350. U.S. Religion and Politics. 3 Credits.

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state. Same as AMST 2350.

HIST 2367. The American Jewish Experience. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as AMST 2380/ WGSS 2380.

HIST 2410. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Same As: AMST 2410, AMST 2410W, HIST 2410W.

HIST 2410W. Twentieth Century U.S. Immigration. 3 Credits.

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2410, AMST 2410W, HIST 2410.

HIST 2440. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Same as AMST 2440.

HIST 2440W. The American City. 3 Credits.

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2440.

HIST 2490. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Same as AMST 2490.

HIST 2490W. Themes in U.S. Cultural History. 3 Credits.

Topical examination of the ideas, values, and modes of expression that have made American life distinctive, as revealed through a cross-cultural or global perspective. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AMST 2490W).

HIST 2505. Majors' Introductory Seminar: Africa. 3 Credits.**HIST 2520. Africans in the Making of the Atlantic World. 3 Credits.**

The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 2601. Topics: Asian History. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

HIST 2605. Majors' Introductory Seminar: Asia. 3 Credits.**HIST 2605W. Majors' Introductory Seminar: Asia. 3 Credits.**

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2610. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late nineteenth century to the present. Same As: AMST 2610, AMST 2610W, HIST 2610W.

HIST 2610W. Science, Technology, and Politics in Modern America. 3 Credits.

The history of science and technology and their role in political and social life from the late nineteenth century to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2610, AMST 2610W, HIST 2610.

HIST 2630. History of Korea. 3 Credits.

An introduction to the history and culture of Korea from antiquity to the present.

HIST 2705. Majors' Introductory Seminar: Latin America. 3 Credits.

HIST 2705W. Majors' Introductory Seminar: Latin America. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2710. The United States in the World. 3 Credits.

U.S. cultural and political engagement with the rest of the world in the twentieth and twenty-first centuries. Global culture, transnational ideas and social movements, travel and tourism, and the impact of media. Same As: AMST 2710.

HIST 2730. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Same as AMST 2730.

HIST 2730W. World War II in History and Memory. 3 Credits.

Examination of Americans' histories and memories of World War II. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as AMST 2730).

HIST 2803. The Ancient Near East and Egypt to 322 B.C.. 3 Credits.

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Credit cannot be earned for this course and CLAS 2803.

HIST 2804. History of Ancient Israel. 3 Credits.

The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as CLAS 2804.

HIST 2805. Majors' Introductory Seminar: Middle East. 3 Credits.

HIST 2805W. Majors' Introductory Seminar: Middle East. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 2809. Imperial Islam. 3 Credits.

The history of the Ottoman, Safavid/Qajar, and Mughal Empires from their formation and expansion as effective military and bureaucratic states until the late nineteenth century.

HIST 2810. Jihad: Love and War in Islamic History. 3 Credits.

The evolving justifications for war in Islamic history; close readings of classical (Qur'an and hadith), medieval (fatwas, legal treatises), and contemporary sources (writings of ISIS, Bin Laden, and others).

HIST 2811. The Formation of Islam to 1500. 3 Credits.

Political, social, and intellectual history of the Islamic world from the seventh to fifteenth centuries; cultural contexts of Southern Europe, North Africa, the Near East, Central Asia, South Asia, and across the Indian Ocean.

HIST 2812. History of Zionism. 3 Credits.

Critical historical survey of the development of Jewish nationalist thought in general and Zionism in particular, from its genesis in the 1880s up until the establishment of the State of Israel in May 1948. Same As: JSTD 2812.

HIST 2850. Modernization in Russia, Turkey, and Iran. 3 Credits.

Interrelated aspects of modernization, such as social and cultural issues, issues of power, and national identity, in Russia, Turkey, and Iran.

HIST 3001. Special Topics. 4 Credits.

May be repeated for credit provided the topic differs. Credit cannot be earned for this course and AMST 2490.

HIST 3001W. Special Topics. 4 Credits.

May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and AMST 2490W.

HIST 3030. Military History to 1860. 3 Credits.

The causes, conduct, and consequences of conflict in the ancient, medieval, renaissance, and early modern world. Examination of the Anglo-Dutch and Anglo-French wars leading to the Seven Years' War, American Revolution (including a "virtual staff ride" of the Saratoga Campaign), French Revolution, and Napoleonic Wars.

HIST 3031. Military History since 1860. 3 Credits.

Causes, conduct, and consequences of conflict from the American Civil War through the Austro- and Franco-Prussian Wars, Spanish-American War, Sino- and Russo-Japanese Wars, World Wars I and II (including a "virtual staff ride" of the Normandy Campaign), Korea, Vietnam, and modern "small wars".

HIST 3033. War and the Military in American Society from the Revolution to the Gulf War. 3 Credits.

Social and psychological dimensions of war and military service.

HIST 3035. The United States and the Wars in Indochina, 1945-1975. 3 Credits.

The American role in the Indochina Wars, emphasizing the period 1961 to 1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

HIST 3038. Naval History to 1815. 3 Credits.

Causes, conduct, and consequences of war at sea from the Age of Reconnaissance and Conquest through the War of 1812 (including a "virtual staff ride" of the Battle of Trafalgar). Consideration of issues including technology, the impact of the environment, and theories of warfare associated with each period.

HIST 3039. Naval History since 1815. 3 Credits.

Causes, conduct, and consequences of war at sea in the Civil War, counterinsurgency operations of so-called small wars, World Wars I and II, and the post-Cold War period. The transition from sail to steam, asymmetric warfare, and the role of sea power in modern geopolitics. Students participate in a virtual staff ride of the Battle of Leyte Gulf.

HIST 3044W. The Price of Freedom: Normandy 1944. 4 Credits.

The causes, conduct, and consequences of warfare, considered through examination of the campaign in Normandy that began with the allied landings on D-Day. Assignments include researching and writing a biography of a member of the military who died in the campaign and presenting a eulogy at the soldier's graveside during a "staff ride" exploration of the battlefield conducted over spring break. The biography paper is submitted to and retained in the archives of the American Cemetery in Normandy. Permission of the Office for Study Abroad and interview with the instructor required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3045. International History of the Cold War. 3 Credits.

Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

HIST 3046. The Cold War in the Third World. 3 Credits.

The evolution of the Cold War in Asia, Africa, and Latin America. Decolonization and the response of the Great Powers, the political economy of the Third World, and American and Soviet interventions.

HIST 3047. Writing Cold War History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

HIST 3047W. Writing Cold War History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of the Cold War. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3061. The Holocaust. 3 Credits.

The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

HIST 3062. War Crimes Trials. 3 Credits.

The Nuremberg trial and its legacy in subsequent international and hybrid tribunals. The need for judicial accountability for genocide, crimes against humanity, and war crimes.

HIST 3095. Internship. 1-3 Credits.

Study of history through internships in museums, libraries, the U.S. Congress, or other appropriate institutions and agencies. Prior approval of a departmental faculty member is required.

HIST 3097. Independent Study. 1-3 Credits.

Permission of instructor required.

HIST 3099. Variable Topics. 1-12 Credits.

HIST 3101. Topics: Europe. 3 Credits.

HIST 3101W. Topics: Europe. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3103. European Intellectual History I. 3 Credits.

The "Century of Genius" and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution.

HIST 3104. European Intellectual History II. 3 Credits.

Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

HIST 3104W. European Intellectual History II. 3 Credits.

Continuation of HIST 3103. Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3111. Topics in Ancient History. 3 Credits.

May be repeated for credit provided the topic differs. Same as CLAS 3111.

HIST 3116. Identity in the Greco-Roman World. 3 Credits.

Questions of identity surrounding the Romans and non-Romans who populated the ancient Mediterranean world in classical antiquity and whose culture is considered the cornerstone of Western civilization. (Same as CLAS 3116).

HIST 3117. Alexander The Great. 3 Credits.

Close reading of ancient primary sources reveal the complex personality and remarkable deeds of Alexander the Great (356-323 BCE); the nature of Alexander's military success, lasting effects of his conquests, and long-term impact on the varied people and lands of his empire. Prerequisites: AH 3101 or HIST 2112. (Same as CLAS 3117).

HIST 3118. The Middle Ages: 500-1500. 3 Credits.

The evolution of European society from the end of the Roman Empire to the Renaissance. The nature of political power, role of religion, place of gender, cultural production, and changing social structures.

HIST 3119. The Ancient Economy. 3 Credits.

Economic history of ancient Greece and Rome; environment and ecology of the Mediterranean region, trade and transport, the invention of coinage and monetization, taxation, food production, consumption, and slavery. (Same as CLAS 3119).

HIST 3126. European Integration: A History. 3 Credits.

An examination of the origins and development of the European Union.

HIST 3130. History of England I. 3 Credits.

Development of English civilization and its impact on Western culture. To 1689.

HIST 3132. Tudor England. 3 Credits.

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485-1603.

HIST 3132W. Tudor England. 3 Credits.

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485 to 1603. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3134. Stuart England. 3 Credits.

The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603-1714.

HIST 3135. Victorian Britain. 3 Credits.

Major themes in nineteenth-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.

HIST 3137. The British Empire. 3 Credits.

The British Empire from its rise in the seventeenth century to its demise in the twentieth century.

HIST 3139. Twentieth-Century Britain. 3 Credits.

Major themes of twentieth-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.

HIST 3139W. Twentieth-Century Britain. 3 Credits.

Major themes of twentieth-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3140. History of France. 3 Credits.

Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon.

HIST 3140W. History of France to 1814. 3 Credits.

Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3145. The French Revolution. 3 Credits.

Social, political, economic, and cultural history of the decade of revolution, 1789-1799. Attention to its structural consequences in France and in Europe at large.

HIST 3145W. The French Revolution. 3 Credits.

Social, political, economic, and cultural history of the decade of revolution, 1789 to 1799. Attention to its structural consequences in France and in Europe at large. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3148. El Camino de Santiago. 3 Credits.

Walking the Camino de Santiago is a cultural phenomenon that has lasted over a thousand years. An important part of Spain's cultural and political history, the Camino has affected the structures that form Spain's political and institutional systems, society, economy, and ideology as well as artistic forms of expression. Students may earn their Pilgrim's passport by walking the last 100 kilometers of the Camino after the formal classes have ended. Offered at GW Madrid Study Center.

HIST 3149. History of Spain. 3 Credits.

Familiarizes students with the important milestones of Spain's history. Discusses the regime of the 40-year dictatorship, concluding with the advent of democracy through an exemplary transition that has served as an example to other nations. Offered only at GW Madrid Study Center.

HIST 3150. Spain and Its Empire, 1492-1700. 3 Credits.

Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.

HIST 3168. Divided and United Germany Since 1945. 3 Credits.

Why was Germany divided after World War II? Why did it stay divided for 45 years? How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.

HIST 3173. The Habsburgs in East Central Europe. 3 Credits.

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

HIST 3173W. The Habsburgs in East Central Europe. 3 Credits.

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3178. The Making of the Modern Balkans. 3 Credits.

States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

HIST 3180. Russia to 1801. 3 Credits.

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention is given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

HIST 3181. Russia Since 1801. 3 Credits.

Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era. Attention is given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.

HIST 3301. Topics: U.S. History. 4 Credits.

HIST 3301W. Topics: U.S. History. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3302. America Before 1764. 3 Credits.

An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

HIST 3303. Revolutionary America. 3 Credits.

The American revolutionary era from the movement for independence through the establishment of the new federal government under the Constitution. Emphasis on changes to the inhabitants of North America, including Native Americans, African Americans, and European Americans, as well as to the broader Atlantic world.

HIST 3304. George Washington and His World. 3 Credits.

George Washington's life as soldier, politician, entrepreneur, slave holder, and national icon. Emphasis on the interpretation of original sources, including historical documents and the material culture of Washington's Mount Vernon estate, with tours and lectures by curators and historians. Departmental permission is required for registration.

HIST 3311. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

Focus on 1824 to 1850 as a crucial era in American history. Popular impact of social and political changes caused by the growth of the market economy; emergence of two national political parties; and new reforms focused increasingly on slavery as the country's greatest problem. Same As: HIST 3311W.

HIST 3311W. The Jacksonian Era and the Rise of Mass Politics. 3 Credits.

Study of 1824 to 1850 as an era in American history marked by widespread change. Impact of social and political reforms caused by the growth of the market economy; emergence of two national political parties; and new reforms increasingly focused on slavery as America's greatest problem. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HIST 3311.

HIST 3322. The Modern American Presidency. 3 Credits.

Development of the modern American presidency from Theodore Roosevelt to Barack Obama. Examination of the lives of the presidents, revealing the intersection of personal and impersonal forces in the creation of modern politics and modern America.

HIST 3324. U.S. Urban History. 3 Credits.

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same As: AMST 3324.

HIST 3332. History of American Foreign Policy Since World War II. 3 Credits.

Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. World War II to the Vietnam .

HIST 3333. History of American Foreign Policy Since World War II. 3 Credits.

Continuation of HIST 3332. Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Vietnam to the "New World Order."

HIST 3334. The Nuclear Arms Race. 3 Credits.

Political, military, diplomatic, scientific, and cultural consequences of the advent of nuclear weapons. The development and uses of the atomic bomb during World War II and the course and legacy of the U.S.-Soviet nuclear arms race during the Cold War.

HIST 3351. U.S. Social History. 3 Credits.

Survey of American society and social change from the Civil War to the present. Gender, sexuality, race, ethnicity, and class perspectives. (Same as AMST 3351).

HIST 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

HIST 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3353. U.S. Women's History II. 3 Credits.

Continuation of HIST 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. Same as AMST 3353/WGSS 3353. (Same as AMST 3353, WGSS 3353).

HIST 3356. Epidemics in American History. 3 Credits.

Epidemics in American history.

HIST 3360. African American History to 1865. 3 Credits.

Major themes and concepts emerging from the early history of the African presence in the Americas and black experiences in the new nation of the United States. Focus on the emergence and evolution of the concept of race, the ways race evolved in concert with Atlantic slavery, and how race intersected with gender, economics, religion, and nationality. (Same as AMST 3360).

HIST 3361. African American History Since 1865. 3 Credits.

African American efforts to realize full freedom after emancipation from slavery. Gender politics, cultural expression, labor organizing, and radicalisms; dynamics of racism within major eras of African American activity from Reconstruction through the Great Migration; and the history of civil rights, Black Power, and black feminism. (Same as AMST 3361).

HIST 3362. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late twentieth century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. (Same as AMST 3362, AMST 3362W, HIST 3362W, WGSS 3362, WGSS 3362W).

HIST 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late twentieth century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same as AMST 3362W/WGSS 3362W.

HIST 3363. Race, Medicine, and Public Health. 3 Credits.

The experiences of African Americans as patients and health care providers; the history of the relationship between race, American medicine, and public health. Emphasis on the importance of understanding the historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care. Restricted to . Same As: AMST 4702W.

HIST 3366. Immigration, Ethnicity, and the American Experience. 3 Credits.

Immigrant life in America from 1607 to the present. Focus on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree.

HIST 3366W. Immigration, Ethnicity, and the American Experience. 3 Credits.

Immigrant life in America from 1607 to the present, focusing on the urban immigrant experience from 1840 to 1924, the ironic persistence of nativism in a "nation of immigrants," the origins of modern immigration law, and the similarities between today's immigrants and those from the past. Students write research papers on an immigrant found in their family tree. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HIST 3366.

HIST 3367. The American Jewish Experience. 3 Credits.

The study of the Jewish minority in America from colonial times to the present. Emphasis on the interaction between a powerful majority culture and that of protean minority people.

HIST 3370. U.S. Constitutional History. 3 Credits.

Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

HIST 3501. Topics: Africa. 3 Credits.

A survey of African history from 1880 to the present.

HIST 3510. African History to 1880. 3 Credits.

Survey of the history of the African continent with emphasis on the history of sub-Saharan Africa.

HIST 3520. Africans in the Making of the Atlantic World. 3 Credits.

The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

HIST 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WGSS 3530.

HIST 3530W. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 3530, WGSS 3530, WGSS 3530W).

HIST 3540. West Africa to Independence. 3 Credits.

A thematic survey of West African history, focusing on the diversity of African culture, West African kingdoms and empires, Islam, the trans-Saharan trade, African contact with Europe, slavery and the slave trade, and the colonization of Africa.

HIST 3601. Topics: Asian History. 3 Credits.

HIST 3610. China to 1800. 3 Credits.

Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

HIST 3611. History of Modern China. 3 Credits.

China since 1840, with particular attention to political developments.

HIST 3614. Writing Modern Chinese History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of modern China.

HIST 3614W. Writing Modern Chinese History. 3 Credits.

Seminar. Students prepare a research paper on selected topics in the history of modern China. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 3615. History of Chinese Communism. 3 Credits.

Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.

HIST 3621. History of Modern Japan. 3 Credits.

Japan's dramatic transformation from an isolated island country to Asia's only modern colonial empire, from unprecedented defeat to postwar "economic miracle." Emphasis on historical, political, economic, and cultural trends.

HIST 3631. History of Modern Korea. 3 Credits.

Modern Korean history from 1876 to contemporary society. Emphasis on colonialism, nationalism, the division of peninsula, the Cold War, and globalization.

HIST 3640. History of Southeast Asia. 3 Credits.

An examination of Vietnam and its neighbors from the pre-colonial period to the present.

HIST 3650. Modern South Asia, 1750-Present. 3 Credits.

The South Asian subcontinent, including Afghanistan, Pakistan, India, and Bangladesh, since the mid-eighteenth century. The period of British rule, from the late eighteenth to the mid-twentieth century. The different trajectories of the independent nation-states of South Asia following decolonization.

HIST 3701. Topics in Latin American History. 3 Credits.

HIST 3710. History of Latin America I. 3 Credits.

Analysis of Spanish and Portuguese imperialism in the New World, 1492-1820.

HIST 3711. History of Latin America II. 3 Credits.

Continuation of HIST 3710. A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, caudillismo, modernization, populism, and revolution.

HIST 3801. Topics in Middle Eastern History. 3 Credits.

HIST 3810. History of the Middle East to 1800. 3 Credits.

Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

HIST 3811. The Emergence of the Modern Middle East. 3 Credits.

The state system established after World War I; effects of colonialism, the rise of nationalism, the Cold War, and the oil industry; modes of identification that accompanied these processes, including pan-Arabism and Islamism.

HIST 3820. History of Israel. 3 Credits.

Survey of the history of Israel from the origins of Zionism to the present; Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state.

HIST 3820W. The History of Israel. 3 Credits.

Survey of the history of Israel from the origins of Zionism to the present. Topics include Zionism as an ideology and movement in the pre-state period; the relationship between state and religion; the impact of 1948 and 1967; immigration, colonization, and Israeli society; the Arab-Israeli conflict; and Israel's national identity as a Jewish and democratic state. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HIST 3820.

HIST 3825. Land and Power in Israel/Palestine. 3 Credits.

Intensive reading seminar surveying key debates and turning points in the history of the Zionist-Palestinian conflict. Approach strikes a balance between structure and agency in understanding the ways in which people make their own history, but not under conditions of their choosing.

HIST 3830. History of Iraq. 3 Credits.

Modern Iraq's Ottoman background; its incorporation into a world market dominated by Europe, British influence and preconceptions in the creation of Iraq, and the emergence and survival of the Ba'ath dictatorship. Reforms in economic, political, and educational spheres.

HIST 3840. History of Central Asia. 3 Credits.

Introduction to the political, cultural, religious, and social history of the region, including Afghanistan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan.

HIST 3850. Modern Iran. 3 Credits.

Political, diplomatic, religious, and other developments in Iran from about 1800 to 1989.

HIST 4098. Thesis Seminar. 3 Credits.

For history majors only. Preparation of a research paper using primary sources.

HIST 4098W. Thesis Seminar. 3 Credits.

History majors identify an original research topic in an area of their interest and complete a major research paper based largely on primary sources. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HIST 4098.

HIST 4099. Senior Honors Thesis Tutorial. 3 Credits.

Required of and restricted to undergraduate honors candidates in history. Prior approval of the instructor is required.

HIST 4099W. Senior Honors Thesis Tutorial. 3 Credits.

Required of and restricted to undergraduate honors candidates in history. Prior approval of the instructor is required. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

HIST 4135. Folger Seminar. 3 Credits.

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as ENGL 4135/ FREN 4135.

HIST 5099. Variable Topics. 1-99 Credits.**HIST 6001. Special Topics. 3-9 Credits.**

Open to doctoral and master's candidates and qualified undergraduates. May be repeated for credit provided the topic differs. Same As: SMPP 6290. Credit cannot be earned for this course and AMST 6190.

HIST 6005. History and Historians. 3 Credits.

Historiography and historical method for graduate students. Readings and discussions on major trends in history; selections from classics of historical literature.

HIST 6006. Teaching History. 3 Credits.

Pedagogic techniques and strategies particular to the discipline. Admission by permission of instructor.

HIST 6007. Writing History. 3 Credits.

Designed to improve graduate students' writing skills. Student strengths and weaknesses as writers are assessed through short assignments such as book reviews. Students prepare an article manuscript for submission to a refereed journal. Restricted to graduate students in history.

HIST 6011. Reading and Research in History and Public Policy. 3 Credits.

The use of historical insights and methods in policymaking, with emphasis on domestic issues.

HIST 6012. Internship in History and Public Policy. 3,6 Credits.

Supervised participation in an office or agency concerned with the formulation of public policy; terms of the internship are arranged with the director of the history and public policy program. Restricted to students in the history and public policy program.

HIST 6030. History and Its Uses in International Affairs. 3 Credits.

The multiple interconnections among history, politics, and international affairs, including how policymakers use or misuse "lessons" of history and how countries attempt to deal with difficult aspects of their past. Specific cases may vary.

HIST 6031. History of International Economic Systems. 3 Credits.

Development of arrangements and institutions designed to manage the international economy since the nineteenth century, with a focus on the period since World War II.

HIST 6032. Reading and Research Seminar: Strategy and Policy. 3 Credits.

A study of the historical development of strategy and the relationship of military thought to national policy.

HIST 6040. Topics in Modern Military and Naval History. 3 Credits.

Discussion, readings, and research in twentieth-century European and American military and naval history.

HIST 6041. The Age of the Battleship: An Introduction to Modern Naval History. 3 Credits.

The rich and varied literature of naval history, with emphasis on interactions among technology, nationalism, and domestic political/social developments in the late nineteenth and early twentieth century. The social history of navies is included.

HIST 6042. Seminar: World War II. 3 Credits.

Examination of statecraft and the management of force before, during, and after World War II. Special attention to broad aspects of military policy and strategy and their interaction with international politics and diplomacy.

HIST 6050. Modernization, Imperialism, Globalization. 3 Credits.

Readings seminar in classic and recent theories of modernization, imperialism, and globalization.

HIST 6051. Re-thinking Cold War History. 3 Credits.

A reading and research course that relies heavily on documents from formerly closed communist archives and recently declassified Western materials. Various issues and events of the Cold War; old and new historiographical controversies. Students write a primary-source research paper to elucidate one of the many aspects of the Cold War about which new evidence is available.

HIST 6097. Independent Readings and Research. 3 Credits.

Written permission of instructor required. May be repeated for credit with permission.

HIST 6101. Topics: Europe. 3 Credits.**HIST 6105. Seminar: European Intellectual History. 3 Credits.**

Topics in eighteenth- and nineteenth-century European thought, with an emphasis on France. Specific topic announced in the Schedule of Classes.

HIST 6120. Seminar: Early Modern European History. 3 Credits.

Topics selected from Western European history of the fourteenth through seventeenth centuries.

HIST 6121. Reading and Research Seminar: Modern European History. 3 Credits.

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HIST 6122. Reading and Research Seminar: 20th-Century History. 3 Credits.

Research or readings on selected topics.

HIST 6128. Europe and the World, 1500-Present. 3 Credits.

An introduction to some of the key debates and scholarship concerning European imperialism.

HIST 6130. Early Modern Britain. 3 Credits.

Analysis of some current issues in early modern historiography; contextualization of recent works in the field; consideration of different methodologies and the types of evidence on which they rely or that they illuminate.

HIST 6133. English People and Institutions. 3 Credits.

Selected topics in the political, social, intellectual, and economic history of England. Focus upon one time period and special area of interest. May be taken for research credit with instructor's approval.

HIST 6135. British Imperialism. 3 Credits.

Research seminar. Major debates and schools of thought on the history of British imperialism.

HIST 6138. Folger Institute Seminars I. 3 Credits.

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6139. Folger Institute Seminars II. 3 Credits.

Continuation of HIST 6138. Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Consult the chair of the department before registration.

HIST 6170. Eastern European History I. 3 Credits.
1772-1918.**HIST 6171. Eastern European History II. 3 Credits.**

Continuation of HIST 6170. 1919-1945.

HIST 6180. History of Modern Russia and the Soviet Union. 3 Credits.

Selected topics in the domestic history of modern Russia and Soviet Union. May be taken as a readings seminar or, with instructor's approval, as a research seminar.

HIST 6181. Research Seminar: Russian and Soviet Empires. 3 Credits.**HIST 6185. Seminar: Russian and Soviet Thought. 3 Credits.**

Selected topics in the intellectual and cultural history of eighteenth to twentieth-century Russia and Soviet Union. May be taken as a readings seminar or, with permission of the instructor, as a research seminar. Permission of the instructor required prior to enrollment.

HIST 6188. The Soviet Union and the World, 1917 to 1991. 3 Credits.

Concepts and perceptions guiding Soviet relations with the outside world. From the blockade and intervention, through years of isolation, World War II, the Cold War, to "peaceful coexistence."

HIST 6301. Topics: U.S. History. 3 Credits.**HIST 6302. Colonial North America. 3 Credits.**

The complex and turbulent world of colonial North America from the late sixteenth century to the late eighteenth century. Inter-cultural negotiations, Atlantic world connections, imperial conflict, gender construction, and race consciousness.

HIST 6303. Revolutionary America. 3 Credits.

The political and social conditions of the revolutionary era: the spiral of events that led to the American independence movement, the various meanings of the war to its participants, and the consequences of victory for the nation, its various subgroups, and other peoples of the colonial Atlantic world.

HIST 6304. American Indian History to 1890. 3 Credits.

North American Indian history from indigenous societies on the eve of first contact with Europeans until the conclusion of the Great Plains Wars of the late nineteenth century.

HIST 6310. Readings in Nineteenth-Century American History. 3 Credits.

Important trends in historical writing about nineteenth-century America.

HIST 6311. The Era of the Civil War, 1850-1877. 3 Credits.

Consideration of how and why the issue of slavery led to the American Civil War. Conflict on the battlefield and the political and social impact of the war in both the North and the South. Examination of the Reconstruction period as a means of understanding how the conflict and its aftermath continue to shape American politics and race relations to the present.

HIST 6312. The Law of Race and Slavery. 3 Credits.

The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Admission by permission of instructor. Same as SOC 6286 and LAW 6596.

HIST 6320. Readings/Research Seminar: Recent U.S. History. 3 Credits.

Research or readings, depending on students' interests and curricular needs. Prerequisites: 6 credits of upper-level undergraduate American history courses.

HIST 6321. Readings/Research Seminar: Recent U.S. History. 3 Credits.

Continuation of HIST 6320. Research or readings, depending on students' interests and curricular needs. Prerequisites: 6 credits of upper-level undergraduate American history courses.

HIST 6322. American Business History. 3 Credits.

The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention is given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. (Same as SMPP 6293).

HIST 6330. Modern U.S. Foreign Policy. 3 Credits.

Readings, lectures, discussion on major developments in the conduct of American diplomacy from 1898 to 9/11.

HIST 6350. American Social Thought Since World War II. 3 Credits.

Consideration of C. Wright Mills, Daniel Bell, Abraham Maslow, Christopher Lasch, Paul Goodman, Martin Luther King, Jr., Barbara Ehrenreich, and other major social critics.

HIST 6360. Immigration and Ethnicity in the United States. 3 Credits.

The history of immigrant life in the United States; focus on the mass migration from Europe that began with the Irish Potato Famine of the 1840s and ended with the immigration restrictions of the 1920s that created the concept of the illegal immigrant.

HIST 6370. U.S. Legal History. 3 Credits.

The legal history of the United States from the seventeenth century to the present. The course examines legal change within the broader context of political, social, and economic change. Permission of the instructor required prior to enrollment. (Same as LAW 6591).

HIST 6410. Readings in American Cultural History. 3 Credits.

Studies in the cultural history of the United States, focusing on major historiographic debates and interventions. Examples of possible topics include cultural contact, the public sphere, and systems of religious and political belief. Same as AmSt 6410.

HIST 6420. Religion and American Culture. 3 Credits.

Interdisciplinary analysis of religious beliefs, practices, and representations in the United States, as well as intersections of the religious and the secular. Relationships of religion to race, gender, capitalism, science, mass media, and material culture. Same as AMST 6420.

HIST 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

HIST 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of HIST 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/WGSS 6431.

HIST 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST 6435/WGSS 6435.

HIST 6450. Race in America. 3 Credits.

Interdisciplinary analysis of the history of race and its changing political, social, and cultural meanings in the United States. Transnational racial formations, struggles for and against civil rights, multiracialism, and interracialism. Same as AMST 6450.

HIST 6455. American Social Movements. 3 Credits.

The history of social movements in the United States, with emphasis on civil rights, feminism, conservatism, and labor in local, national, and transnational contexts; the historical rise and fall of these movements and their larger impact on American life. Same as AMST 6455.

HIST 6470. Cityscapes. 3 Credits.

Interdisciplinary examination of the American city, including urban theory, history, planning, architecture, urban politics, and cultural representations of the city. Same as AMST 6470.

HIST 6475. U.S. Urban History. 3 Credits.

History of American urban life and culture from the Colonial era to the present, focusing on the transitions from pre-industrial to industrial and post-industrial forms, the social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as AMST 6475.

HIST 6480. Theory and Practice of Public History. 3 Credits.

Theoretical and practical dimensions of public history, as illustrated by recent controversies surrounding public exhibitions and debates on revisionist history as well as more traditional means of presenting the past in public forums. Same as AMST 6480.

HIST 6485. Contemporary Jewish Life. 3 Credits.

The changing nature of Jewish life, domestically and transnationally, from the 1950s through the present; how contemporary Jews, especially those in the United States, reckon with rupture, dissent, and freedom. Restricted to graduate students. Prerequisite: None. (Same as AMST 6190, JSTD 6001).

HIST 6495. Historic Preservation: Principles and Methods. 3 Credits.

The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6495.

HIST 6496. Historic Preservation: Principles and Methods. 3 Credits.

Continuation of HIST 6495. The scope and purpose of the preservation movement in the United States, with focus on developments since the 1960s. Preservation theories, attitudes toward the past and toward design, the intent and impact of legislation, approaches to documentation, the concept of significance, and preservation as an instrument of change. Same as AMST 6496.

HIST 6501. Topics: Africa. 3 Credits.**HIST 6502. Western Representations of Africa. 3 Credits.**

Representations of Africa by non-Africans from the earliest contact to more recent encounters.

HIST 6601. Topics: Asian History. 3 Credits.**HIST 6602. Asia: History, Memory, and Violence. 3 Credits.**

Violence has been a defining experience for many of the populations and polities of Asia over the past century and a half. Focusing on the themes of violence and historical memory, the course takes a comparative approach, looking at how these issues have played out in different arenas throughout East, Southeast, and South Asia.

HIST 6610. Readings Seminar: Late Imperial China. 3 Credits.

Selected topics in the history of modern China in the late imperial period, with a particular focus on the internal and external challenges to the last Chinese dynasty in the nineteenth century.

HIST 6611. Readings Seminar: Twentieth-Century China. 3 Credits.

Selected topics in the history of modern China from the 1911 Revolution to the Cultural Revolution.

HIST 6621. Readings Seminar: Modern Japanese History. 3 Credits.

Selected topics in modern Japanese history from the Meiji Restoration of 1868 to the present. Research or readings depending on students' interests. Emphasis on how interpretations of the past are shaped by the present.

HIST 6625. Japan's Empire and Its Legacies. 3 Credits.

History of modern Japan's overseas expansion and empire building. Focus on issues including colonial modernity, resistance and collaboration, and postwar legacies such as politics of memory and prospects of reconciliation.

HIST 6630. Special Topics in Korean History. 3 Credits.

Intensive exploration of the history of Korea in modern times (1850–present). Korean identity and the challenges of foreign imperialism, industrialization, modernization, and globalization.

HIST 6641. Modern Southeast Asia. 3 Credits.

The modern history of Southeast Asia from the 1800s to 1975. Colonialism, rise of postcolonial states, revolutions and persistence of the past.

HIST 6701. Topics in Latin American History. 3 Credits.**HIST 6801. Topics in Middle Eastern History. 3 Credits.****HIST 6805. The Modern Middle East in World History. 3 Credits.**

Draws on recent works that situate the social, economic, cultural, political, and environmental transformations that have swept the region over the past two centuries within broader global trends.

HIST 6811. Research Seminar: Modern Middle East. 3 Credits.

Readings, discussion, and research in selected political, economic, social, cultural, and intellectual trends.

HIST 6821. Islam and Social Movements. 3 Credits.

An examination of the relationship of religion and religious symbols to social and political movements in the Islamic world.

HIST 6822. Nationalism in the Middle East. 3 Credits.

Different interpretations of nationalism and their applicability to nationalism in the Middle East.

HIST 6823. Imperialism in the Middle East. 3 Credits.

An exploration of the process of European and American expansion in the Middle East.

HIST 6824. Reading/Research Seminar: Modern Iran. 3 Credits.**HIST 6998. Thesis Research. 3 Credits.****HIST 6999. Thesis Research. 3 Credits.****HIST 8998. Advanced Reading and Research. 1-12 Credits.**

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

HIST 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

HOMINID PALEOBIOLOGY (HOMP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HOMP 5099. Variable Topics. 1-99 Credits.

HOMP 6201. Hominid Paleobiology. 3 Credits.

Study of human evolution through investigation of the fossil record; current research in reconstructing paleobiology. Adaptation, phylogeny and behavior reconstruction, site formation, and the taxonomy, site context, anatomy, behavior, and major issues surrounding each hominin taxon.

HOMP 6202. Lab Techniques: Paleoanthropology. 1-3 Credits.

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HOMP 6203. Ethics and Professional Practice I. 1 Credit.

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HOMP 6204. Ethics and Professional Practice II. 1 Credit.

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HOMP 6995. Independent Research. 1-9 Credits.

Research on problems approved by the director of the program. Open to qualified students with advanced training. May be repeated for credit.

HOMP 6999. Thesis Research. 3-6 Credits.

Development of a thesis project and accompanying research. Restricted to graduate students in the MS in human paleobiology program.

HOMP 8301. Problem-Based Learning Seminar. 1-3 Credits.

Problem-based tutorial in hominid paleobiology. Development of research skills through problem-solving tasks in a small group. May be repeated for credit.

HOMP 8302. Public Understanding of Science Internship. 2-3 Credits.

Supervised participation in an institution that presents science to the public. Opportunity to participate in procedures and gain practical experience in disseminating scientific information to non-scientists.

HOMP 8303. Paleobiology Lab Rotation. 2-3 Credits.

Supervised participation in a relevant laboratory. Students learn analytical techniques, handle diverse types of data, and encounter a range of disciplines as preparation for later participation in interdisciplinary research projects. May be repeated for credit.

HOMP 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

HOMP 8999. Dissertation Research. 3-9 Credits.

May be repeated for credit. Restricted to doctoral candidates.

HONORS (HONR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HONR 1015. Honors Seminar: UW 1020: Origins and Evolution of Modern Thought. 4 Credits.

Exploration of significant exemplars, milestones, and developments of human thought. Foundational and representative thinkers and texts from Western and Eastern traditions provide an indication of the diversity and complexity of attempts to articulate responses to universal questions, problems, and aspirations. Credit cannot be earned for this course and UW 1020.

HONR 1016. Honors Seminar: Origins and Evolution of Modern Thought. 3 Credits.

Continuation of HONR 1015. Key developments and trajectories in human thought and inquiry into modern times.

HONR 1033. Honors Seminar: Scientific Reasoning and Discovery. 4 Credits.

Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1034. Honors Seminar: Scientific Reasoning and Discovery. 4 Credits.

Continuation of HONR 1033. Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

HONR 1099. Variable Topics. 1-36 Credits.**HONR 1120. Introduction to Biomolecular Research. 2 Credits.**

Research methods in the studies of proteins and DNA; exploration of faculty research to help prepare students for conducting their own research. Prerequisite or concurrent registration: BISC 1115 and BISC 1125. Permission of the instructor is required. Laboratory fee.

HONR 2016. Enlightenment East and West. 4 Credits.

This course replaces HONR 1016 for students who enter the Honors Program as sophomores.

HONR 2043. Honors Microeconomics. 3 Credits.

An introductory microeconomics course that considers both the philosophical basis of economics as well as its methods and applications. Same as ECON 1011.

HONR 2044. Honors Macroeconomics. 3 Credits.

An accelerated introductory macroeconomics course that includes the study of special topics. (Same as ECON 1012).

HONR 2047. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. May be repeated for credits provided the topic differs. See program for more details. Same As: HONR 2047W.

HONR 2047W. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena by using the tools and modes of inquiry of the social and behavioral sciences; relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. May be repeated for credits provided the topic differs. See program for more details. Same As: HONR 2047.

HONR 2048. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena through the use of social and behavioral sciences tools and modes of inquiry; relationships between individuals and among collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. May be repeated for credit provided the topic differs. See program for more details.

HONR 2048W. Self and Society Seminar. 3 Credits.

Understanding significant social and political phenomena through the use of social and behavioral sciences tools and modes of inquiry; relationships between individuals and among collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. May be repeated for credit provided the topic differs. See program for more details. Same As: HONR 2048.

HONR 2053. Arts and Humanities Seminar. 3 Credits.

Inter- or multi-disciplinary approaches to topics in the arts and humanities. Exploration of the relationship between literature, religion, art, film, photography, philosophy, or other humanistic fields of study. Topics vary by semester. May be repeated for credits provided the topic differs. See program for more details. Same As: HONR 2053W.

HONR 2053W. Arts and Humanities Seminar. 3 Credits.

Inter- or multi-disciplinary approaches to topics in the arts and humanities. Exploration of the relationship between literature, religion, art, film, photography, philosophy, or other humanistic fields of study. Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: HONR 2053.

HONR 2054. Arts and Humanities Seminar. 3 Credits.

In-depth exposure to an area of literature, art, film, philosophy, or other humanistic field of study, often placing the subject matter in cultural and historic contexts. Topics vary by semester. May be repeated for credits provided the topic differs. See program for more details. Credit cannot be earned for this course and HONR 2054W.

HONR 2054W. Arts and Humanities Seminar. 3 Credits.

In-depth exposure to an area of literature, art, film, philosophy, or other humanistic field of study, often placing the subject matter in cultural and historic contexts. Topics vary by semester. May be repeated for credit provided the topic differs. See program for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and HONR 2054.

HONR 2175. Honors Special Topics. 6 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details.

HONR 2182. Honors Internship. 4 Credits.

The Honors Program allows credit to Honors students for academic work that puts an internship in a broader scholastic context. Each student must have a GW faculty member oversee his or her project. The Honors internship faculty member determines the student's grade. May be repeated for credit.

HONR 2184. Honors Undergraduate Research. 4 Credits.

Independent or faculty-mentored research resulting in a significant written or other product. May be repeated for credit.

HONR 2185. Honors Research Assistantship. 4 Credits.

Students provide substantive assistance to a faculty member engaged in scholarly or scientific research. May be repeated for credit.

HONR 4198. Honors Senior Thesis. 3-4 Credits.

One- or two-semester thesis under faculty guidance. May be repeated for credit.

HONR 4199. Honors Capstone Experience. 1 Credit.

Students re-engage with core questions and issues related to the Honors Program curriculum, reflecting on their learning in relation to enduring questions and challenges of our world.

HUMAN DEVELOPMENT (HDEV)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HDEV 5099. Variable Topics. 1-99 Credits.**HDEV 6108. Life Span Human Development. 3 Credits.**

Continuity and change in developmental attributes. The developing person in relation to social norms, roles, and stage-graded expectations from birth to death. Interaction between biogenetics and environment.

HDEV 6109. Child Development. 3 Credits.

Typical development and the familial and social antecedents of developmental risk. Environments that foster competent children and developmental sequelae of childhood vulnerability and trauma. For graduate students in counseling, psychology, and related disciplines.

HDEV 6110. Adolescent Development. 3 Credits.

Key attributes and problems in adolescent development. Typical adolescent development and contemporary social problems in relation to stress, risk, and resilience. For graduate students in counseling, psychology, and related areas.

HDEV 6129. Cultural Effects on Human Development. 3 Credits.

Effects of culture on the experience and expression of self, others, space, time, faith systems, norms, and other attributes. Egocentric and sociocentric effects, primitive and technological effects. Group immersion as the basis for prejudice. Developmental consequences as a consequence of cultural context.

HDEV 6161. Practicum in Human Development. 3 Credits.

Permission of the instructor required prior to enrollment.

HDEV 6162. Internship in Human Development. 3 Credits.

Permission of the instructor required prior to enrollment.

HDEV 6701. Adult Learning. 3 Credits.

Same as HOL 6701.

HDEV 8100. Issues and Special Topics in Human Development. 3-6 Credits.

Issues and special contemporary topics related to child, adolescent, and adult development. Applications for professional roles.

HDEV 8241. Emotional and Cognitive Development. 3 Credits.

Emotional and cognitive development as related to self-esteem, social cognition, and interpersonal skills. Relationships among cognitive development, intellectual reasoning, insight, and social development.

HDEV 8244. Adult and Aging Development. 3 Credits.

Theories and research on personality and intelligence in adulthood. Research designs and methods. Implications of developmental data for counseling and selected professional roles.

HDEV 8253. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/ HOL 8742.

HUMAN FUNCTION AND REHABILITATION (HFR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

HFR 1105. Survey of Human Anatomy and Physiology for Health and Rehabilitation. 2 Credits.

Survey of human anatomy and physiology with an emphasis on the movement systems. First aid and Basic Life Support (BLS) training included. Prerequisites: HSCI 1101, HSCI 1102 and HSCI 1103.

HFR 1107. Illness and Injury for Health and Rehabilitation. 2 Credits.

Survey of injury and illness with an emphasis on dysfunction impacting the movement systems; basic concepts of biomechanics for health and rehabilitation professionals. Prerequisite: HFR 1105.

HFR 1109. Exercise Science for Health and Rehabilitation. 2 Credits.

Basic concepts of exercise physiology; intervention, prevention, and assessment of injuries and conditions with special emphasis on musculoskeletal systems. Prerequisite: HFR 1107.

HFR 1111. Cases in Health and Rehabilitation. 2 Credits.

Continuation of HFR 1109. Topics and cases related to prevention, treatment, and management of injuries and conditions; discussion of career preparation for rehabilitation and exercise science careers. Prerequisite: HFR 1109.

HFR 8101. Interprofessional Collaboration in Practice. 3 Credits.

Core competencies and skills needed to participate effectively in team-based care for patients and populations. Emphasis on communication and flexible leadership strategies and the impact of interprofessional practice on health delivery practices and outcomes. Restricted to SMHS students.

HFR 8102. Health Professions Practicum I. 3 Credits.

Supervised integration and implementation of educational or clinical health professional leadership in the student's practice environment. Completion of 9 credits in HFR courses required prior to enrollment. Restricted to students in the doctor of health sciences program. Recommended background: Prior completion of HFR 8107.

HFR 8103. Health Professions Practicum II. 3 Credits.

Supervised integration and implementation of educational or clinical health professional leadership in the student's practice environment. Restricted to students in the doctor of health sciences program. Prerequisite: HFR 8102.

HFR 8107. Program Theory and Health Innovations. 3 Credits.

Program theory as the basis for designing health and educational innovations that can be tested using scientific methods, replicated in practice, and used to inform policy. Restricted to students in the doctor of health sciences program. Same As: THS 8107.

HFR 8116. Academic and Clinical Leadership in the Health Professions. 3 Credits.

Skills needed to serve as a clinical or academic leader in the health professions. Students learn how to think strategically and align goals and resources to prepare health care professionals to serve as effective providers in evolving contexts. Restricted to SMHS students.

HFR 8123. Qualitative Methods for the Health Professions. 3 Credits.

Introduction to qualitative methods used in the generation and analysis of data relevant to health professionals. Prerequisites: HFR 8270 or HSCI 6270 or the advisor's approval. Credit cannot be earned for this course and THS 8123.

HFR 8127. Systematic Reviews in Health Care Practice and Education. 3 Credits.

Students to refine their skills in developing a systematic review of the literature related to health care practice and education. Prerequisites: HFR 8270. Credit cannot be earned for this course and THS 8127.

HFR 8203. Bioethical Implications of Health Research. 3 Credits.

Critical roles of ethics theories and bioethics principles in the planning, conduct, and dissemination of scientific studies. Scientific and academic integrity, protection of human participants in research, conflicts of interest and commitment, ownership of data and intellectual property, whistleblowing and dispute resolution, and privacy and confidentiality. Restricted to students in the doctor of health sciences program. Credit cannot be earned for this course and THS 8203.

HFR 8212. Teaching Strategies in the Health Professions. 3 Credits.

Application of teaching and learning principles in the delivery of education in health professions; practices grounded in andragogy, contributing to curriculum program development, and the enhancement of teaching and assessment skills. Restricted to SMHS students. Recommended background: Experience in health care or practice as a health care professional. Same As: HSCI 8212.

HFR 8213. Curriculum Development in the Health Professions. 3 Credits.

Curriculum development and assessment skills in medical and health science settings. Restricted to SMHS students. Recommended background: experience in health care or practice as a health care professional. Same As: HSCI 8213.

HFR 8214. Assessment in Health Profession Education. 3 Credits.

Skills needed to effectively assess individual achievement of required clinical competencies and implement a comprehensive assessment of course and program goals. Prerequisites: HFR 8212 and HFR 8213.

HFR 8215. Technology and Education in the Health Professions. 3 Credits.

Students design, develop, implement and assess technology-based education approaches for the health profession. Prerequisites: HFR 8212 and HFR 8213.

HFR 8270. Research Methods in the Health Professions I. 3 Credits.

Students design research and study methods to address gaps in the body of health science knowledge. Restricted to students in the doctor of health sciences program.

HFR 8271. Research Methods in the Health Professions II. 3 Credits.

Continuation of HFR 8270. Students are prepared to manage data and conduct quantitative analyses to test hypotheses and support decision making. Restricted to students in the doctor of health sciences program. Prerequisite: HFR 8270.

HFR 8313. Knowledge Translation in Health Care. 3 Credits.

Examination of the emerging field of knowledge translation, which integrates knowledge across the domains of translational research, implementation and dissemination science, and collaboration and team science within the context of current health practice and legislation.

HFR 8314. Health Care Research. 3 Credits.

Skills needed for planning and implementation of health care research within clinical institutions; institutions and regulatory requirements for health care research including those involving human subjects. Prerequisites: CML 6203 and HFR 8116.

HFR 8996. Seminar I. 3 Credits.

First in a three-course series of scholarly inquiry. May be repeated for credit. Restricted to students in the doctor of health sciences program. Prerequisites: HFR 8270 and HFR 8271.

HFR 8997. Seminar II. 3 Credits.

Second in a three-course series of scholarly inquiry. May be repeated for credit. Restricted to students in the doctor of health sciences program. Prerequisite: HFR 8996.

HFR 8998. Seminar III. 3 Credits.

Third in a three-course series of scholarly inquiry. May be repeated for credit. Restricted to students in the doctor of health sciences program. Prerequisite: HFR 8997.

HUMAN ORGANIZATIONAL LEARNING (HOL)

Explanation of Course Numbers

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HOL 0920. Continuing Research - Master's. 1 Credit.**HOL 0940. Cont. Res. - Doctoral. 1 Credit.****HOL 5099. Variable Topics. 1-99 Credits.****HOL 6100. Special Workshop. 1-12 Credits.**

Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 6101. Research and Independent Study. 1-3 Credits.

Preparation of an in-depth project under the guidance of a faculty member. The course is arranged individually with the program advisor.

HOL 6700. Human Behavior and Learning in Organizations. 3 Credits.

How individuals and groups learn and interact within organizations and how organizations function and learn. Motivation, group dynamics, leadership, systems theory, organizational culture, and change.

HOL 6701. Adult Learning. 3 Credits.

Premises and theories used to meet learning needs of adults. Overview of various learning theories and the impact of various stages of adult development on learners. Topics including self-directed learning, accommodating individual learning needs, and creation of effective learning techniques. Same as HDEV 6701.

HOL 6702. Organizational Change. 3 Credits.

Assessing organizational conditions; operations, problems (human, structural, and systemic), and the process of collecting and interpreting information.

HOL 6703. Consulting Skills. 3 Credits.

Concepts, methods, and skills required for effective consultation in organizations, as either an internal or an external consultant; meeting the human needs in organizations while improving performance and productivity. Students undertake a consulting project in an organization.

HOL 6704. Leadership in Organizations. 3 Credits.

Developments in theory and research centered on organizational leadership. Emphasis on various types of leadership including transformational, responsible, authentic, and ethical.

HOL 6705. Strategic Change. 3 Credits.

Overview of best practices for organizing and managing people and organizations to compete successfully. Leading an organization through a process of self-examination, redesign, and change that results in sustained effectiveness, learning, and high performance.

HOL 6706. Current Issues in Organizational Leadership. 3 Credits.

Current issues and future trends in organizational leadership. Students gather data and analyze key topics associated with areas such as talent management, leading through demographic shifts, leadership in a globalized world, leading global change, and developing new forms of leadership, ethics, and sustainability.

HOL 6707. Organizational Learning. 3 Credits.

Learning in an organizational context. Processes through which the organization as a system learns, unlearns, changes, and disseminates information. Organizational learning theories address the processes and barriers of gathering, using, developing, and retaining knowledge in organizations.

HOL 6708. Global Leadership. 3 Credits.

The changes taking place in organizations due to the process of globalization and the requirements for leadership. The changing global environment, how those changes influence operational and strategic issues within global organizations, and how a leader can better understand the global environment to help organizations meet these new challenges.

HOL 6709. Leadership Development. 3 Credits.

Theories of and processes used in leader/leadership development; effects of leadership development on the individual and its importance to organizations. Prerequisite: HOL 6704.

HOL 6710. Globalization, Change, and Learning. 3 Credits.

With learning as the coping strategy, focus on how policymakers and global leaders can be helped to take advantage of the opportunities and address the challenges that globalization presents.

HOL 6712. Diversity, Equity and Inclusion in Organizations. 3 Credits.

Developments in the theory of diversity, equity, and inclusion (DEI). Practice of diversity management as an integrative, structural, and social change effort within organizations. Prerequisites: HOL 6700, HOL 6702, HOL 6704, and HOL 6746.

HOL 6720. Advanced Strategies for Adult Learning. 3 Credits.

Theoretical and practical strategies of adult learning in various settings, including corporate environments. Learning strategies, such as creative thinking and self-directed learning. Critical adult learning issues.

HOL 6721. Assessing the Impact of Organizational Change Using Qualitative and Quantitative Methods. 3 Credits.

Knowledge and skills needed to evaluate the impact and return on investment of change efforts; planning and conducting systematic evaluations of change efforts, including the choice, development, and use of various tools for measuring individual, group, and organizational change; assessing the success of the planned change.

HOL 6724. Increasing the Capacity to Learn. 3 Credits.

Identification of actions that can help increase the capacity to learn. Emphasis on experimental learning and critical reflection.

HOL 6725. Internship in Organizational Leadership and Learning. 3-6 Credits.

Supervised experience in selected areas of leadership, learning, and/or change. Admission by permission of the program advisor.

HOL 6726. Curriculum Design for Adult Learners. 3 Credits.

Exploration of theories, methods, and models of curriculum design for adult learners. Application of major design steps. Restricted to students in the master teacher leadership development program. Prerequisite: HOL 6701.

HOL 6727. Assessment of Adult Learning. 3 Credits.

Exploration of the major methods used to assess adult learning in classroom and workplace environments; means of ensuring the validity and reliability of the major methods. Restricted to students in the master teacher leadership development program. Prerequisite: HOL 6701.

HOL 6742. Design of Adult Learning Interventions. 3 Credits.

Designing and implementing adult learning programs. Topics include instructional design techniques, designing effective programs, program planning and marketing techniques, and conducting needs assessments and evaluations of adult learning programs.

HOL 6743. Action Learning. 3 Credits.

Processes, principles, and skills necessary to participate in and lead both single- and multiple-problem action learning sets. The six dimensions of action learning; educational psychological, political, sociological, and management theories underlying action learning.

HOL 6744. Meaningful Workplaces. 3 Credits.

Characteristics of the humane organization and of meaningful work. Intrinsic motivation, work-life balance, and the workplace community.

HOL 6745. Technology and Human Resource Development. 3 Credits.

How technology can best be utilized in the HRD environment. Discussion of CBT, use of the Internet for instruction, and distance learning techniques.

HOL 6746. Work Groups and Teams in Organizations. 3 Credits.

Exploration of the nature of work groups and teams as they are utilized in organizational settings. Group and team dynamics, facilitating and leading skills, and group roles and culture.

HOL 6747. International and Multicultural Issues in Organizations. 3 Credits.

The impact of culture and globalization on U.S. and international human and organizational learning programs and practices. Adult learning and organizational change approaches that develop and utilize the synergy of a global workforce.

HOL 6998. Thesis Research. 3 Credits.

Thesis research.

HOL 6999. Thesis Research. 3 Credits.

Thesis research.

HOL 8100. Special Topics in Human and Organizational Learning - Doctoral Studies. 3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit.

HOL 8101. Research and Independent Study. 1-3 Credits.**HOL 8700. Foundations of Human and Organizational Learning. 3 Credits.**

The study of individuals and their interactions within an organizational context. Overview of key theories in leadership, systems theory, group dynamics, learning, organizational culture, and motivational theory. The use of research in human and organizational learning.

HOL 8701. Theory, Research, and Practice in Adult Learning and Development. 3 Credits.

Learning theories as applied to adults in individual and group learning transactions; effect of age on learning; psychological, physical, and social environments in adult education situations.

HOL 8702. Theory and Design of Organizational Diagnosis and Development. 3 Credits.

Focus on various paradigms through which organizations and their functions may be viewed; a variety of analytical models of organizations; techniques for assessing systems; application of analysis techniques.

HOL 8703. Human Systems Change. 3 Credits.

The classical and contemporary ideas related to social systems change; the relation of these ideas to current issues in organizations.

HOL 8704. Leadership Theory, Research, and Practice. 3 Credits.

Leadership in organizations with a focus on transformational leadership. Historical review of leadership theory and research; current developments in understanding leadership. Students examine their own leadership style and plan for continued development as a leader.

HOL 8705. Organizational Culture. 3 Credits.

Theory and research on organizational culture, from the multidisciplinary seminal works in anthropology, psychology, sociology, and management to current day theorizing and empirical research on culture. The rituals, values, and behaviors that differentiate cultural groups and the way cultural identities manifest themselves in organizational practices; and how organizational culture evolves and its relationship to other organizational phenomena such as innovation, strategy, sensemaking, and performance. Current trends in organizational culture theorizing.

HOL 8706. Interdisciplinary Readings in Human and Organizational Learning. 3 Credits.

Seminal works from various disciplines related to current research and practice.

HOL 8707. Advanced Organizational Learning. 3 Credits.

The psychological and sociological paradigms associated with the learning of a collective whole.

HOL 8708. Introduction to Doctoral Research. 3 Credits.

An introduction to scholarly inquiry for doctoral students. The role of the scholar-practitioner; types of scholarly inquiry and their components; diverse paradigms used to frame scholarly inquiry; and critical thinking skills for evaluating research in human and organizational learning.

HOL 8720. Seminar: Applied Research in Human and Organizational Learning. 3 Credits.

Identification of initial constructs and theories that support the identified research interest, with a problem statement and critical analysis of research reports and review of research literature.

HOL 8721. Practicum in Human and Organizational Learning. 3-6 Credits.**HOL 8722. Seminar: Advanced Issues in Human and Organizational Learning. 1-12 Credits.**

Forum in which candidates critically examine relevant classic and contemporary literature, with analysis and synthesis to defend their research questions and conceptual frameworks.

HOL 8723. Organizations and Strategy in Human Resource Systems. 3 Credits.

Overview of paradigms, theories, models, and constructs of organizations and strategy to understand organizations and their environments.

HOL 8724. Creating and Planning Doctoral Research. 3 Credits.

Students learn to develop an evidence-based problem statement, design a conceptual framework, craft a research question, and conduct a literature review. Fundamental principles of both qualitative and quantitative research and various research strategies and designs.

HOL 8725. Integration of Theory, Research and Practice. 3 Credits.

Provides students with the opportunity to apply adult learning principles explored in the curriculum towards an integration and synthesis of the knowledge base in human and organizational studies. Aids in preparation for the comprehensive examinations and subsequently, dissertation development.

HOL 8741. Managerial and Organizational Cognition. 3 Credits.

The emerging field of collective cognition in organizations, including theoretical foundations and seminal and current literature on knowledge structures and their role in strategy formation, organizational change, and sensemaking.

HOL 8742. Work, Identity, and Adult Development. 3 Credits.

The influence of work on identity, intellectual and personality development, and other developmental attributes. Same as CNSL 8253/HDEV 8253.

HOL 8746. Work Groups and Teams in Organizations. 3 Credits.

Theoretical understanding and practical considerations of working with groups and teams. Group dynamics, facilitating and leading groups, and member roles. Group facilitation techniques across different group settings and environments.

HOL 8997. Preparation and Delivery of Doctoral Research. 3 Credits.

Students develop and present a mock dissertation proposal, receiving feedback from faculty and colleagues in order to refine their proposal. Prerequisites: none. Recommended background: Students are expected to have developed a literature review, conceptual framework, and research question for their dissertation research prior to enrolling in this class.

HOL 8998. Predissertation Seminar. 3-6 Credits.

Platform for further development of the dissertation proposal.

HOL 8999. Dissertation Research. 3,6 Credits.

Prerequisite: HOL 8998.

HUMAN SERVICES AND SOCIAL JUSTICE (HSSJ)

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HSSJ 1099. Variable Topics. 1-36 Credits.

HSSJ 1100. Introduction to Human Services and Social Justice. 3 Credits.

Human services and social justice theory, research, and practice; historical and intellectual development, community-based scholarship, and the context of Washington, D.C.

HSSJ 1177. Organizing for Social Justice in Human Services. 3 Credits.

Theory in community organizing and social justice is connected with an opportunity to explore how it is applied directly in the field. Methods used by non-profit organizations and campaigns to address issues in human services.

HSSJ 2160. Role of NGOs in International Humanitarian Assistance. 3 Credits.

The increasing role of nongovernmental organizations (NGOs) as providers of service and care for vulnerable individuals and communities in need; development of NGOs, the place they hold in international interventions, and the types of services they provide.

HSSJ 2170. Interpersonal Relationships in Human Services. 3 Credits.

Exploration of the theories, principles, and practices of ethically sound professional interpersonal relationships in the context of human services. Topics include forming, bounding, maintaining, and ending relationships; basic helping skills; working in, through, and with difference; working with groups or teams; and self care. May involve fieldwork. Restricted to majors and minors in the field or with permission of the instructor.

HSSJ 2171. Human Interactions: Child and Adolescent Development. 3 Credits.

Human development from infancy to young adulthood. Dominant psychosocial, cognitive, and physical competencies; motivational changes; coping styles; and normative and non-normative behaviors. Three hours per week of service learning in an appropriate agency setting are required in addition to lectures.

HSSJ 2172. Human Interactions: Adult Development. 3 Credits.

Human development from young adulthood to old age. Dominant psychosocial, cognitive, and physical competencies; motivational changes; coping styles; and normative and non-normative behaviors. Three hours per week of service learning in an appropriate agency setting are required in addition to lectures.

HSSJ 2200. Principles of Ethical Leadership. 3 Credits.

The practices and commitments of ethical leaders to enhance organizational effectiveness, engage diverse perspectives, clarify values and mission, and promote commitment to shared purposes.

HSSJ 3100W. Program Planning & Evaluation. 3 Credits.

Program planning and development as essential aspects of human services agencies. Analysis through case studies and on-site field experience of processes by which agency needs are assessed and programs planned. Community-based research. Restricted to HMSR or HSSJ majors or minors or permission of the instructor. Prerequisites: PSC 2101 OR PSYC 2101 OR SOC 2101. Same as HSSJ 3100.

HSSJ 3110W. Nonprofit and Organizational Management. 3 Credits.

Organizational theory and program administration in community agencies; staff recruitment and development; fiscal operations including funding; facilities; and effective community relations. Community-based research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to human services majors or minors. Recommended background: SOC 2101.

HSSJ 3152. Fact/Field/Fiction: Intersections in HSSJ. 3 Credits.

Seminar taken in conjunction with an internship in SOC 3153. Critical analysis of literature, experiential learning, and community-informed research in the field of human services and social justice. Restricted to majors and minors in the human services and social justice program. Prerequisites: HSSJ 1000, HSSJ 1177 and SOC 2101.

HSSJ 3153. Internship in Human Services and Social Justice. 3 Credits.

Internship with an approved agency or organization in the criminal justice field taken in conjunction with HSSJ 3152. Restricted to majors and minors in the human services and social justice program. Prerequisites: HSSJ 1000, HSSJ 1177 and SOC 2101.

HSSJ 4133. Supervised Experience in HSSJ. 3-6 Credits.

Students deepen their theoretical, research, or practical knowledge and skills through instructor (and where appropriate community) supervised independent work on an issue within the field of Human Services for approximately 100 hours. Meet regularly with supervisor(s), readings, anecdotal records, and research paper. Permission of the program director and supervising instructor required prior to enrollment. Restricted to HSSJ majors and minors. Prerequisite: One HSSJ course beyond HSSJ 1100.

HSSJ 4193. Research and Independent Study. 1-6 Credits.

Students explore a topic relevant to human services in depth by designing, conducting, evaluating, and presenting original research. Required for honors in HSSJ.

HSSJ 4195. Capstone Seminar in Human Services and Social Justice. 3 Credits.

Culminating experience synthesizing the knowledge, skills, abilities, and attitudes needed to address complex real-world issues in socially just ways; integration and reflection on the key theories, research, practices, issues, and policies addressed throughout the program. Restricted to program majors in their final spring semester.

HSSJ 4198. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit provided topic differs.

HSSJ 5099. Variable Topics. 1-99 Credits.

INFORMATICS (INFR)

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INFR 3101. Introduction to Bioinformatics. 3 Credits.

Basic principles of bioinformatics, including genome sequencing, models, and evolution and computational approaches for analyzing biological data. Four credits in general biology courses may be substituted for the prerequisite. Prerequisites: BISC 1111.

INFR 3102. Scripting. 3 Credits.

Basic concepts of scripting in bioinformatics, such as alignments, searches, and data manipulation for biological data. Four credits in general biology courses may be substituted for the prerequisite. Prerequisites: BISC 1111.

INFR 3103. Genomics. 3 Credits.

Genes and genomes; computational and statistical approaches for analyzing genomic and metagenomic data. Four credits in general biology courses may be substituted for the prerequisite. Prerequisites: BISC 1111. Recommended background: declared major in the bioinformatics or the medical informatics program.

INFR 3104. Human Genetics. 3 Credits.

The application of genetics to the understanding and treatment of human disease; basic methods for design, analysis, interpretation and follow-up of rare variant, candidate gene, and genome-wide association studies. Four credits in general biology courses may be substituted for the prerequisite. Prerequisites: BISC 1111.

INFR 4101. Introduction to Medical Informatics. 3 Credits.

Medical informatics applications and innovations in health care and the health care system; implications for health care delivery and patient outcomes, including electronic medical records, health system databases, and medical data analysis. Laboratory fee. Restricted to medical informatics program majors.

INFR 4102. Survey of Medicine for Informaticians. 3 Credits.

Survey of clinical medicine and basic concepts related to clinical process, medical vocabulary, anatomy, pathophysiology, and clinical disease management for selected organ systems and health care specialties; evaluation of medical records, clinical decision making, and health providers in the U.S. health care system. Laboratory fee. Completion of one course in general biology, anatomy, or physiology may be substituted for the prerequisite. Restricted to students in the medical informatics program or with permission of the instructor. Prerequisite: HSCI 2102.

INFR 4103. Programming for Informaticians. 3 Credits.

Programming (Java), databases, and data models in medical informatics. Laboratory fee. Restricted to medical informatics program majors; permission of the instructor may be substituted.

INFR 4104. Medical Informatics Terminology & Standards. 3 Credits.

Terminology and standards commonly used in clinical and public health systems; practical experience in selecting terminology, mapping concepts to standard terminologies, and creating and testing standardized messages. Laboratory fee. Restricted to medical informatics program majors. Prerequisites: INFR 4101.

INFR 4105. Consumer Health Informatics. 3 Credits.

Consumer health informatics as a field of research and development in the context of medical informatics, including patient and provider perspectives and technology innovations utilized by patients and health care systems. Laboratory fee. Restricted to medical informatics program majors. Prerequisite: INFR 4101.

INFR 4106. Population Health for Medical Informatics. 3 Credits.

Population health informatics, and informatics techniques used on population-level data to improve health. Laboratory fee. Restricted to medical informatics program majors. Prerequisites: INFR 4103 and INFR 4104.

INFR 4107. Clinical Decision Support. 3 Credits.

Examination of clinical decision support systems and associated quality improvement efforts. Laboratory fee. Restricted to students in the medical informatics degree program. Prerequisites: INFR 4103 and INFR 4104.

INFR 4108. Information Extraction for Medical Informatics. 3 Credits.

The automatic extraction of information from clinical text; specificities, information extraction methods, existing applications, and resources for information extraction. Laboratory fee. Restricted to students in the medical informatics degree program. Prerequisites: INFR 4103 and INFR 4104.

INFR 4109. Evaluation Methods in Medical Informatics. 3 Credits.

Evaluation methods associated with clinical information systems and informatics interventions; objective and subjective evaluation, design, measurement, and analysis of medical informatics cases. Laboratory fee. Restricted to students in the medical informatics degree program. Prerequisites: HSCI 3117 and INFR 4103 and INFR 4104.

INFR 4110. Biomedical Data Science. 3 Credits.

Principles of health analytic techniques, and implications associated with big data uses in clinical and health care settings. Laboratory fee. Restricted to students in the medical informatics degree program. Prerequisites: HSCI 3117 and INFR 4101 and INFR 4103.

INFR 4120. Bioinformatics Algorithms. 3 Credits.

Algorithmic foundations of bioinformatics; string, combinatorial, graph, and clustering algorithms. Restricted to bioinformatics majors. Prerequisites: HSCI 3117 and INFR 3101.

INFR 4121. High Performance Computing. 3 Credits.

Concepts and practice in high performance computing for scientists; systems, resource management, parallel programming, and nationally shared resources. Restricted to bioinformatics majors. Prerequisites: INFR 3101, INFR 3102 and HSCI 3117.

INFR 4122. Advanced Scripting. 3 Credits.

Advanced scripting skills in the context of computational biology problems. Restricted to bioinformatics majors. Prerequisites: INFR 3101 and INFR 3102.

INFR 4123. Statistical Genetics. 3 Credits.

Introduction to basic concepts in statistical genetics and molecular evolution. Restricted to bioinformatics majors. Prerequisites: INFR 3101, INFR 3102 and INFR 3103.

INFR 4197. Medical Informatics Internship. 12 Credits.

Supervised field work in medical informatics, arranged in consultation with the program director. May be repeated for credit. Restricted to students in the medical informatics program. Prerequisites: HSCI 2105.

INFR 4198. Medical Informatics Research Project. 12 Credits.

Supervised research project in medical informatics, arranged in consultation with the program director. May be repeated for credit. Restricted to students in the medical Informatics degree program. Prerequisites: HSCI 2105.

INFR 4203. Seminar in Computational Biology. 3 Credits.

Bioinformatics research across the fields of biology, computer science, and mathematics to address contemporary health science and basic science problems; career and research opportunities. Restricted to bioinformatics majors. Prerequisites: HSCI 4112W, INFR 3101, INFR 3102 and INFR 3103.

INFR 4204. Bioinformatics Internship. 3-12 Credits.

Supervised field work in bioinformatics, arranged in consultation with the program director. May be repeated for credit. Restricted to bioinformatics majors with program approval. Prerequisites: HSCI 2105.

INFR 4205. Bioinformatics Research Project. 3-12 Credits.

Supervised research project in bioinformatics, arranged in consultation with the program director. May be repeated for credit. Restricted to bioinformatics majors with program approval. Prerequisites: HSCI 2105 and HSCI 4112W.

INFR 6101. Principles of Medical Informatics. 3 Credits.

Analysis of medical informatics applications and innovations in health care and the health care system; implications for health care delivery and patient outcomes, including electronic medical records, health system databases, and medical data analysis. Restricted to graduate students. Recommended background: graduate enrollment in data science or related field. Credit cannot be earned for this course and INFR 4101.

INFR 6102. Principles of Medicine for Informaticians. 3 Credits.

Survey of clinical medicine and basic concepts related to clinical process, medical vocabulary, anatomy, pathophysiology, and clinical disease management for selected organ systems and health care specialties; evaluation of medical records, clinical decision making, and health providers in the U.S. health care system. Laboratory fee. Restricted to graduate students. Recommended background: graduate students in the data science program or those with prior undergraduate coursework in general biology or anatomy and physiology or pathophysiology. Credit cannot be earned for this course and INFR 4102.

INFR 6103. Advanced Computing Applications for Biomedical Informatics. 3 Credits.

The course examines advanced scripting skills in the context of biomedical informatics. This is an programming course utilizing current language for applied systems. Proctor fee. Prerequisites: HSCI 6263, INFR 6101 and INFR 6102. Recommended background: graduate students in biomedical Informatics programs. Credit cannot be earned for this course and INFR 4122.

INFR 6105. Health Care Quality for Informatics. 3 Credits.

Health care quality theory, principles, and practice for medical informatics professionals. Restricted to students in the biomedical informatics program.

INFR 6121. High Performance Computing. 3 Credits.

Applied contemporary concepts and practice in high performance computing for scientists; systems, resource management, parallel programming, and nationally shared resources. Proctor fee. Prerequisites: INFR 6101, INFR 6102, and HSCI 6263 (or equivalent statistics course). Recommended background: graduate students in biomedical Informatics programs. Same As: INFR 4121.

INFR 6197. Biomedical Informatics Practicum. 1-3 Credits.

Supervised field work in biomedical informatics arranged in consultation with the program director. Students must have completed 9 credits of graduate INFR coursework and have program approval in order to enroll. May be repeated for credit. Prerequisites: graduate students in biomedical Informatics programs.

INFR 6198. Biomedical Informatics Capstone. 3 Credits.

Capstone project for biomedical informatics arranged in consultation with the program director. Students must have completed 12 credits of graduate INFR coursework and have program approval in order to enroll. May be repeated for credit. Recommended background: graduate students in biomedical Informatics programs.

INFR 6540. Medical Decision Making and Decision Support Systems. 3 Credits.

Clinical decision support systems (CDSS) used in biomedical informatics to assist health care providers with decision making tasks related to patient care and associated quality improvement efforts. Artificial intelligence in medicine. Restricted to students in the biomedical informatics program. Prerequisite: INFR 6121.

INFORMATION SYSTEMS TECHNOLOGY MANAGEMENT (ISTM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ISTM 3119. Introduction to Programming. 3 Credits.

Introductory course in writing simple computer programs using Python; data-analytic thinking and business applications through hands-on practices. No prior knowledge or experience in programming is required.

ISTM 4120. Business Systems Development. 3 Credits.

Analysis, design, and implementation of management information systems (MIS). Structured methodologies and techniques for various stages of the MIS development process. Computer-aided software engineering tools. May be taken for graduate credit with permission of the program director and instructor and extra assigned work.

ISTM 4121. Database Principles and Applications. 3 Credits.

Theory, architecture, and implementation of database management systems in corporate and organization information systems; fundamental concepts of database management and processing; hands-on experience with database management packages.

ISTM 4123. Business Data Communications. 3 Credits.

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BADM 2301.

ISTM 4123W. Business Data Communications. 3 Credits.

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BADM 2301.

ISTM 4130W. Writing On The Ethics of Technology. 3 Credits.

Complex ethical dilemmas inherent in the introduction of new technologies and the influence human behavior asserts on these problems. Students write stories to explore and evaluate specific ethical problems relative to technology from various perspectives. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ISTM 4205. Web Applications Development. 3 Credits.

Concepts and practice necessary for creating Internet content. Technical overview of the Internet environment and the structure of the World Wide Web. Recommended background: Prior completion of ISTM 3119.

ISTM 4206. Foundations of Information Systems Security and Ethics. 3 Credits.

Computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from design and planning to implementation. Risk assessment strategies. Recommended background: ISTM 4120.

ISTM 4209. Foundations of Web Analytics. 3 Credits.

Concepts, techniques and tools of reporting and analyzing web data to derive actionable customer intelligence, develop digital strategies and evaluate their impacts.

ISTM 4210. Information Systems Capstone. 3 Credits.

Application of conceptual and technical knowledge to analyzing, planning, and designing an online information system. Culminates with a system proposal and design presentations. Restricted to eligible students in their final semester. Prerequisites: ISTM 3119, ISTM 4120, ISTM 4121, ISTM 4205, ISTM 4206, and ISTM 4209.

ISTM 4212. Data Management for Analytics. 3 Credits.

Traditional and contemporary tools for data wrangling, databases, data warehousing. Focus on schema design and dimensional modeling; hands-on experience using these tools and other contemporary methods for managing and analyzing data at scale.

ISTM 4213. Foundations of Cloud Applications. 3 Credits.

Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The Internet as a major resource for globally distributed applications using grid and utility computing. Prerequisites: ISTM 3119.

ISTM 4214. Foundations of Artificial Intelligence. 3 Credits.

A comprehensive introduction to the recent developments in AI through the coverage of fundamental AI concepts, practical business applications and the hands-on experiences with modern deep learning frameworks such as Keras. Prerequisites: ISTM 3119.

ISTM 4215. Human-Computer Interaction. 3 Credits.

An introduction to and overview of the field of human-computer interaction (HCI), an interdisciplinary field that integrates theories and methodologies from computer science, cognitive psychology, design, and other areas. Readings cover current theory and practice in interface specification, design, and evaluation, and include current and classic research papers in the field.

ISTM 4216. Mobile Application Development. 3 Credits.

The creation of mobile solutions for various modern platforms, including major mobile operating systems, and how to program using Java and apply this knowledge to Android Platform in smart phones. Recommended background: prior completion of one of the following: ISTM 3119, ISTM 6200, or ISTM 6205.

ISTM 4217. Internet of Things Management. 3 Credits.

Apache Spark technology skills to analyze huge data sets. Taught in Python, continuing on to learning to use Spark DataFrames with the latest Spark 2.0 syntax; the MLlib Machine Library with the DataFrame syntax and Spark.

ISTM 4223. Innovation Ventures. 3 Credits.

Process of innovation entrepreneurship used to launch and build new ventures; technology ventures; organizing for innovation, raising venture capital, wealth creation, managing the growing innovation venture, marketing technology products and services. Students enrolled at the graduate level are expected to do additional work. (Same as ISTM 6223).

ISTM 4233. Emerging Technologies. 3 Credits.

New developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space; forecasting technological advances and assessing their economic and social effects. Students enrolled at the graduate level are expected to do additional work. (Same as ISTM 6233).

ISTM 4900. Special Topics. 3 Credits.

Topics vary by semester. May be repeated once for credit provided the topic differs. Consult the Schedule of Classes for additional information.

ISTM 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

ISTM 4995. Independent Study. 3 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit.

ISTM 5099. Variable Topics. 1-99 Credits.**ISTM 6200. Python Program Database Applications. 3 Credits.**

Introduction to Python programming language, Structured Query Language (SQL), relational database design, data wrangling, and rudimentary data analysis.

ISTM 6201. Information Systems Development and Applications. 3 Credits.

The information systems life cycle evaluated in terms of technologies, impact, and management. Structured and object-oriented analysis, prototyping, software reuse, testing, life-cycle costs, software development environments, and organizational and behavioral aspects of development projects. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6202. Relational Databases. 3 Credits.

Introduction to the theory of relational databases and commences an in-depth discussion of Relational database theory and design at the conceptual, logical, and physical levels. Structured query language (SQL) is covered in depth. Restricted to Students in the MS in Information Systems Technology program or with permission of the department.

ISTM 6203. Managing Cloud Security. 3 Credits.

Enterprise data and telecommunications networks with emphasis on operations and security on the cloud; functional characteristics of network technologies, gateways, and configurations; operational best practices to enhance the security of data and systems.

ISTM 6204. Information Technology Project Management. 3 Credits.

Project and program management practices with an emphasis on information technology projects. The basic tools of project management: work breakdown structure, cost, schedule and performance goal setting, and risk analysis. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6205. Web Application Development. 3 Credits.

Concepts and practice for creating Internet content. Technical overview of the Internet environment and the structure of the World Wide Web. Design and implementation of an effective web site with HTML, CSS, and JavaScript. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 3119 or ISTM 6200.

ISTM 6206. Information Systems Security. 3 Credits.

Comprehensive examination of computer security issues from the design, management, and business information system ownership perspectives. System security concepts, methods, and policies from the design and planning stages to multi-level system implementation. Design of risk assessment strategies to achieve security goals. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6207. Information Resources Management. 3 Credits.

Information resources management strategically assesses and exploits information technology assets for competitive advantage. The CIO role in information resources management, planning, security, information integration, enterprise model development, and data administration.

ISTM 6209. Web and Social Analytics. 3 Credits.

Concepts, techniques, and tools of collecting, analyzing, and reporting digital data concerning how users interact with organizations through the Internet and social media; business intelligence; key performance indicators; new business models. Restricted to students in the MS in information systems technology program or with permission of the department.

ISTM 6210. Integrated Information Systems Capstone. 3 Credits.

Students apply conceptual and technical knowledge in analyzing, planning, and designing an online information system. Culminates with system proposal/design presentations. Restricted to students in their final semester in the MS in information systems technology program or with permission of the department. Prerequisites: ISTM 6201, ISTM 6202, ISTM 6204, ISTM 6205, ISTM 6206 and ISTM 6209.

ISTM 6211. Data Warehousing and Online Analytical Processing. 3 Credits.

Introduction to the theory of data warehousing, dimensional data modeling, and online analytical processing (OLAP) through case studies, technology, and a design project. Restricted to students in the MS in information systems technology program or with permission of the department. Prerequisite: ISTM 6202.

ISTM 6212. Data Management for Analytics. 3 Credits.

Relational databases, data warehousing, and dimensional modeling. Practical experience with these and other traditional and contemporary methods for managing and analyzing data at scale, including Unix command line and Apache Spark. Restricted to students in the MS in business analytics program.

ISTM 6213. Cloud Applications. 3 Credits.

Enterprise applications concepts, architecture, and technologies for emerging technologies and IT frameworks. The internet as a major resource for globally distributed applications. Prerequisites: ISTM 3119 OR ISTM 6200.

ISTM 6214. Foundations of Artificial Intelligence. 3 Credits.

Foundations of artificial intelligence. Introduction to advanced programming design and development of solutions to automate business processes. Prerequisites: ISTM 3119 OR ISTM 6200.

ISTM 6215. Human-Computer Interaction. 3 Credits.

Human-computer interaction as an interdisciplinary endeavor integrating theories and methodologies from computer science, cognitive psychology, design, and many other areas. Theory and practice in interface specification design and evaluation, and research.

ISTM 6216. Mobile Application Development. 3 Credits.

Creation of mobile solutions for various modern platforms, including major mobile operating systems. Programming using Java and applying this knowledge to Android platform in smart phones. Recommended background: Prior completion of one of the following: ISTM 3119, ISTM 6200, or ISTM 6205.

ISTM 6217. Internet of Things Management. 3 Credits.

Technology skills to analyze huge data sets using Apache Spark. Taught in Python, continuing on to learning to use Spark DataFrames. Using the MLlib machine learning library with the DataFrame syntax and Spark. Prerequisites: ISTM 3119. Recommended background: Prior completion of ISTM 6214.

ISTM 6218. Business Applications of Artificial Intelligence. 3 Credits.

Comprehensive introduction to recent developments in artificial intelligence (AI) through the coverage of fundamental AI concepts, practical business applications, and hands-on experiences with modern deep learning frameworks. Prerequisites: ISTM 3119 and ISTM 6214.

ISTM 6222. IS/IT Strategy and Implementation. 3 Credits.

The development and implementation of information systems and technology strategies designed to align with and maximize business strategy applications and approaches in a challenging and increasingly global business environment.

ISTM 6223. Technology Entrepreneurship. 3 Credits.

Case studies on the innovation-entrepreneurship processes used to launch and build new ventures based on information technology and on technology more broadly. Organizing for innovation, raising venture capital, managing the small technology-based venture, marketing technology products and services, intellectual property considerations, and new venture proposal development.

ISTM 6224. Management of Technology and Innovation. 3 Credits.

Business, technological, economic, and political factors that influence the development and deployment of new technology products, processes, and services. Managing technology, corporate innovation, alternatives, new approaches, sources of competitive advantages.

ISTM 6225. Cloud Foundations. 3 Credits.

Concepts of cloud managed enterprise architecture as a management tool to align information technology assets, people, operations, and projects with operational characteristics.

ISTM 6233. Emerging Technologies. 3 Credits.

Developments in scientific and technological innovation, including automation, energy, medicine, bioengineering, social science, information technology, and space. Forecasting technological advances and assessing their economic and social effects.

ISTM 6234. New Venture Financing. 3 Credits.

Fundamentals and practice of due diligence and screening of early-stage investment opportunities. Same as FINA 6234.

ISTM 6239. Seminar: Competitiveness/Technology. 3 Credits.

Capstone course integrating the field of management of science, technology, and innovation. Commercialization of technology in the private sector and the impact on competitiveness. Implementation of technology in the public sector. Technology development, from new product concept to utilization. Prerequisites: ISTM 6224 or MBAD 6253; and ISTM 6232 or ISTM 6233; or permission of the instructor.

ISTM 6243. Human Factors in Information Systems. 3 Credits.

The user-computer interaction, human factors of online dialogues, interfacing, and various approaches to user-system interaction; development and evaluation of user-computer interfaces.

ISTM 6290. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

ISTM 6298. Directed Readings and Research. 1-3 Credits.**ISTM 6500. Technology Skills for Managers. 1 Credit.**

Introduction to information technologies in multiple business domains for oversight by managers. The topics may vary. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more information. Restricted to MBA students.

ISTM 6502. Working with Databases Using SQL. 1 Credit.

Training in core SQL, especially data query language (DQL) and data manipulation language (DML). Concepts of SQL, including writing SQL statements and understanding of database operations.

ISTM 6514. Introduction to Artificial Intelligence. 1 Credit.

Decision making using artificial intelligence. Real-world examples from finance, health care, marketing, and operations illustrate applications of machine learning methods. Includes hands-on exercises with programming software (R and RStudio).

ISTM 6519. Health Care Analytics and Applications. 1 Credit.

Introduction to the basic analytics techniques and applications in health care and overview of the state of practice of the health care analytics ecosystem.

ISTM 6522. Digital Transformation. 1 Credit.

Use of information and digital technologies to restructure organizations and business processes and survive and thrive in an intensively digitized business world.

ISTM 8300. Thesis Seminar. 3 Credits.**ISTM 8333. Seminar: Management of Science, Technology, and Innovation. 3 Credits.****ISTM 8340. Philosophical Issues in Information Systems. 3 Credits.**

Seminar for doctoral students interested in information systems. Various philosophical traditions and insights from those traditions applied to problems in information systems.

ISTM 8341. Advanced Topics in MIS Research. 3 Credits.

For information systems doctoral students. Seminal papers and leading methods and instruments as applied to MIS research.

ISTM 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

ISTM 8390. Philosophical Foundations of Administrative Research. 3 Credits.

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

ISTM 8391. Advanced Problems in Research Methodology. 3 Credits.

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. For doctoral candidates who have completed the general examination and all courses and are preparing for their dissertation.

ISTM 8397. Doctoral Seminar. 1-3 Credits.

Current research and scholarly issues in management science.

ISTM 8398. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

ISTM 8399. Dissertation Research. 1-12 Credits.

Limited to doctoral candidates. May be repeated for credit.

INTEGRATIVE MEDICINE (INTM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

INTM 5099. Variable Topics. 1-99 Credits.

Variable topics.

INTM 6101. Nutrition I: Assessment, Diagnosis, and Intervention. 3 Credits.

Risk factors for malnutrition in macronutrients (protein, fat, carbohydrates), micronutrients (fat versus water soluble vitamins), and those due to environmental exposures including medications. Nutrition, nutrition research, and their application to health care.

INTM 6102. Nutrition II: Life Cycle. 3 Credits.

Expands on foundational nutrition knowledge through evaluating and assessing nutrient requirements across the lifespan. Students develop a personalized, culturally appropriate integrative nutrition plan. Permission of the instructor may be substituted for the prerequisite course. Prerequisite: INTM 6101.

INTM 6105. Advanced Nutrition: Biochemistry. 3 Credits.

Nutrition science and metabolism through exploration of nutrient-oriented biochemical pathways. Prerequisites: INTM 6101 and INTM 6102.

INTM 6110. Food Technology and Health. 1 Credit.

The relationships among food, technology, and health. Food processing, health benefits of food, and novel food products and technology. Prerequisites: INTM 6101 and INTM 6102.

INTM 6111. Topics in Nutrition. 1 Credit.

Contemporary and emerging areas of interest in nutrition as they relate to research, policy, dietary guidelines, and clinical intervention. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisite: INTM 6201.

INTM 6120. Nutritional Immunology. 2 Credits.

The effects of nutrient deficiency in the function, or dysfunction, of immunity. Permission of the instructor may be substituted for the prerequisite courses. Prerequisites: INTM 6101 and INTM 6102.

INTM 6201. Foundations in Integrative Medicine. 3 Credits.

Developing a patient-centric integrative medicine approach to care. Historical, sociocultural, and legal aspects of the evolution of medicine in the United States. Focus on clinical domains of therapeutic relationships and motivational interviewing, lifestyle medicine, personalized medicine, and traditional medical systems.

INTM 6202. Self-Care Methods for Health Care Professionals. 2 Credits.

Health care provider wellness; strategies to address the biological and psychological domains of personal and clinical care.

INTM 6203. Nutritional Metabolism and Environmental Exposure. 3 Credits.

Diseases of the gastrointestinal, immune, and nervous systems and interconnectedness of these systems in the context of chronic disease states. Symptomatic, functional, and disease markers and the development of integrative treatment plans.

INTM 6204. Metabolic Networks in Integrative Medicine. 3 Credits.

Diseases of the gastrointestinal, immune, and nervous systems and interconnectedness of these systems in the context of chronic disease states. Symptomatic, functional, and disease markers and the development of integrative treatment plans.

INTM 6205. Clinical Genomics, Proteomics, and Metabolomics. 3 Credits.

Application of clinical genomics, proteomics, and metabolomics to clinical practice; isolating patterns of meaning within complex signals; developing clinical solutions; interpreting the omics literature; and engaging in omics-based research.

INTM 6206. Legal and Medical Ethics in Integrative Medicine. 1 Credit.

Students evaluate the legal and ethical considerations in decision making related to patient care. Students develop business strategies associated with running an integrative medicine practice.

INTM 6207. Business of Integrative Medicine and Health Care. 3 Credits.

Developing and growing a successful integrative medicine/health care enterprise; the integrative person-centered care concept; business principles, processes, and implementation methods.

INTM 6210. Practical Application of Integrative Medicine I. 3 Credits.

Integration of knowledge and practice of the integrative medicine curriculum into practical clinical skills in preparation for addressing core lifestyle topics with patients/clients. Restricted to students in integrative medicine programs.

INTM 6211. Practical Application of Integrative Medicine II. 3 Credits.

Incorporation of health promotion with disease prevention and advocating for healthy lifestyles and preventive medicine practices. Evidence-based clinical reasoning for the evaluation and management of problems common to outpatient care. Restricted to students in integrative medicine programs.

INTM 6212. Clinical Research in Integrative Medicine. 3 Credits.

Application of clinical knowledge and continued development of clinical reasoning through literature review, Good Clinical Practice (GCP), and peer review. Students develop a research protocol on a domain of integrative health care practice. Restricted to students in integrative medicine programs.

INTM 6213. Clinical Approaches in Integrative Medicine. 3 Credits.

Foundational understanding of complementary and integrative health (CIH); commonly used CIH approaches discussed within the larger framework of determinants of health. Restricted to students in integrative medicine programs with the permission of the instructor.

INTERIOR ARCHITECTURE (IA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IA 1099. Variable Topics. 1-36 Credits.

IA 2100. Studio 1. 6 Credits.

Introduction to design through study and application of fundamental design principles and elements to two- and three-dimensional projects. Restricted to undergraduate IA majors.

IA 2125. Introduction to Graphic Communications. 3 Credits.

Introduction to a variety of techniques used in communicating design ideas; image creation, logo design and branding, rendering, basic layouts, modeling, printed and digital presentation skills.

IA 2150. Beginning Sketching for Designers. 3 Credits.

Freehand sketching developed and applied as a tool in all phases of the creative design process.

IA 3200. Studio 2. 6 Credits.

All phases of design, from development of a concept through producing a complete presentation; implementing the different aspects of the design process. Restricted to undergraduate IA majors. Prerequisite: IA 2100.

IA 3225. Understanding Materials and Color. 3 Credits.

The visual perception and interaction of color; interior and exterior materials for use in residential and commercial environments.

IA 3250. Introductory Digital Design Tools. 3 Credits.

Introduction to CAD technology, two-dimensional drawings, plotting, and enhancement of presentations; using CAD for the production of construction drawings. Restricted to undergraduate IA majors.

IA 3300. Studio 3. 6 Credits.

Studio course emphasizing continued refinement of the design process as applied to multifaceted and complex problems in non-residential space. Restricted to undergraduate IA majors. Prerequisite: IA 3200.

IA 3325. Concepts in Modern Architecture. 3 Credits.

Introduction to the history and concepts of architecture, interiors, and furniture, from the Bauhaus movement to the present. Emphasis on creative thinking and cross-cultural perspectives. Credit cannot be earned for this course and CIAR 3325.

IA 3350. Basic Sustainability Design Strategies. 3 Credits.

Introduction to sustainable design and to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) Rating Systems for Interior Design and Construction.

IA 4400. Studio 4. 6 Credits.

Continuation and refinement of the design process to further advance conceptual thinking for development of larger-scale and more complex design problems Restricted to undergraduate IA majors. Prerequisite: IA 3300.

IA 4425. Fundamentals of Lighting and Acoustics. 3 Credits.

Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Restricted to undergraduate IA majors.

IA 4450W. Pre-Design for Studio 5. 3 Credits.

Research methodology applied to development of the senior project. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate IA majors. Prerequisite: IA 4300.

IA 4500. Studio 5. 6 Credits.

Culmination of skills and knowledge gained through the program as demonstrated by the development of an interior design project covering all aspects from conception through presentation. Restricted to undergraduate IA majors. Prerequisite: IA 4400.

IA 4525W. Professional Practice and Internship. 3 Credits.

Industry professionals provide students with guidance concerning the roles and responsibilities of the professional interior designer; written business procedures and practices, legal implications, ethics, trade relations, and designer-client relations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to undergraduate IA majors.

IA 4550. Building Systems: Methods and Processes. 3 Credits.

Organization and preparation of construction documents; methods and materials; application of codes; building systems (mechanical, electrical, plumbing) relevant to function and design of interior spaces. Restricted to undergraduate IA majors.

IA 4560. Selected Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details.

IA 4570. Independent Study. 1-3 Credits.

Independent research and special projects. Students must submit a written plan of study and obtain approval of the faculty member directing the study prior to enrollment. Restricted to junior and senior IA majors.

IA 6100. Studio 1 Graduate. 6 Credits.

Introduction to the theory and application of design principles and elements in the built environment and to two- and three-dimensional projects; understanding the design process while adhering to a concept or parti. Restricted to graduate IA majors.

IA 6125. Graphic Communications. 3 Credits.

Concepts and techniques used successfully in communicating design; graphic design principles, including hierarchy, emphasis, balance, rhythm and contrast, tools used in creating two-dimensional communication ideas; image creation, logo design and branding, rendering, basic layouts, three-dimensional modeling, printed and digital presentation skills.

IA 6150. Sketching Architecture and Design. 3 Credits.

Three-dimensional mechanical drafting and free-hand sketching developed and applied as a tool in all phases of the creative design process; using line value, 2D and 3D representation of the built environment.

IA 6200. Studio 2 Graduate. 6 Credits.

Application of fundamental knowledge of design to complex three-dimensional projects and small scale interior projects. Restricted to graduate IA majors. Prerequisite: IA 6100.

IA 6225. Interior Materials and Color Theory. 3 Credits.

Visual perception and interaction of color; interior and exterior materials for residential and commercial environments; interior building methods and materials as they relate to interior build-outs, furniture grade materials, and construction; materials qualities, strengths, weaknesses, and appropriate usage.

IA 6250. Digital Drafting and Modeling. 3 Credits.

Introduction to CAD technology, two-dimensional drawings, plotting and enhancement of presentations. Use of CAD for the production of construction drawings. Restricted to graduate IA majors.

IA 6300. Studio 3 Graduate. 6 Credits.

Continued exploration of the design process as applied to medium scale projects. Restricted to graduate IA majors. Prerequisite: IA 6200.

IA 6325. Case Studies: Bauhaus to Bilbao. 3 Credits.

Modern and contemporary architectural ideas and concepts explored through key buildings and interiors of the twentieth and twenty-first centuries; focus on modernist works in Washington, DC. Credit cannot be earned for this course and CIAR 6325.

IA 6350. Sustainability and the Built Environment. 3 Credits.

The application of sustainable design; introduction to the U.S. Green Building Council's Leadership in Energy and Environmental Design (LEED) rating system, the Living Building Challenge, and the WELL Building Standard.

IA 6400. Studio 4 Graduate. 6 Credits.

Continued refinement of the design process to further advance conceptual thinking for development of larger-scaled and more complex design problems. Restricted to graduate IA majors. Prerequisite: IA 6300.

IA 6425. Lighting and Acoustics. 3 Credits.

Terminology, concepts, and principles of lighting design; acoustic principles as they relate to building design. Restricted to graduate IA majors.

IA 6450. Research Seminar for Studio 5. 3 Credits.

Students synthesize knowledge and define an area of interest that is well established or newly emerging within the discipline in preparation for the capstone project in Studio 5. Restricted to graduate IA majors. Prerequisite: IA 6300.

IA 6500. Studio 5 Graduate. 6 Credits.

Students create and design an individual capstone interior design project that meets the learning objectives, accreditation standards, and requirements of the program. Restricted to graduate IA majors. Prerequisite: IA 6400.

IA 6525. Practicum and Internship. 3 Credits.

Students work with professional interior designers, architects, or industry-related professionals participating in a project based setting. Roles and responsibilities of the professional interior designer; business procedures, legal-implications, ethics, trade relations, and designer-client-contractor relations. Restricted to graduate IA majors. Prerequisite: IA 6400.

IA 6550. Structures and Building Systems. 3 Credits.

Organization and preparation of construction documents; methods and materials; application of codes; mechanical, electrical, and plumbing building systems as related to function and design of interior spaces. Restricted to graduate IA majors.

IA 6560. Selected Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

INTERNATIONAL AFFAIRS (IAFF)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IAFF 1001. First-Year Experience. 1 Credit.

First-Year Experience assists students in developing their personal, academic, and career goals. Restricted to students in the Elliott School.

IAFF 1005. Introduction to International Affairs. 3 Credits.

Introduction to the field of international affairs; the challenge of promoting cooperation and order in a world in which competition, conflict, and disorder are common; interstate relations, intrastate conflicts, regional problems, and old and new global challenges. Credit cannot be earned for this course and PSC 1003.

IAFF 1099. Variable Topics. 1-36 Credits.**IAFF 2040. Basic Topics in International Affairs. 3 Credits.**

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Primarily for Elliott School freshmen and sophomores.

IAFF 2090. Latin America: Problems and Promise. 3 Credits.

An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America.

IAFF 2091. East Asia-Past and Present. 3 Credits.

An interdisciplinary course offering a comprehensive and integrated introduction to the civilizations and present problems of East Asia.

IAFF 2092. Russia and Eastern Europe: An Introduction. 3 Credits.

A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media.

IAFF 2093. Africa: Problems and Prospects. 3 Credits.

Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa.

IAFF 2094. Europe: International and Domestic Interactions. 3 Credits.

A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisites: IAFF 1005 and PSC 1001.

IAFF 2095. The Middle East in International Affairs. 3 Credits.

Multidisciplinary survey of social, cultural, political, historical, and religious issues in the Middle East with a concentration on the modern period.

IAFF 2101. International Affairs Research Methods. 3 Credits.

Overview of the variety of research methods, both qualitative and quantitative, used in international affairs research; theoretical groundings and approaches to research methods; the research process.

IAFF 2190. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

IAFF 2190W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

IAFF 2444. International Law. 3 Credits.

Overview of public international law. How public international law is established, implemented, interpreted, changed, and enforced; the legal structure underpinning international society; and the relationship between domestic and international law. Credit cannot be earned for this course and PSC 2444.

IAFF 3171. U.S. Foreign Policy Summer Program. 3-4 Credits.

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues. The program has special admission criteria.

IAFF 3172. Conflict and Conflict Resolution. 3 Credits.

Introduction to the field of conflict analysis and resolution. Analysis of conflicts and their resolutions; major theories and driving causes of conflict; barriers to and mechanisms for resolving conflict; and applications to real-world conflicts.

IAFF 3177. Political Economy of Latin America. 3 Credits.

The politics of economic policymaking in Latin America. Successes and failures with policymaking ideas, political reasons for adopting different development models, and political and economic obstacles to prosperity. Restricted to juniors and seniors. Prerequisites: ECON 1011 and ECON 1012; or PSC 2439.

IAFF 3179. Special Topics in Science and Technology Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3180. Special Topics in Security Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3180W. Special Topics in Security Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3181. Special Topics in Conflict Resolution. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3182. Special Topics in Foreign Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3183. Special Topics in Development Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3184. Special Topics in Trade and International Economic Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3185. Special Topics in European and Eurasian Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3186. Special Topics in Asian Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3186W. Special Topics in Asian Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

IAFF 3187. Special Topics in Latin American and Hemispheric Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3188. Special Topics in Middle East Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3189. Special Topics in African Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3190. Special Topics in International Affairs. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisites: IAFF 1005 or PSC 1003.

IAFF 3190W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

IAFF 3191W. Latin American Populism in Global Context. 3 Credits.

Theoretical frameworks for thinking about classical and contemporary examples of Latin American populism in the twentieth and twenty-first centuries; examining these theories and interpretations as they pertain to the origins, process, and outcomes of selected cases. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to . Recommended background: Latin America, upper-level political science/ international affairs coursework, and writing experience.

IAFF 3192. ESIA Dean's Scholars Workshop. 1 Credit.

For Elliott School students who have applied and been accepted to the ESIA Dean's Scholars Program. Students fine-tune their research questions, conduct the bulk of their research, draft abstracts, and outline their papers. Visit the Elliott School website for more information.

IAFF 3193W. ESIA Dean's Scholars Seminar. 3 Credits.

For Elliott School students who have applied and been accepted to the ESIA Dean's Scholars Program. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Visit the Elliott School website for more information.

IAFF 3194W. Latin America's Violent Peace. 3 Credits.

The complex governability challenges facing Latin America; discussion of the historical evolution of conflict and contestation in Latin America through inquiry into patterns in state building, political violence, armed forces, insurgencies, and criminal gangs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Recommended background: Latin America, upper-level political science/international affairs coursework, and writing experience.

IAFF 3195. Internship. 3 Credits.

Internships in public, private, and nonprofit organizations concerned with international affairs. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for up to 6 credits with permission.

IAFF 3198. Independent Study and Research. 1-3 Credits.

For juniors and seniors with a minimum grade-point average of 3.0. Students must find a sponsoring faculty member and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for credit with permission of the dean.

IAFF 3210W. Migration, Gender, and International Development. 3 Credits.

The relationship between migration and international development as an established feature of social and economic life. Gender as a framework for analyzing elements of the migration-development nexus. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

IAFF 3501. International Development Theory, Policy, and Practice. 3 Credits.

Historical overview of theoretical approaches, policies, and practices associated with international development. Possible thematic foci include state-directed development approaches, environmentalist-influenced green development, or similar topics. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W.

IAFF 3513. Human Rights and Ethics. 3 Credits.

Theoretical and empirical basis of human rights from a multi-disciplinary perspective. How rights have been conceptualized, envisioned, imagined, promoted, and asserted by philosophers, political scientists, anthropologists, and other scholars. Prerequisites: ANTH 1002 or ANTH 1002W; or ANTH 1004 or ANTH 1004W. Credit cannot be earned for this course and ANTH 3513.

IAFF 4191. Research Seminar. 3 Credits.

Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. Restricted to juniors and seniors in the Elliott School.

IAFF 4191W. Research Seminar. 3 Credits.

Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive advisor approval. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors in the Elliott School.

IAFF 4199. Senior Thesis. 3 Credits.

Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. Restricted to seniors in the Elliott School.

IAFF 5099. Variable Topics. 1-99 Credits.**IAFF 6101. International Affairs Cornerstone. 3 Credits.**

Political, economic, and social theories of international relations and their applications to practice.

IAFF 6102. Global Gender Policy. 3 Credits.

An interdisciplinary and comparative approach to examination of policies targeted at achieving gender equality and of the costs of policies that are not gender-specific. Topics include poverty reduction, environmental sustainability, social justice, global and personal security, and prevention of and responses to extreme calamities and crises. How global gender policies are rationalized, adopted, implemented, and assessed. Focus on "what works" and why it works; gaps that remain in achieving global gender equality.

IAFF 6106. Nuclear Weapons. 3 Credits.

The technology and politics associated with nuclear weapons. Strategy and deterrence, force planning and operations, and the prospect of nuclear terrorism.

IAFF 6107. The Science of Nuclear Materials. 3 Credits.

Fundamental principles of nuclear materials, including the origins of radiation, manufacture and detection of nuclear materials, nuclear weapons and power issues, and medical uses and environmental issues related to nuclear materials.

IAFF 6108. International Development Policy. 3 Credits.

The changing scope and nature of international development and the challenges currently facing development agencies; how the mixed results of investment in development has brought methods and concepts into question and how agencies are responding to this challenge.

IAFF 6118. Special Topics in International Affairs. 3 Credits.
Topics announced in the Schedule of Classes.

IAFF 6121. International Development Studies Cornerstone. 3 Credits.

Introduction to the concepts and methods of international development. Prerequisite: students in the MA in international development studies program.

IAFF 6122. Development Policy and Practice. 3 Credits.

An overview of economic development in developing countries; key challenges of economic growth, poverty alleviation, and development.

IAFF 6136. Gender and Development. 3 Credits.

Theoretical approaches to gender and development and debates over how to promote gender equity and rights across the gender spectrum. Key issues in gender and development and the range of actors who are involved in promoting gender equality. General patterns, lessons with broader applications, and challenges and differences within and between societies.

IAFF 6137. Development Studies Pre-Capstone Workshop. 1 Credit.

Students work in teams to find a suitable client and negotiate a project, with detailed terms of reference and a work plan to be carried out in the spring semester. Restricted to students in the MA in international development studies program.

IAFF 6138. Special Topics in International Development Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6139. International Development Studies Capstone. 3 Credits.

A project-oriented development course abroad, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in international development studies program.

IAFF 6141. International Science and Technology Policy Cornerstone. 3 Credits.

Introduction to the study of international science and technology policy; focus on policy issues that arise from interactions between scientific and technological developments and government activity.

IAFF 6142. Technology Creation/Diffusion. 3 Credits.

Examination of the relationship between invention (inception), innovation (first application), and dissemination (diffusion) of technological knowledge; focus on the technological environment prevailing in the major developed market economies.

IAFF 6143. Science and Technology Policy Analysis. 3 Credits.

The use of science by policy decision makers; the affects of policy on science and technology; issues of risk, uncertainty, regulation, democratization, and politics in science and technology policy.

IAFF 6145. U.S. Space Policy. 3 Credits.

Origins, evolution, current status, and future prospects of U.S. space policies and programs. U.S. civilian, military, and national security space programs and space activities of the U.S. private sector.

IAFF 6146. Space Law. 3 Credits.

The underlying principles of international space law, with emphasis on issues of particular concern as the uses of space increase for exploration, commerce, and security.

IAFF 6148. Space and National Security. 3 Credits.

Historic and current factors and emerging trends shaping the development and implementation of U.S. national security space policy and strategy, including the global security environment, domestic politics, and technology.

IAFF 6151. Environmental Policy. 3 Credits.

Examination of public policies designed to protect the human and physical environment; focus on the ways science and technology can simultaneously create new environmental problems and contribute to their mitigation and prevention.

IAFF 6153. Science, Technology, and National Security. 3 Credits.

The contributions of science and technology to U.S. security in military, intelligence, and homeland security activities.

IAFF 6157. International Science and Technology Policy Capstone Workshop. 1 Credit.

First course in a two-semester sequence. Second-year students in the MA in international science and technology policy program work in groups on a project addressing a policy problem or issue in international affairs. Restricted to students in the international science and technology policy program.

IAFF 6158. Special Topics in International Science and Technology Policy. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6159. ISTP Capstone Project. 3 Credits.

A seminar designed to synthesize the skills and knowledge that students have acquired in their graduate study. Open only to MA candidates in science and technology policy.

IAFF 6160. Defense Policy and Program Analysis. 3 Credits.

Examination of how national security policy is formulated and translated into a defense budget, program priorities, and force structure. Focus on nuclear forces.

IAFF 6161. International Security. 3 Credits.

Survey of the field of international security studies; overview of key concepts, theories, and approaches; inter-state, intra-state, and transnational security problems and the interrelated nature of these categories; analysis of security topics such as great-power relations, arms racing and arms control, crisis management, civil wars, terrorism, and gender, combined with a review of regional developments; non-military issues that have major security implications, including poverty, health, population movements, energy consumption, and climate change; the role of international organizations in promoting international security, and prospects for the future. Restricted to students in the MA in security policy studies program.

IAFF 6162. Security Policy Analysis. 3 Credits.

Key components of security policy and the decision making behind them. Restricted to students in the MA in security policy studies program.

IAFF 6163. Transnational Security. 3 Credits.

Overview of security concerns that transcend state borders, including terrorism, drug trafficking, organized crime, weapons proliferation, migration, and environmental degradation.

IAFF 6164. Environmental Security. 3 Credits.

The relationship between conflict, environmental degradation, and natural resources, including how the environment, climate change, and natural resources influence national security. Theoretical security concepts and use of multidisciplinary academic literature to consider how environmental security can be integrated into future U.S. defense and foreign policy strategies and decisions.

IAFF 6165. Fundamentals of Intelligence. 3 Credits.

The institutional structure of the intelligence community; the intelligence production cycle, including tasking, collection, analysis, covert action, and counterintelligence; and relations between the intelligence and policy communities.

IAFF 6167. Defense Policy and Program Analysis II. 3 Credits.

Analysis of the development of national security policy and analytic techniques to derive a defense program and force structure from it. Special attention to general-purpose forces.

IAFF 6169. Homeland Security. 3 Credits.

The central missions of a homeland security agency: domestic security, emergency preparedness, technology policy, timely intelligence, counterintelligence, and preemptive actions. How the U.S. has dealt historically with internal security matters; contemporary approaches to security problems.

IAFF 6171. Introduction to Conflict Resolution. 3 Credits.

Interstate disputes, contemporary civil wars, complex political emergencies, and other forms of organized violence.

IAFF 6173. Security and Development. 3 Credits.

Consideration of the relationship between security and development reflecting the growing interest from the security field in issues that have traditionally been the purview of development, and vice versa.

IAFF 6186. Special Topics in Security Policy Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6189. Security Policy Studies Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Prerequisite: students in the MA in security policy studies program.

IAFF 6191. Financial Accounting. 3 Credits.

Basic concepts and methods used in financial reporting to understand content, context, and related processes. Income statement, balance sheet, and statement of cash flows. Detailed accounting procedures, calculations, and choices. Same As: ACCY 6101, MBAD 6211.

IAFF 6193. Finance. 3 Credits.

Financial management examined through financial analyses, fund sources, investing, capital planning/budgeting, dividend policy, and working capital management. Money and capital markets, primary and secondary markets, and cash and futures markets. Prerequisites: MBAD 6211, MBAD 6224 and MBAD 6242; or MBAD 6211, MBAD 6221, MBAD 6222 and MBAD 6242; or DNSC 6202, MBAD 6211 and MBAD 6242. Same As: MBAD 6235.

IAFF 6198. Special Topics in International Economic Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more information.

IAFF 6199. International Trade and Investment Policy Capstone. 1 Credit.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in international trade and investment policy program.

IAFF 6208. Special Topics in Global Communication. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6209. Global Communication Capstone. 3 Credits.

A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in global communication program.

IAFF 6211. Master of International Policy and Practice Leadership Practicum. 3 Credits.

Major issues in international affairs confronting policymakers in the United States and around the world; the evolving nature of international leadership; how diverse actors exercise power in the international realm. Restricted to MIPP degree candidates.

IAFF 6212. Strategy and Leadership. 3 Credits.

The evolving nature of international leadership in the twenty-first century; lateral leadership for managing expert, networked teams to address complex problems requiring adaptation and learning; strategic thinking and team leadership skills. Restricted to students in the MIPP program.

IAFF 6213. Leadership Capstone. 3 Credits.

Practical application of lateral leadership skills to researching and designing an individual leadership project addressing a critical issue in the student's professional field; qualitative research methods, program design and evaluation, coalition building, proposal writing, and oral presentation skills. Restricted to students in the MIPP program. Prerequisites: IAFF 6212.

IAFF 6216. Economic Tools for Global Policy. 3 Credits.

Analysis of economic issues and concrete policy problems related to globalization, trade, and technology.

IAFF 6222. Special Topics in International Policy and Practice. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See school for more details.

IAFF 6302. Taiwan: Internal Development and Foreign Policy. 3 Credits.

The social, political, and economic development in Taiwan since World War II; Taiwan's foreign affairs.

IAFF 6305. U.S.-South Asia Relations. 3 Credits.

The nature of challenges and opportunities facing the South Asia region and the U.S. policy response. The rise of India as a global actor; relations between India and Pakistan; political transformation in the countries of the region, including Nepal and Sri Lanka.

IAFF 6308. International Relations of South Asia. 3 Credits.

The foreign policy choices of South Asian countries and the domestic and international linkages that drive these decisions; the different patterns of state-society relationships and identity formations which determine a country's external alliances and partnerships; the changing nature of the Asian balance of power and roles of key Asian actors.

IAFF 6318. Special Topics in Asian Studies. 3 Credits.

Topics announced in Schedule of Classes.

IAFF 6321. European and Eurasian Studies Cornerstone. 3 Credits.

Survey of current research on Europe and Eurasia. Research paper required. Restricted to students in the MA in European and Eurasian studies program or with permission of the instructor.

IAFF 6338. Special Topics in European and Eurasian Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6339. European and Eurasian Studies Capstone. 3 Credits.

Survey of current research on Europe and Eurasia. Research paper required. Restricted to students in the MA in European and Eurasian studies program or with permission of the instructor.

IAFF 6341. Latin American and Hemispheric Studies Cornerstone. 3 Credits.

Multidisciplinary foundation course for the Latin American and hemispheric studies program.

IAFF 6342. Drug Trafficking in the Americas. 3 Credits.

A historical, comparative, and contemporary picture of drug trafficking in the Americas and the anti-narcotics policies to combat this trade.

IAFF 6357. Latin American and Hemispheric Studies Pre-Capstone Workshop. 2 Credits.

First in a two-course sequence with IAFF 6359. Planning and preparation to undertake field-based research related to a specific problem or issue of interest to a sponsoring organization. Restricted to students in the MA in Latin American and hemispheric studies program.

IAFF 6358. Special Topics in Latin American and Hemispheric Studies. 3 Credits.

Topics announced in the Schedule of Classes.

IAFF 6359. Latin American and Hemispheric Studies Capstone. 2 Credits.

Second in a two-course sequence with IAFF 6357. A project-oriented course, designed to apply the skills and synthesize the knowledge that students have acquired in their graduate study. Restricted to students in the MA in Latin American and hemispheric studies program.

IAFF 6361. Middle East Studies Cornerstone. 3 Credits.

Multidisciplinary foundation course for the Middle East studies program. Introduction to key issues.

IAFF 6362. Regional Security in Middle East. 3 Credits.

The nature, elements, and future of security in the Middle East region. Various analytical frameworks are examined to consider the interplay of national interests, ideology, and regionalism. Issues in regional security.

IAFF 6363. Political Economy of the Middle East. 3 Credits.

Current political economy of the Middle East, including an overview of Islamic economic concepts and political organizations.

IAFF 6364. Religion and Society in the Modern Middle East. 3 Credits.

Comparative overview, both historical and current, of religious and social trends in the Middle East.

IAFF 6377. Middle East Studies Program Capstone Workshop. 1 Credit.

First in a two-course sequence with IAFF 6379. Second-year students in the MA in the Middle East studies program work in groups on a project addressing a policy problem or issue in international affairs. Restricted to students in the MA in Middle East studies program.

IAFF 6378. Special Topics in Middle East Studies. 3 Credits.

Topics announced in the Schedule of Classes. Credit cannot be earned for this course and IBUS 4900, IBUS 6290.

IAFF 6379. Middle East Studies Capstone. 3 Credits.

Second in a two-course sequence with IAFF 6377. A project-oriented course, designed to synthesize the skills and knowledge that students have acquired in their graduate study. Restricted to students in the MA in Middle East studies program.

IAFF 6381. African Studies Cornerstone. 3 Credits.

Introduction to the broad historical and contemporary forces that have shaped and continue to affect Africa. Key concepts, theories, and analytic approaches that help deepen understanding of the region. Important challenges, as well as opportunities and innovations, shaping the region's future.

IAFF 6385. Special Topics in African Studies. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See the Schedule of Classes for more information.

IAFF 6501. Quantitative Analysis for International Affairs Practitioners. 3 Credits.

Overview of quantitative measurement, data summary, statistical inference, and elementary modeling such as linear regression.

IAFF 6502. Professional Skills I. 1 Credit.

Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6503. Professional Skills II. 1 Credit.

Continuation of IAFF 6502. Short courses that focus on developing specialized skills for international affairs professionals. Topics announced in the Schedule of Classes.

IAFF 6504. Intermediate Conversation. 1 Credit.

Short courses designed to develop professional language skills for international affairs students. Specific languages announced in the Schedule of Classes.

IAFF 6505. Elliott School Seminars. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See Schedule of Classes for more details.

IAFF 6515. Graduate Internship in International Affairs. 0 Credits.

Internship and research paper involving experience at an international organization or with international issues. Restricted to MA candidates in the Elliott School.

IAFF 6516. Independent Study and Research. 1-3 Credits.

Restricted to MA candidates in the Elliott School. Prerequisites: Written permission of the instructor.

IAFF 6517. Independent Study and Research. 1-3 Credits.

IAFF 6521. U.S. Foreign Policy Summer Program. 3-4 Credits.

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues.

IAFF 6898. Capstone Workshop. 2 Credits.

First part of two-semester sequence that addresses a concrete policy problem or issue in international affairs. In small teams, students refine the policy question of the capstone project, develop a research strategy, select appropriate research methods, and begin research. Continued in IAFF 6899.

IAFF 6899. Capstone Course. 2 Credits.

Second part of a two-semester sequence. Completion of the capstone sequence by conduct of the group's research, completion of the capstone report, and oral presentation of research findings and recommendations. Prerequisite: IAFF 6898.

IAFF 6998. Thesis. 3 Credits.

Restricted to MA candidates in the Elliott School who have selected the thesis option.

IAFF 6999. Thesis. 3 Credits.

Open to Elliott School MA candidates who have selected the thesis option.

INTERNATIONAL BUSINESS (IBUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

IBUS 1099. Variable Topics. 1-36 Credits.

IBUS 3001. Introduction to International Business. 3 Credits.

The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Same As: IBUS 3001W.

IBUS 3001W. Introduction to International Business. 3 Credits.

The international business environment, including social, cultural, political, technological, and institutional domains; multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044. Same As: IBUS 3001.

IBUS 3101. Global Financial Environment. 3 Credits.

The international economic, trade, and financial environment in which global business operates and how developments in these areas affect business activity. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044.

IBUS 3201. International Marketing Management. 3 Credits.

Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of strategies at the entry and global stages. Prerequisites: IBUS 3001.

IBUS 3301. International Business Finance. 3 Credits.

Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisites: IBUS 3101 and BADM 3501.

IBUS 4202. Regional Strategy for Multinationals. 3 Credits.

The business, economic, investment, and market environments in different regions of the world; regional strategy framework for responding to business opportunities in regional markets. Prerequisites: IBUS 3001.

IBUS 4203. Foreign Market Analysis. 3 Credits.

Project course involving market research for target market selection, market entry strategy, in-country marketing plan, and recommendations for strategy implementation in the target country. Focus on consulting process as ancillary component. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3201.

IBUS 4302. International Banking. 3 Credits.

Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective. Prerequisite: IBUS 3001, except by permission of instructor, and IBUS 3301.

IBUS 4303. International Monetary and Financial Issues. 3 Credits.

Risks facing the global financial and the international monetary systems and their macro-economic framework; role of financial oversight institutions, the dollar and of central banks; old and new economic players in the global system. Prerequisites: ECON 1012 or permission of the instructor.

IBUS 4401. Managing the Multinational Enterprise. 3 Credits.

The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 4402. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries; cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Prerequisites: IBUS 3001 or IBUS 3101. Credit cannot be earned for this course and IBUS 6402.

IBUS 4402W. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: IBUS 3001 or IBUS 3002; or permission of the instructor.

IBUS 4403. Oil: Industry, Economy, and Society. 3 Credits.

Multidisciplinary approach, related primarily to political economy and management, to oil and its effects on business, nation-states, and the world economy. Restricted to juniors and seniors who are familiar with economics measures and concepts at the level of ECON 1011 and ECON 1012.

IBUS 4404. Global Energy. 3 Credits.

Fundamental economics and politics of the energy business; effects on business decisions and strategies; conventional energy generation technologies and alternative technologies. Course equivalent or permission of the instructor may be substituted for the prerequisite. Restricted to juniors and seniors. Prerequisite: ECON 1012.

IBUS 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Prerequisite: IBUS 3001, except by permission of instructor. Credit cannot be earned for this course and IAFF 6378.

IBUS 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: IBUS 3001, except by permission of instructor.

IBUS 4995. Independent Study. 1-12 Credits.

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. Prerequisite: IBUS 3001, except by permission of instructor.

IBUS 5099. Variable Topics. 1-99 Credits.

IBUS 6201. International Marketing. 3 Credits.

Methods and tools for analyzing world markets and their respective consumers and environments to develop marketing strategies for a global market. Selecting new international markets for entry and establishing a brand and strong regional presence. Prerequisites: MBAD 6245. Credit cannot be earned for this course and IBUS 3201.

IBUS 6202. Regional Strategy for Multinationals. 3 Credits.

Development of a framework to understand dynamic business, cultural, and economic environments in Asia and Latin America. Regional business strategies of multinational companies from outside and within Asia and Latin America that respond to business opportunities and challenges in these regions.

IBUS 6290. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: ACCY 6900. Credit cannot be earned for this course and IAFF 6378.

IBUS 6297. International Management Experience. 1-6 Credits.

May be repeated for credit. Same As: FINA 6297, MGT 6297, MKTG 6297, SMPP 6297.

IBUS 6301. International Business Finance. 3 Credits.

Analysis of major issues and developments in the international financial environment and their impact on multinational corporations and financial institutions. Credit cannot be earned for this course and IBUS 3301.

IBUS 6302. Seminar: International Banking. 3 Credits.

Evolution in international banking and other international financial institutions. Functioning of international banking operations, public policy issues and regulatory issues in international banking, and the effect of international banks on national monetary policies.

IBUS 6303. External Development Financing. 3 Credits.

Institutions, instruments, and theory of external development financing; financial flows to developing countries; development finance and the role of international and regional development banks; policies, methods, and practices of the World Bank, the IMF, and others; technical assistance, training, capacity building, and role of institutions in sustained development. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6304. Financial Crises and the Global Economy. 3 Credits.

The causes of a financial crisis and how various countries have responded to their specific crises; the relationship between financial crises and other economic developments, particularly in emerging market and developing economies; how global financial arrangements have evolved to help manage the risks of contagion. Recommended background: graduate-level study in macroeconomics.

IBUS 6305. Global Investment Banking. 3 Credits.

Examination of investment banking as practiced in a global context from a strategic perspective using case studies and readings. Topics covered include securities underwriting and derivatives instruments, risk management, and business development strategies. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6307. International Portfolio Management. 3 Credits.

Theory and practice of international investment. Portfolio construction and optimization. Effects of exchange rate changes on portfolio risk and return. International asset pricing models and trading institutions. Prerequisites: MBAD 6234; and MBAD 6243 or ECON 6284.

IBUS 6308. International Reporting and Control. 1.5 Credit.

. Credit cannot be earned for this course and ACCY 6110.

IBUS 6309. International Accounting. 1.5 Credit.

IBUS 6310. International Financial Reporting Standards. 1.5 Credit.

. Same As: ACCY 6112.

IBUS 6400. Oil: Industry, Economy, and Society. 3 Credits.

Multidisciplinary approach to the study of oil and its effects on business, nation-states, and the world economy, based primarily on political economy and management perspectives. Topics include the oil industry, the global oil environment, and the potential effects of oil on a society. (Same as IAFF 6378).

IBUS 6401. International Business Strategy. 3 Credits.

The changing nature of the international environment and the resulting impact on strategy of both U.S. and foreign multinational corporations. Marketing, production, and financial strategy. Focus of discussion is at the company level. Prerequisites: MBAD 6245. Credit cannot be earned for this course and IBUS 4401.

IBUS 6402. Managing in Developing Countries. 3 Credits.

Challenges of operating in developing countries. Cross-country experience and case studies exploring issues of institutions, corruption, infrastructure, private-public partnerships, competition, regulation, and global standards. Credit cannot be earned for this course and IBUS 4402.

IBUS 6403. International Business Negotiations. 3 Credits.

Theories and application in International Business Negotiations (IBN). Formulation of concepts and frameworks; development of systematic approaches to planning for and conducting IBN. Integration of functional, environmental, and institutional contexts facing negotiators internationally. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6404. New Global Competitive Framework. 3 Credits.

How industries develop sustained competitive advantages within the global framework. The European Union's "single market" and the Economic-Monetary Union; the transformation of formerly centrally planned economies; the changing Japanese economy and emerging Pacific Basin, with implications for the U.S. economy, industries, and firms. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6405. Legal Aspects of International and Multinational Business. 3 Credits.

Legal environment of international and multinational business including legal systems, antitrust laws, regulation of direct investment, international arbitration and expropriation; topics of current interest. Prerequisites: MBAD 6242 and MBAD 6243; or ECON 6283 or ECON 6284.

IBUS 6500. Global Currency and Stock Trading. 1.5-3 Credits.

Linkages of global events and risks and their impact on financial markets; foreign exchange market trading philosophies, techniques, strategies, and rules. Real-time practical training in trading major currencies, stocks, and managing an emerging markets portfolio in the GWSB Capital Markets Trading Room.

IBUS 6995. Directed Readings and Research. 3 Credits.

Supervised readings or research in selected fields within business administration. Permission of the instructor required prior to enrollment. May be repeated once for credit.

IBUS 6999. Thesis Seminar. 3 Credits.

No fixed content.

IBUS 8311. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Same as SMPP 8311.

IBUS 8361. Colloquium on International Business. 3 Credits.

Examination of selected topics in international business, with emphasis on major new theoretical and empirical developments. Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

IBUS 8397. Doctoral Seminar. 1-3 Credits.

No fixed content.

IBUS 8900. Thesis Research. 3 Credits.

No fixed content.

IBUS 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

IBUS 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

ITALIAN (ITAL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ITAL 1001. Basic Italian I. 4 Credits.

Handling the immediate context of daily experience in spoken and written Italian: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

ITAL 1002. Basic Italian II. 4 Credits.

Speaking and writing in Italian about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Laboratory fee. Prerequisite: ITAL 1001.

ITAL 1003. Intermediate Italian I. 4 Credits.

Third-semester course designed for students with a basic overall knowledge of the Italian language; strengthens proficiency in listening, speaking, reading, and writing; enhances critical understanding of Italian culture. Course conducted in Italian. Prerequisite: ITAL 1002.

ITAL 1004. Intermediate Italian II. 3 Credits.

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: ITAL 1003. Laboratory fee.

ITAL 1012. Beginning Intensive Italian. 8 Credits.

Basic skills in speaking, comprehension, reading, and writing in standard Italian. Covers an academic year of instruction in one semester.

ITAL 1099. Variable Topics. 1-36 Credits.**ITAL 2005. Language, Culture, and Society I. 3 Credits.**

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Laboratory fee. Prerequisite: ITAL 1004.

ITAL 2006. Language, Culture, and Society II. 3 Credits.

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects. Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Laboratory fee. Prerequisite: ITAL 2005.

ITAL 3010. Advanced Italian Grammar and Style. 3 Credits.

Compositions, drills, dictations; translations into Italian; study of vocabulary and syntax with emphasis on stylistic devices. Taught in Italian. Prerequisite: ITAL 2006.

ITAL 3099. Variable Topics. 1-12 Credits.**ITAL 3100. Introduction to Italian Literature. 3 Credits.**

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods; study of Italian literature in its cultural context; close reading approach and introduction to literary vocabulary. Taught in Italian. Prerequisite: ITAL 2006.

ITAL 3100W. Introduction to Italian Literature. 3 Credits.

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods; study of Italian literature in its cultural context; close reading approach and introduction to literary vocabulary. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Taught in Italian.

ITAL 3201. History of Italian Literature from the Middle Ages Through the Seventeenth Century. 3 Credits.

Development of genre and movements. Selected readings from the relevant periods, including complete texts of epics, essays, novels, and plays. Taught in Italian. Prerequisite: ITAL 2006.

ITAL 3202. History of Italian Literature from the Eighteenth Through the Twentieth Century. 3 Credits.

Philosophical and literary movements of the modern period. Selected readings and reading of complete texts of novels and drama. Taught in Italian. Prerequisite: ITAL 2006.

ITAL 3202W. History of Italian Literature from the Eighteenth Through the Twentieth Century. 3 Credits.

Philosophical and literary movements of the modern period. Selected readings and reading of complete texts of novels and drama. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Taught in Italian.

ITAL 3290. Textual Analysis. 3 Credits.

Close examination of critical methods and vocabulary used in literary study as applied to Italian Literature; linguistic and stylistic difficulties in textual analysis. Taught in Italian. Prerequisite: ITAL 3100.

ITAL 3300. Italian Literature and Culture in Translation. 3 Credits.

Dynamics of Italian-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required.

ITAL 3600. Special Topics in Italian Literature and Culture. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Taught in Italian.

ITAL 4100. The Italian American Experience. 3 Credits.

The dynamics of the Italian American experience from its origins to the present day; what it is to be American, how ethnic identity should be expressed, and who has the power to control a group's representation. Taught in English.

ITAL 4183. History of Italian Film. 3 Credits.

Study of Italian films, directors, and styles, with films examined as aesthetic objects in their own right and in relation to the wider social and cultural environment. The verbal and visual language necessary for decoding and describing film. The course is conducted in English.

ITAL 4184. Contemporary Italian Cinema. 3 Credits.

Contemporary Italian culture viewed through an examination of Italian cinema of the twenty-first century; diversity, immigration and integration; gender and sexuality; and the changes brought about by economic upheaval and the changing role of work. Taught in English.

ITAL 4200. L'Inferno di Dante. 3 Credits.

The medieval Italian context in which the *Inferno* was written; cultural and political developments that directly affected the author; key issues raised, from the nature and causes of political conflict to the role of morality in society; the history of the *Inferno*'s reception and its continuing importance in Italian political and cultural life. Taught in Italian. Prerequisite: ITAL 2006.

ITAL 4300. Il Decamerone di Boccaccio. 3 Credits.

Study of Boccaccio's *Decameron* as a foundational text in the Italian literary canon and key work in Western cultural imaginary; historic and cultural context of the author's presentation of his social world, including issues of class structures, gender and family relations, religious and civic rituals, and dress. Taught in Italian. Prerequisite: ITAL 2006.

ITAL 4380. Italian Journeys Medieval to Postmodern. 3 Credits.

Italy's dual role as the home of legendary travelers and the destination for an endless stream of tourists. The reality and metaphor of travel viewed through travel diaries, ship logs, letters to patrons, maps, travel guides, poetry, and film. The course is conducted in English.

ITAL 4500. Studies in Medieval and Early Renaissance Literature. 3 Credits.

Works by Dante, Petrarca, and Boccaccio. Structure, rhetorical features, and problems of narrative organization; historical and ideological aspects of the works as well as to cultural influence. Taught in Italian. Prerequisite: ITAL 3290.

ITAL 4560. Modern Italian Novel. 3 Credits.

Reading of Manzoni, Verga, Bassani, Calvino, Eco, and Sanguinetti, the most important Italian novelists of the nineteenth and the twentieth centuries. The relationship of each work to its social and cultural context and to the novel as a genre. Prerequisite: ITAL 3290.

ITAL 4800. Independent Study. 1-4 Credits.

Permission of the department chair and instructor required prior to enrollment. May be repeated for credit. Taught in Italian.

ITAL 5099. Variable Topics. 1-99 Credits.

JAPANESE (JAPN)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

JAPN 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

JAPN 1001. Beginning Japanese I. 4 Credits.

Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

JAPN 1002. Beginning Japanese II. 4 Credits.

Continuation of JAPN 1001. Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee.

JAPN 1005. Intensive Beginning Japanese. 8 Credits.

Intensive beginning course equivalent to JAPN 1001- JAPN 1002. Laboratory fee.

JAPN 1099. Variable Topics. 1-36 Credits.

JAPN 2003. Intermediate Japanese I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee. Prerequisites: JAPN 1002 or JAPN 1005; or permission of the instructor.

JAPN 2004. Intermediate Japanese II. 4 Credits.

Continuation of JAPN 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee. Prerequisites: JAPN 2003 or permission of the instructor.

JAPN 2006. Intensive Intermediate Japanese. 8 Credits.

Intensive intermediate course equivalent to JAPN 2003 and JAPN 2004. Laboratory fee. Prerequisites: JAPN 1002 or JAPN 1005.

JAPN 3099. Variable Topics. 1-12 Credits.

JAPN 3105. Intermediate Japanese III. 3 Credits.

Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Laboratory fee. Prerequisites: JAPN 2004 or JAPN 2006; or permission of the instructor.

JAPN 3106. Intermediate Japanese IV. 3 Credits.

Continuation of JAPN 3105. Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Laboratory fee. Prerequisites: JAPN 3105 or permission of the instructor.

JAPN 3111. Japanese Literature in Translation I. 3 Credits.

An introductory survey of Japanese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

JAPN 3112. Japanese Literature in Translation II. 3 Credits.

Continuation of JAPN 3111. An introductory survey of Japanese literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

JAPN 3123. Introduction to Japanese Linguistics I. 3 Credits.

The structure of the Japanese language with focus on modern Japanese phonology, grammar, and pragmatics. Course is conducted in English.

JAPN 3124. Introduction to Japanese Linguistics II. 3 Credits.

Continuation of JAPN 3123. Focus on grammatical analysis of modern Japanese, the history of the Japanese language, and linguistic universals. Course is conducted in English.

JAPN 3132. Tale of Genji: Love and Politics. 3 Credits.

Social and aesthetic topics in Japanese culture and literature revealed in the story The Tale of Genji and examined in selected secondary sources.

JAPN 3162. Japanese Culture Through Film. 3 Credits.

Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from premodern times to the modern era. Lectures and discussion in English. (Same as ANTH 3709).

JAPN 4107. Readings in Modern Japanese I. 3 Credits.

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisites: JAPN 3106 or permission of the instructor.

JAPN 4108. Readings in Modern Japanese II. 3 Credits.

Continuation of JAPN 4107. Readings in selected modern literary works, social science materials, and documentary materials. Prerequisites: JAPN 3106 or permission of the instructor.

JAPN 4109. Introduction to Bungo, Literary Japanese. 3 Credits.

Introduction to Bungo, the literary Japanese used in official government documents up to World War II, newspapers and journals through the Meiji period, and literature from the prose of the Tales of Ise to the poetry of Tawara Machi. Prerequisites: JAPN 3106 or permission of the instructor.

JAPN 4110. Readings in Classical Japanese. 3 Credits.

Readings in premodern texts in Japanese literature, history, and philosophy. Prerequisites: JAPN 4109 or permission of the instructor.

JAPN 4121W. Advanced Conversation and Composition I. 3 Credits.

Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: JAPN 3106 to JAPN 4121.

JAPN 4122W. Advanced Conversation and Composition II. 3 Credits.

Continuation of JAPN 4121. Productive skills at the advanced discourse level, topic-specific practice of commonly used speech patterns and writing formats. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: JAPN 4121.

JAPN 4185. Directed Reading I. 3 Credits.

Reading of material in the student's field of interest. Permission of the instructor required prior to enrollment.

JAPN 4186. Directed Reading II. 3 Credits.

Continuation of JAPN 4185. Reading of material in the student's field of interest. Permission of the instructor required prior to enrollment.

JAPN 4198. Proseminar: Readings for the Major in Japanese Language and Literature. 3 Credits.

Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: JAPN 3106.

JAPN 4199. Proseminar: Readings for the Major in Japanese Language and Literature. 3 Credits.

Continuation of JAPN 4198. Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: JAPN 4198.

JAPN 5099. Variable Topics. 1-99 Credits.

JUDAIC STUDIES (JSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

JSTD 1099. Variable Topics. 1-36 Credits.**JSTD 2001. Topics in Judaic Studies: Pre-modern. 3 Credits.**

Focus on the pre-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 2002. Topics in Judaic Studies: Modern. 3 Credits.

Focus on the post-1650 period. Topics vary by semester. See the Schedule of Classes for details.

JSTD 2060. Modern Jewish History. 3 Credits.

Survey of Jewish history from the seventeenth century to the present, focusing on Europe, America, and the Middle East. The myriad political, economic, and intellectual challenges of modernity to Jewish life and how Jews responded to these challenges through various religious and secular movements and with new concepts of identity and community. Same As: HIST 2060.

JSTD 2812. History of Zionism. 3 Credits.

Critical historical survey of the development of Jewish nationalist thought in general and Zionism in particular, from its genesis in the 1880s up until the establishment of the State of Israel in May 1948. Same As: HIST 2812.

JSTD 3099. Variable Topics. 1-12 Credits.**JSTD 4018. Senior Thesis. 1 Credit.**

For Judaic studies majors. Students choose a topic in any major subfield of Judaic studies, select a faculty advisor who specializes in the subfield, conduct research, and produce an annotated bibliography and a proposal that previews the main arguments of the thesis.

JSTD 4019. Senior Thesis. 3 Credits.

Continuation of JSTD 4018. For Judaic studies majors. Completion of the thesis and oral presentation before Judaic studies students and faculty.

JSTD 5099. Variable Topics. 1-99 Credits.**JSTD 6001. Topics in Judaic Studies. 3 Credits.****JSTD 6097. Independent Readings/Research. 1-3 Credits.**

Written permission of the instructor required prior to enrollment. May be repeated for credit with permission.

JSTD 6154. Internship. 1-6 Credits.

Elective internship in areas related to Jewish cultural study.

JSTD 6201. Jewish Life in Contemporary America. 3 Credits.**JSTD 6211. Displaying Jewish Culture: Landmark Exhibitions on Judaism and the Jewish Experience. 3 Credits.****JSTD 6298. Capstone Seminar in Jewish Cultural Arts. 3 Credits.**

The culminating experience for graduate students in the Jewish Cultural Arts program, the capstone synthesizes the skills and knowledge gained in the course of the degree program. Students conceptualize, develop, and execute a public cultural event of their own devising. Taken in the final spring semester of the student's program.

KOREAN (KOR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

KOR 1001. Beginning Korean I. 4 Credits.

Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee.

KOR 1002. Beginning Korean II. 4 Credits.

Continuation of KOR 1001. Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee.

KOR 1099. Variable Topics. 1-36 Credits.**KOR 2003. Intermediate Korean I. 4 Credits.**

Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee.

KOR 2004. Intermediate Korean II. 4 Credits.

Continuation of KOR 2003. Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee.

KOR 3099. Variable Topics. 1-12 Credits.**KOR 3105. Intermediate Korean III. 3 Credits.**

Continuation of reading of texts, writing of short pieces, conversation, and systematic review of grammar, focusing on business Korean. Prerequisite: KOR 2004. Laboratory fee.

KOR 3106. Intermediate Korean IV. 3 Credits.

Continuation of KOR 3105. Continuation of reading of texts, writing of short pieces, conversation, and systematic review of grammar, focusing on business Korean. Laboratory fee. Prerequisite: KOR 3105.

KOR 3111. Korean Literature in Translation. 3 Credits.

An introductory survey of Korean literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The pre-modern period.

KOR 3112. Korean Literature in Translation. 3 Credits.

Continuation of KOR 3111. An introductory survey of Korean literature read in English translation, including fiction, poetry, drama, essays, diaries, testimonials. The modern period.

KOR 3123. Introduction to Korean Linguistics. 3 Credits.

The structure of the Korean language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

KOR 3124. Introduction to Korean Linguistics. 3 Credits.

Continuation of KOR 3123. The structure of the Korean language, including such topics as the structure of sounds and words, sentence meaning and structure, the writing system, adaptation of foreign vocabulary, pragmatics, variation, and change. Course conducted in English.

KOR 3162. Korean Culture through Film. 3 Credits.

The intersection of gender, class, and nation in contemporary society through the lens of Korean film. English subtitles; lectures and discussion in English.

KOR 3189. History of Korean Design, Decorative Arts, and Material Culture. 3 Credits.

How objects and environments such as architecture, domestic artifacts, gardens, food ways, vehicles, musical instruments, and clothing shape Korean life experience and forge personal and cultural identities.

KOR 3190. Korean Arts and Culture. 3 Credits.

Fundamentals of Korean arts and culture in interdisciplinary and comparative approaches; contrasts between other Asian nations and Korea.

KOR 4107. Readings in Modern Korean I. 3 Credits.

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: KOR 3106 .

KOR 4108. Readings in Modern Korean II. 3 Credits.

Continuation of KOR 4107. Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: KOR 3106 .

KOR 4109. Introduction to the History of the Korean Language. 3 Credits.

Diachronic and synchronic descriptions of the Korean language. Conducted in English.

KOR 4121W. Advanced Korean Conversation and Composition I. 3 Credits.

Comprehensive study of advanced vocabulary and sentence structure through intensive reading, writing, speaking, and listening. Designed to improve proficiency, accuracy, and fluency in formal writing and oral communication skills. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: KOR 3106.

KOR 4122W. Advanced Korean Conversation and Composition II. 3 Credits.

Continuation of KOR 4121W. Comprehensive study of advanced vocabulary and sentence structure through intensive reading, writing, speaking, and listening. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: KOR 4121W.

KOR 4190. North Korean Society and Culture. 3 Credits.

Historical, political, social, and cultural transformations of North Korea from 1948 to present.

KOR 5099. Variable Topics. 1-99 Credits.

LATIN (LATN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LATN 1001. Beginning Latin I. 4 Credits.

Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

LATN 1002. Beginning Latin II. 4 Credits.

Continuation of LATN 1001. Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

LATN 1099. Variable Topics. 16 Credits.

LATN 2001. Intermediate Latin. 3 Credits.

Development of ability to read and understand Latin literature of moderate difficulty. Prerequisites: LATN 1001 and LATN 1002.

LATN 2002. Poetry of Empire. 3 Credits.

Study of selected Latin poets in the original including discussion of social and political context. Prerequisites: LATN 2001. Same As: LATN 2002W.

LATN 2002W. Poetry of Empire. 3 Credits.

Study of selected Latin poets in the original including discussion of social and political context. Prerequisites: LATN 2001. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: LATN 2002.

LATN 3001. Major Latin Authors I. 3 Credits.

Topics vary; selections from one or two major authors each semester. May be repeated for credit provided the topic differs. See department for more details. Prerequisites: LATN 2001 and LATN 2002; or permission of the instructor. Same As: LATN 3001W.

LATN 3001W. Major Latin Authors I. 3 Credits.

Topics vary; selections from one or two major authors each semester. May be repeated for credit provided the topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: LATN 2001 and LATN 2002; or permission of instructor. Same As: LATN 3001.

LATN 3002. Major Latin Authors II. 3 Credits.

Continuation of LATN 3001. Selections from one or two major authors are read each semester. May be repeated for credit. Prerequisites: LATN 2001, LATN 2002; or permission of instructor. Same As: LATN 3002W.

LATN 3002W. Major Latin Authors II. 3 Credits.

Continuation of LATN 3001. Selections from one or two major authors are read each semester. May be repeated for credit. Prerequisites: LATN 2001, LATN 2002; or permission of instructor. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: LATN 3002.

LATN 3099. Variable Topics. 1-12 Credits.

LATN 5099. Variable Topics. 1-99 Credits.

LEADERSHIP EDUCATION AND DEVELOPMENT (LEAD)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LEAD 5099. Variable Topics. 1-99 Credits.

LEAD 6001. The Academy and the Brigade. 3 Credits.

Introduction to topical leadership issues, adult learning theory, and organizational psychology associated with service as a company officer at the United States Naval Academy. Analysis of the most effective means to produce highly capable Navy and Marine Corps officers and examination of principal institutional challenges. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6002. The Nature and History of Command. 3 Credits.

Study of evolving nature, imperatives, and unique demands of military leadership. Examination of the leadership styles of tactical/operational officers and strategic commanders. Illustration of principles of leadership through historical case studies. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6003. Foundations of Moral Reasoning. 3 Credits.

Introduction to professional ethics for military officers. Deliberative study of fundamental moral theory and case studies to enhance critical thinking and moral reasoning skills. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6004. LEAD Fellows Teaching Practicum. 4 Credits.

Seminar focused on the processes of teaching and learning at the United States Naval Academy. Designed to be taken concurrently with a field assignment to co-teach Midshipmen in a foundation course on the study of leadership. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6005. LEAD Fellows Counseling Practicum. 2 Credits.

Study and practice of counseling. Exploration of the academic counseling resources available at the United States Naval Academy, the difference between counseling and coaching, and the elements of constructive counseling/coaching sessions. Students will work directly with Midshipmen and engage in targeted counseling/coaching. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEAD 6006. LEAD Research Capstone. 3 Credits.

Students plan, implement, and present an individual, group, or faculty-designed research-based project. The final product should make defensible recommendations that can be showcased as the culminating experience of the student's time in the program. Restricted to US Naval Academy students in its Leadership Education and Development program.

LEGISLATIVE AFFAIRS (LGAF)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

LGAF 5099. Variable Topics. 1-99 Credits.

LGAF 6201. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

LGAF 6202. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on member-constituency relations, individual and collective decision making, party and committee activities, executive-legislative relations, and interest-group activities.

LGAF 6203. Executive-Legislative Relations. 3 Credits.

Political and institutional relationships between the executive and legislative branches of the federal government.

LGAF 6204. Research Methods for Legislative Affairs Specialists. 3 Credits.

Approaches to political analysis. Construction of research designs and problems of measurement.

LGAF 6212. Congressional Committees. 3 Credits.

Overview of the history, function, and influence of Senate and House committees in the U.S. Congress.

LGAF 6217. Budgetary Politics. 3 Credits.

Examination of federal budget policymaking and politics.

LGAF 6218. Judicial Politics. 3 Credits.

Role of the judiciary in policy formulation; emphasis on Congress and the Supreme Court.

LGAF 6219. American Presidency. 3 Credits.

Personalized and institutionalized aspects of the presidency, with emphasis on the politics of contemporary policymaking.

LGAF 6221. Executive Branch Decision Making. 3 Credits.

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LGAF 6222. Parties and Elections. 3 Credits.

Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

LGAF 6223. Public Opinion and Political Socialization. 3 Credits.

Sources and dynamics of public opinion and political socialization.

LGAF 6224. Interest Group Politics. 3 Credits.

Theory, structure, and activities of interest groups in American politics.

LGAF 6228. Media and Congressional Politics. 3 Credits.

Role of the media in American politics, with emphasis on news coverage, political debates, and political advertising, with their impact on the electorate.

LGAF 6233. Comparative Legislatures. 3 Credits.

Selected problems of legislative theory and behavior from a comparative perspective, with particular reference to the parliamentary systems of Germany, France, and Britain.

LGAF 6234. PACs and Congress. 3 Credits.

Examination of the structure and function of political action committees in the United States in the context of wider arenas of campaign finance, elections, and issue management.

LGAF 6235. Ethics and Congress. 3 Credits.

The role of ethics in the U.S. Congress.

LGAF 6240. Special Topics in Legislative Affairs. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics.

LGAF 6241. Legislative Writing and Research. 3 Credits.

Using specialized databases and policy journals and communicating research findings to a sophisticated, policy-driven audience.

LGAF 6242. Legislative Drafting. 3 Credits.

Introduction for non-lawyers to the process of legislative drafting in the U.S. Congress.

LGAF 6243. Advanced Legislative Procedure. 3 Credits.

Detailed study of the rules, procedures, traditions, and constitutional underpinnings that govern the work of the U.S. Senate and House of Representatives.

LGAF 6244. Running for and Serving in the U.S. Congress. 3 Credits.

Running for and serving in Congress from a member's perspective.

LGAF 6245. Congressional Committees. 3 Credits.

The lawmaking processes of the U.S. Congress. Focus on the legislative workshops of the House and the Senate. Committees and subcommittees.

LGAF 6246. Congress and Foreign Policy. 3 Credits.

The role of Congress in setting foreign policy.

LGAF 6247. Managing a Congressional Office. 3 Credits.

Practical consideration of the proper structure, organization, and management of a Congressional office.

LGAF 6248. Religion and Politics. 3 Credits.

The influence of religion on politics in the United States.

LGAF 6249. Congress and National Security Policy. 3 Credits.

The role of Congress in setting defense policy.

LGAF 6251. Budgetary Policy. 3 Credits.

Analysis of U.S. monetary and fiscal policy.

LGAF 6260. Special Topics: Domestic Policy. 3 Credits.

Analysis of U.S. policy on selected domestic problems.

LGAF 6261. Congress and Defense Policy. 3 Credits.

The role of Congress in U.S. defense policy.

LGAF 6262. Congress and Intelligence Policy. 3 Credits.

The role of Congress in U.S. intelligence policy.

LGAF 6263. Congress and Cybersecurity Policy. 3 Credits.

The role of Congress in U.S. cybersecurity policy.

LGAF 6264. U.S. Energy and Environmental Policy. 3 Credits.

An overview of energy and environmental policymaking in the United States.

LGAF 6266. Congress and Trade Policy. 3 Credits.

The role of Congress in setting U.S. trade policy.

LGAF 6267. Congress and Healthcare Policy. 3 Credits.

The role of Congress in U.S. healthcare policy.

LGAF 6270. Special Topics: Congress and Foreign Policy. 3 Credits.

Analysis of U.S. policy on selected issues, challenges, or world regions.

LGAF 6290. Independent Study. 1-3 Credits.

Directed readings in a topic related to Congress and public policymaking. Limited to Legislative Affairs degree candidates. Written permission of program director required.

LGAF 6299. Thesis. 3 Credits.**LGAF 6300. Thesis. 3 Credits.**

LIFESTYLE, SPORT, AND PHYSICAL ACTIVITY (LSPA)

Explanation of Course Numbers

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LSPA 1011. Hiking. 1 Credit.

Introduction to hiking as an element of outdoor and environmental education and basic wilderness travel, incorporating elements of outdoor leadership. For beginners and experienced hikers. Visits to DC metropolitan area parks and surrounding regions.

LSPA 1012. Dance Conditioning. 1 Credit.

Dance techniques that develop and improve strength, endurance, flexibility, and coordination. Workouts include the use of the barre, floor mats, and movement across the floor.

LSPA 1013. Latin Dance Conditioning. 1 Credit.

Combines movement with discussion of the folkloric history of Afro-Brazilian/Cuban cultural dance. Strength, flexibility, and the ability to undulate the torso and hips fully and rapidly through dance styles including mambo, rumba, salsa, and samba.

LSPA 1014. Meditation. 1 Credit.

Introduction to and practice of basic meditation techniques and principles.

LSPA 1016. Running. 1 Credit.

Training methods and skills of running using a variety of local routes, terrain, and techniques to improve cardiovascular fitness and running form and speed. No prior experience or training is necessary.

LSPA 1017. Walking for Health. 1 Credit.

Walking for health.

LSPA 1018. Trail Running. 1 Credit.

Instruction in the proper techniques and equipment for trail running. Distance is increased progressively.

LSPA 1019. Outdoor Adventure. 1 Credit.

An introduction to various outdoor activities in and around Washington, DC.

LSPA 1020. Beginning/Intermediate Golf. 1 Credit.

Development of basic golf skills through lectures, demonstrations, drills, and game play. Topics include terminology, rules, and etiquette as well as game formats and strategies.

LSPA 1021. Introduction to Fencing. 1 Credit.

Foil or epee fencing skills for recreation and competition. Footwork, right of way, blade work, bouting, refereeing, and competition formats. For beginners and those looking to reenter the sport.

LSPA 1022. Basketball. 1 Credit.

Basic principles and skills of basketball through drills and practice play. Fundamentals, philosophies of team play, etiquette, and offensive and defensive strategies.

LSPA 1023. Shaolin Kung Fu. 1 Credit.

Training in the Southern Shaolin Kung Fu system to improve health and fitness. Participants build endurance, balance, and strength and learn practical self-defense techniques.

LSPA 1024. Volleyball. 1 Credit.

Skills, strategies, techniques, and rules of the game of volleyball. The values of teamwork and sportsmanship are reinforced through competition.

LSPA 1025. Thai Massage. 1 Credit.

Tradition, techniques, and practice of Thai massage.

LSPA 1026. Karate. 1 Credit.

History, terms, skills, and practice of the martial art karate.

LSPA 1027. Tennis. 1 Credit.

Participants learn a range of skills from basic strokes and terminology to advanced match play strategy.

LSPA 1029. Yoga. 1 Credit.

Introduction to basic poses as well as breathing techniques, deep relaxation, and meditation practices. Improving strength, flexibility, and balance. Using techniques learned in class to help manage stress.

LSPA 1030. Fitness. 1 Credit.

Defining fitness activities and practicing associated skills. Taking heart rate and describing rate of perceived exertion.

LSPA 1031. Weight Training. 1 Credit.

Resistance training for strength, power, and muscular endurance. Purpose and function of equipment, proper form, and development of a weight training program to meet fitness goals. Appropriate for students at all levels.

LSPA 1033. Swimming. 1 Credit.

Beginning students learn basics of the freestyle and butterfly strokes, backstroke, and breaststroke. Advanced students further develop their knowledge of the four strokes to improve swimming endurance.

LSPA 1035. Rock Climbing. 1 Credit.

Introductory level indoor climbing course designed to help participants become safe and knowledgeable climbers; safety systems of belaying, basic knot tying, and basic climbing movements; skills needed to climb independently. Meets off campus.

LSPA 1036. Triathlon. 1 Credit.

Training methods for and practice in the three events of a triathlon: running, cycling, and swimming.

LSPA 1037. Indoor Soccer. 1 Credit.

Basic concepts, rules, and skills as well as technical and tactical aspects of the game of indoor soccer.

LSPA 1038. Racquetball. 1 Credit.

History, rules, and vocabulary of the sport of racquetball. Practice in the skills and drills associated with the game.

LSPA 1039. Cardio Kickboxing. 1 Credit.

Workout based on boxing and martial arts movements designed to improve health and fitness, including endurance, balance, flexibility, and strength.

LSPA 1040. Self-Defense and Personal Safety. 1 Credit.

Participants develop an understanding of assault and the wide range of options of self-defense; drills in verbal assertiveness, concentration/relaxation, and physical defense; concepts of alignment, balance, and the mechanics of generating force.

LSPA 1041. Mat Pilates. 1 Credit.

Strengthening and toning all of the body's core muscles through targeted exercises, focusing on specific muscle groups to build core strength. Students bring their own mat.

LSPA 1042. Cardio Conditioning. 1 Credit.

Developing and improving cardiovascular endurance through a variety of aerobic activities.

LSPA 1043. Tai Chi. 1 Credit.

Basic principles of the Chinese internal martial art of tai chi chuan, which uses physical movement, energy awareness, and mental concentration for fun, relaxation, and to improve health.

LSPA 1044. Aikido Self Defense. 1 Credit.

Instruction in and practice of aikido, the Japanese art of self-defense employing locks and holds and using the principle of nonresistance to cause an opponent's own momentum to work against them.

LSPA 1045. Experimental Activities. 1 Credit.

Topics announced in the Schedule of Classes.

LSPA 1046. Taekwondo. 1 Credit.

History, tenets, and practice of the traditional Korean martial art taekwondo, characterized especially by the extensive use of kicks.

LSPA 1048. Horseback Riding. 1 Credit.

Theory and practice of horseback riding for beginning, intermediate, and advanced level students.

LSPA 1049. Boxing. 1 Credit.

Developing muscular strength, agility, and cardiovascular fitness using boxing skills and techniques; jumping rope, shadow boxing, and sparring; punching and kicking combinations.

LSPA 1050. Backpacking. 1 Credit.

Equipment associated with backpacking. Instruction in safety and first aid skills. Students practice backpacking in various outdoor settings.

LSPA 1052. Cross Training. 1 Credit.

Principles of lifetime physical fitness, using the five major components of fitness: cardio-respiratory endurance, muscular strength, muscular endurance, flexibility, and body composition.

LSPA 1053. Squash. 1 Credit.

Basic strokes, grips, and movement patterns used in the game of squash.

LSPA 1054. Metabolic Effect. 1 Credit.

High intensity-based circuits that combine anaerobic and aerobic training to increase calorie burn during and after the workout.

LSPA 1055. Barre. 1 Credit.

Barre cardio and Garuda barre movement repertoire; barre choreography and movement patterns for building strength and competence; barre cardio and the Lotte Berke method.

LSPA 1056. Scuba Diving Certification Course. 1 Credit.

Entry-level PADI (Professional Association of Diving Instructors) course, leading to international diver certification.

LSPA 1057. Zumba. 1 Credit.

Latin-inspired dance fitness class using Latin and international music and dance movements to create a dynamic, exhilarating, and effective cardio workout.

LSPA 1059. Cycling. 1 Credit.

High-intensity cardio class using stationary bikes to simulate real cycling experiences. Students adjust their own resistance and cadence so that beginners and experienced cyclists are challenged in the same class.

LSPA 1060. High-Intensity Interval Training. 1 Credit.

Training the aerobic and anaerobic energy systems and building muscular strength, power, and endurance with short periods of intensive activity followed by periods of rest.

LSPA 1061. Capoeira. 1 Credit.

Introduction to the Afro-Brazilian martial art encompassing elements of music, dance, acrobatics, and martial techniques. Includes interactive events with local Capoeira groups to help develop flexibility, strength, rhythm, and confidence.

LSPA 1063. Les Mills BODYPUMP. 1 Credit.

Use barbells to sculpt, tone, and strengthen the body. Low weight loads and high repetition movements are used in muscle group-specific sessions choreographed to sync with music.

LSPA 1065. Introduction to Therapeutic Massage. 1 Credit.

Fundamentals of Swedish massage, including basic techniques, strokes, draping, muscle anatomy, and body mechanics; holistic benefits of therapeutic touch; physiological effects of stress on the body and how massage is used to address these effects.

LSPA 1066. Sports Massage. 1 Credit.

Pre-activity techniques to help improve an athlete's flexibility and post-activity methods to alleviate injuries or keep muscles from tightening.

LSPA 1067. Group Fitness Instructor Training. 1 Credit.

Fundamentals of group exercise instruction geared toward those wishing to become certified group exercise instructors. Participants learn the skills and knowledge to teach a safe, enjoyable, and effective group exercise class.

LSPA 1068. Sports Clinic and Workshops. 1 Credit.

Topics of intensive study and skill development. Consult the Schedule of Classes for specific topics and possible associated fees.

LSPA 1081. Kendo I. 1 Credit.

Kendo I.

LSPA 1082. Kendo II. 1 Credit.

Kendo II.

LSPA 1083. Iaido I. 1 Credit.

Iaido I.

LSPA 1102. Personal Trainer Preparation. 1 Credit.

Students develop knowledge of exercise science, kinesiology, and physiology. Includes practical experience needed to prepare for the American Council on Exercise (ACE) personal trainer certification exam and to become an effective personal trainer.

LSPA 2001. Special Topics. 1-3 Credits.

Topics announced in the Schedule of Classes.

LINGUISTICS (LING)

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LING 1099. Variable Topics. 1-36 Credits.

LING 3099. Variable Topics. 1-12 Credits.

LING 3601. Language, Culture, and Cognition. 3 Credits.

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts.

Prerequisites: ANTH 1004. (Same as ANTH 3601).

LING 3602. Ethnographic Analysis of Speech. 3 Credits.

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Same as ANTH 3602. Prerequisite: ANTH 1004. Laboratory fee.

LING 3603. Psycholinguistics. 3 Credits.

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as ANTH 3603.

LING 3691. Special Topics in Linguistic Anthropology. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ANTH 1004 or permission of the instructor. (Same as ANTH 3691).

LING 5099. Variable Topics. 1-99 Credits.

MANAGEMENT (MGT)

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MGT 1099. Variable Topics. 1-36 Credits.

MGT 3201. Leadership in Action. 3 Credits.

Leadership in organizations and society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation-specific. Modern and historical examples; issues of leadership in popular contexts.

MGT 3202. Managerial Negotiations. 3 Credits.

Negotiation concepts, strategies, and tactics as applied to managerial situations. The nature of interdependencies; competitive and collaborative negotiations; negotiations involving third-party dynamics, such as mediation and arbitration. Employee relations, including employee rights; the impact of unions and collective bargaining on management practices.

MGT 3203. Advanced Human Resource Management. 3 Credits.

The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BADM 3101.

MGT 3204. Contemporary Topics in Management. 3 Credits.

Contemporary practice in human resource planning, recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and international human resource management. Interaction with practitioners through actual situations, case analyses, and presentations. Prerequisite: BADM 3101.

MGT 3300. Entrepreneurship. 3 Credits.

Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios.

MGT 3300W. Entrepreneurship. 3 Credits.

Students develop the knowledge and ability to launch their own venture. The entrepreneur and the process of entrepreneurship; key aspects of entrepreneurial success, from idea generation and development to launching a firm. Practical skills applicable to real-world scenarios. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: MGT 3300.

MGT 3301. Small Business Management. 3 Credits.

Theory and practice of entrepreneurship. How to start or acquire a new business; effective management, including the essentials of planning, organizing, financing, marketing, and controlling the smaller enterprise. Students consult with a small DC-area company as part of a team research project. Prerequisites: MGT 3300W or permission of the instructor.

MGT 3302. e-Entrepreneurship. 3 Credits.

The process of turning a web, mobile, or wearable business idea into a validated, repeatable, and scalable business model using lean startup methodologies; testing and user feedback, technology basics, promotions, and tracking core metrics. Permission of the instructor may be substituted for the prerequisite. Prerequisites: MGT 3300 or MGT 3300W.

MGT 3303. Women's Entrepreneurial Leadership. 3 Credits.

Students create and execute a business plan while developing essential skills, mentoring relationships, and self-confidence and self-insight.

MGT 3305. Human Capital Sustainability. 3 Credits.

Managerial challenges associated with creating sustainable employment relationships using concepts from human resource management, labor relations, organizational behavior, and entrepreneurship; how markets, management practices, collective bargaining, and public policy affect human capital sustainability.

MGT 4003. Management of the Growing Entrepreneurial Venture. 3 Credits.

Examination of the data, dilemmas, and decisions that can confront leaders of post-startup entrepreneurial ventures.

MGT 4900. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 4900W. Special Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MGT 4995. Independent Research. 1-6 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit.

MGT 5099. Variable Topics. 1-99 Credits.**MGT 6210. Leading Teams. 3 Credits.**

Knowledge and skills for effectively leading teams. Setting up teams for success, promoting effective team dynamics, and other leadership issues for contemporary teams that operate in a global, digital environment.

MGT 6213. Change Management. 3 Credits.

Behavioral and organizational components of individual, team, and firm-wide change. The dynamics that often accompany the change process.

MGT 6215. Conflict Management and Negotiations. 3 Credits.

The nature and sources of conflict and interdependence in social and organizational dynamics. Various means of resolving conflict, including the use of competitive and collaborative negotiations and mediation. Case discussion, exercises, role-playing, and simulation. Managers as mediators and negotiators.

MGT 6216. Cross-Cultural Management. 3 Credits.

The cultural foundations of organizations and institutions, with an emphasis on managerial behavior. Cross-cultural differences as they affect work-related behaviors, such as communication, attitude, teamwork, negotiation, and decision making.

MGT 6252. Strategic Human Resource Management. 3 Credits.

Strategic International and domestic applications of human resource management functions. Selection, preparation, compensation of managers and executives to think critically about HR in a global environment.

MGT 6253. Leadership and Executive Development. 3 Credits.

The required skills, knowledge, and abilities for effective executive leadership in organizations. Contemporary and classical leadership theories and research approaches.

MGT 6254. Negotiations and Labor Relations. 3 Credits.

Negotiation theory and practice in the context of labor-management relations in both union and nonunion settings. Emphasis on negotiation and conflict resolution skills, arbitration and grievance procedures, public-sector labor relations, labor laws and public policy, and global labor relations issues.

MGT 6257. Performance Management and Development. 3 Credits.

The design and implementation of effective and successful performance management systems; measuring and developing the performance of individuals and groups and aligning performance with an organization's strategic objectives.

MGT 6258. Applied Organization Leadership. 3 Credits.

In-depth studies of theories of leadership. Legal and ethical obligations of leadership. The leader in the process of assuming responsibility. Experiential exercises designed to develop the students' interpersonal abilities and leadership capacities.

MGT 6259. Employment Law and Ethics. 3 Credits.

An examination of the interaction of legal requirements and personal ethics and their influence on managerial decisions affecting the employment exchange. Special emphasis on equal employment opportunity and civil rights, workers' compensation, occupational health and safety, collective bargaining, and wrongful discharge.

MGT 6270. Consulting Processes. 3 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process.

MGT 6271. Consulting Practicum. 3 Credits.

Instruction in and application of integrative problem solving, team work, client relationship, and communications skills required to be a successful management consultant. Students gain practical experience through a team-based assignment consulting for a client. Prerequisite: MGT 6270.

MGT 6277. Critical Thinking Skills for Executive Leadership. 3 Credits.

Theory and practice of critical thinking; how it differs from other types of thinking and other executive leadership competencies; approaches known to improve thinking skills.

MGT 6280. Entrepreneurship. 3 Credits.

The entrepreneur as a phenomenon. Theory and experiences associated with entrepreneurs, entrepreneurial acts, and entrepreneurship in all organizational settings—large, small, public, and private.

MGT 6281. Small Business Management. 3 Credits.

The start-up process and management of small firms. Field projects involve student teams as consultants to local businesses. Case studies. Emphasis on total customer service, international opportunities, and minority and women's issues.

MGT 6282. New Venture Initiation. 3 Credits.

Essentials of planning a new business venture. Sources of financing, evaluation of alternative new business ventures, and analysis of business functions. Creating and analyzing the business plan.

MGT 6283. Strategic Entrepreneurship. 3 Credits.

Capstone course for the small business/entrepreneurship concentration. Student teams assist companies in upgrading strategies. Prerequisites: MBAD 6265, MGT 6281, MGT 6282 and/or permission of instructor.

MGT 6284. Family Business Management. 3 Credits.

Challenges of managing a family business: risk strategies; successor development and succession planning; stages of family business growth; family motivations and goals. Field projects provide hands-on experience.

MGT 6285. Social Entrepreneurship. 3 Credits.

Theory and practice of social entrepreneurship. The power and limits of social entrepreneurship as a tool for creating sustainable and scalable social impact.

MGT 6286. Creativity and Innovation. 3 Credits.

How organizational culture encourages or discourages creativity in individuals and teams and how organizational policies support or undercut innovation. Methods for developing and strengthening creative ideas and innovative action. Factors such as breakthrough design that encourage creativity and support innovation. Students examine and assess, on both personal and organizational levels, the bases of and propensity for creativity and innovation.

MGT 6287. Women's Entrepreneurial Leadership. 3 Credits.

Students create and execute a business plan while developing essential skills, tools and mentoring relationships.

MGT 6290. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

MGT 6297. International Management Experience. 3 Credits.

Same as FINA 6297/ IBUS 6297/ MKTG 6297/ SMPP 6297. May be repeated for credit.

MGT 6298. Directed Readings and Research. 1-6 Credits.**MGT 6299. Thesis Seminar. 3 Credits.****MGT 6301. Negotiations. 1.5 Credit.**

Major concepts and theories of negotiation; the dynamics of interpersonal and intergroup conflict and its resolution; skill development relevant to a broad range of applied contexts; reflective posture about negotiations specifically and social influence broadly. Restricted to students in the World Executive MBA program.

MGT 6999. Thesis Research. 3 Credits.**MGT 8382. Foundations of Organizational Behavior and Development. 3 Credits.**

The individuals and institutions central to the field of organizational behavior and development. Students read about, meet with, and discuss the work of persons central to the development of the field. Restricted to candidates in the PhD in organizational behavior and development program or with permission of the instructor.

MGT 8383. Field Research in Organizational Settings. 3 Credits.

Applications of field research techniques in formal organizational settings. Examination of the logic of inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized. Credit cannot be earned for this course and SOC 6240.

MGT 8385. Special Topics in Research Methods. 3 Credits.

Research problems and issues related to student dissertations form topics for readings, group discussions, and assigned papers.

MGT 8386. Management Ideas in Progress. 3 Credits.

Doctoral students work with a variety of faculty members as they develop new ideas, research projects, and engage in seminal inquiry. The content and structure of the course depends based on the instructor. Restricted to students in the PhD in organizational behavior and development program or with permission of the instructor.

MGT 8390. Philosophical Foundations in Administration Research. 3 Credits.

Philosophy of science as applied to research in administration. Topics include the nature and current problems of epistemology, the development and role of theories, and the relationship between theory, methodology, and empirical data.

MGT 8391. Adv Prob-Research Methodology. 3 Credits.

Use of models and theoretical frameworks in research; formulation of research questions, hypotheses, operational definitions, research designs, sampling and data analysis approaches. Restricted to doctoral candidates who have completed the general examination and all courses, and are preparing for their dissertation.

MGT 8397. Advanced Special Topics. 1-3 Credits.

Current research and scholarly issues in management science.

MGT 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

MGT 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

MARKETING (MKTG)

Explanation of Course Numbers

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MKTG 1099. Variable Topics. 16 Credits.**MKTG 3142. Consumer Behavior. 3 Credits.**

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Same As: MKTG 3142W.

MKTG 3142W. Consumer Behavior. 3 Credits.

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: MKTG 3142.

MKTG 3143. Marketing Research. 3 Credits.

Basic methods and techniques of market research; designing a marketing research project, including research questions, secondary and syndicated data, primary data collection approaches, data analysis, and report presentation; focus group interviews, questionnaire construction, and statistical software packages. Prerequisites: DNSC 1001 or equivalent approved by the instructor or department chair. Corequisites: MKTG 3142.

MKTG 4148. Advertising and Marketing Communications. 3 Credits.

Executing and measuring the effectiveness of advertising and integrated marketing communications campaigns. Methods for gathering research for a customer-based campaign, defining key target personas, developing a singular message strategy, and reaching consumers through media typically used in marketing communications.

MKTG 4149. Advanced Advertising Campaigns. 3 Credits.

Students conceptualize, support, and execute a marketing communications campaign for entry in the American Advertising Federation's National Student Advertising Competition. Interview and permission of the instructor required prior to enrollment. Prerequisites: MKTG 4148 or permission of the instructor.

MKTG 4150. Salesmanship and Sales Management. 3 Credits.

Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs.

MKTG 4151W. Marketing Communications Planning. 3 Credits.

Components of a marketing communications plan; writing, development, and presentation, including executive summary, situation analysis (company, consumer, competitor), target market segmentation, consumer behavior analysis, positioning strategy, and tactics for implementation. Permission of the instructor is required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BADM 3401, MKTG 3142 and 3143.

MKTG 4152. Retailing Management. 3 Credits.

A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory management, and non-store and service retailing. Industry executive and student presentations; case analyses. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4154. Digital Marketing. 3 Credits.

Using the social Web to leverage a firm's marketing strategy; developing and improving a company's electronic marketing strategy for the next evolution in Web commerce. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4156. Integrated Marketing Communications. 3 Credits.

The ubiquity of advertising and promotion; fundamental shifts in how consumers get information and from whom, and how much trust they place in different sources; strategies to address a rapidly changing media environment; concepts, analyses, and activities that comprise advertising; assessing and solving advertising challenges. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4159. Marketing Strategy. 3 Credits.

The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisites: BADM 3401 or BADM 3401W; and MKTG 3142 and MKTG 3143.

MKTG 4161. Pricing Strategy: Competitive and Dynamic Pricing. 3 Credits.

Pricing decisions confronting marketers. Equips students with a comprehensive approach to managing pricing decisions. Prerequisites: BADM 3401; MKTG 3142 or MKTG 3142W; and MKTG 3143. Credit cannot be earned for this course and MKTG 6261.

MKTG 4162. Digital Marketing Analytics. 3 Credits.

Measuring, analyzing, and interpreting key behavioral and performance indices for digital marketing. Hands on experience working with data sets, and applying a range of techniques to extract insights from data used primarily in digital marketing. Credit cannot be earned for this course and MKTG 6262.

MKTG 4163. Applied Marketing Decision Analytics. 3 Credits.

Merging marketing and analytics using various tools, including statistical software, to analyze primary and secondary qualitative and quantitative data to support marketing decisions. Credit cannot be earned for this course and MKTG 6263.

MKTG 4164. Artificial Intelligence and Automated Marketing. 3 Credits.

Applying data collection, management, and analysis to address marketing problems from an artificial intelligence/machine learning (AI/ML) perspective and to automate models. Prerequisites: BADM 2301, BADM 3401, MKTG 3143, and MKTG 3142 or MKTG 3142W. Credit cannot be earned for this course and MKTG 6264.

MKTG 4165. Customer Relationship Management and Relational Databases. 3 Credits.

The development and implementation of methods and strategies for doing business on a more personalized, one-to-one basis. Devising targeted communications and promotions to individual customers based on their purchasing behaviors. Credit cannot be earned for this course and MKTG 6265.

MKTG 4900. Special Topics. 3 Credits.

Experimental offering: new course topics and teaching methods. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4900W. Special Topics. 3 Credits.

Experimental offering; new course topics and teaching methods. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: BADM 3401, MKTG 3142 and MKTG 3143.

MKTG 4995. Independent Study. 1-12 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit. Prerequisite: BADM 3401.

MKTG 5099. Variable Topics. 1-99 Credits.

MKTG 6241. Advanced Marketing Management. 3 Credits.

MKTG 6242. Buyer Behavior. 3 Credits.

The buyer decision process model and how and why products and services are purchased; synthesis of behavioral sciences applied to understanding individual, family, and organizational decision processes; the impact of consumer decisions on the marketing strategies of business and public organizations; consumer marketing applications in high-tech and services industries and on a global scale.

MKTG 6243. Marketing Research. 3 Credits.

The marketing research process: designing, conducting, and using market research studies. Managing the market research project; qualitative research; survey and experimental designs; data analysis with statistical software packages. Prerequisite: MBAD 6221.

MKTG 6246. Marketing of Services. 3 Credits.

Services in a marketing context from the viewpoint of the customer; service quality, marketing analysis, consumer behavior, product analysis, channel distribution, pricing, and promotional decision making; business strategies examined in service trends, benefits of relationships for firms and for customers, service failure and recovery.

MKTG 6248. Advertising and Marketing Communications Strategy. 3 Credits.

Practical instruction in executing an advertising and integrated marketing communications campaign; strategic planning, communication theory, planning from a consumer attitudes and behavioral perspective, and campaign execution. Prerequisite: MBAD 6274. Recommended background: MKTG 6242.

MKTG 6250. Selling/Sales Management. 3 Credits.

MKTG 6251. Product Management. 3 Credits.

MKTG 6252. Digital Marketing. 3 Credits.

The impact of technology on sales and marketing strategy; e-branding, customer relationship management, permission e-mail, sales force technology enhancement, mobile commerce, online marketing research, and electronic channels of distributions. Prerequisite: MBAD 6274.

MKTG 6255. Strategic Brand Management. 3 Credits.

Theoretical foundation for branding and brand management and practical application of these concepts in marketing management. Prerequisite: MBAD 6274.

MKTG 6256. Integrated Marketing Communication. 3 Credits.

The ubiquitous nature of advertising and promotion; how and from whom consumers get information and their level of trust in different information sources; concepts, analyses, and activities related to advertising; assessing and solving challenges. Prerequisite: MBAD 6274.

MKTG 6259. Marketing Strategy. 3 Credits.

Required capstone course for marketing students. Analysis of complex marketing problems involving policy and operational decisions; emphasis on creative marketing strategy.

MKTG 6261. Dynamic Pricing Strategy. 3 Credits.

Fundamental theories and concepts that constitute the principles of pricing in marketing. Examples of topics covered include pricing and price promotions in distribution channels, product line pricing, and online pricing. Recommended background: Prior completion of a course in basic microeconomics. Credit cannot be earned for this course and MKTG 4161.

MKTG 6262. Digital Marketing Analytics. 3 Credits.

Applied data and analytics in the digital marketing space with hands on experience working with data sets, and applying a range of techniques to extract insights from data primarily used in digital marketing. Credit cannot be earned for this course and MKTG 4162.

MKTG 6263. Marketing Decision Analytics. 3 Credits.

Transforming data into actionable information, using various statistics tools and software to analyze primary and secondary data; identifying data nuances; and weaving qualitative and quantitative data into a story. Prerequisites: MKTG 6243. Credit cannot be earned for this course and MKTG 4163.

MKTG 6264. Artificial Intelligence and Machine Learning for Marketing Automation. 3 Credits.

Application of machine learning and artificial intelligence models to marketing-related data. Focus on automating procedures and communicating findings in a business environment. Recommended background: Basic statistics and some knowledge of R and Python. Credit cannot be earned for this course and MKTG 4164.

MKTG 6265. Marketing Relational Databases and Customer Relationship Management. 3 Credits.

Customer-centric concepts, metrics; and strategies; basic customer database organization and analytics; and predictive modelling of customer responses. Credit cannot be earned for this course and MKTG 4165.

MKTG 6290. Special Topics. 3 Credits.

Same As: FINA 6290, MBAD 6290.

MKTG 6297. International Management Experience. 3 Credits.

Same as FINA 6297/ IBUS 6297/ MGT 6297/ SMPP 6297. May be repeated for credit.

MKTG 6298. Directed Readings and Research. 1-3 Credits.**MKTG 6299. Thesis Seminar. 3 Credits.****MKTG 6999. Thesis Research. 3 Credits.****MKTG 8341. Seminar: Marketing. 3 Credits.****MKTG 8397. Doctoral Seminar. 3 Credits.****MKTG 8998. Advanced Readings and Research. 1-12 Credits.**

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

MKTG 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

MASTER OF BUSINESS ADMINISTRATION (MBAD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MBAD 6202. Foundational Management Topics in Health Care. 3 Credits.

How prevailing health care business models serve as barriers to economic and business gains; environmental changes and future directions of health care delivery, practice, and policy that can to innovation and serving as drivers for thinking strategically about the business components of the health care sector. Restricted to students in the MBA in health care program.

MBAD 6203. Global MBA Career Roadmap. 0 Credits.

Career options; traditional and digital networking tools and techniques; resume, cover letter, and related correspondence writing; preparing for an interview. Restricted to students in the global MBA program.

MBAD 6205. Business Essentials for Dynamic Markets. 1.5 Credit.

Introduction to the foundations of business. Business models and design, dynamic capabilities, and strategy. Identify opportunities, lead individuals, groups, virtual teams, and organizations effectively.

MBAD 6206. Business Improv. 1 Credit.

Experiential learning exercises, case studies, interactive lectures, discussions, and custom simulations to real-world challenges. A practice field for communications skill building and adaptive problem solving.

MBAD 6207. Leadership Lab. 1 Credit.

Managerial soft skills in communications and leadership. Applications to challenges managers face with people and projects. Topics include personality, influence, social networks, and teams. Translating theory to practice and concept to action.

MBAD 6211. Financial Accounting. 3 Credits.

Basic concepts and methods used in financial reporting to understand content, context, and related processes. Income statement, balance sheet, and statement of cash flows. Detailed accounting procedures, calculations, and choices. Same As: ACCY 6101, IAFF 6191.

MBAD 6213. Accounting for Internal Decision Making. 1.5 Credit.

Effective use of internal generation, communication and interpretation of information for both operational and strategic decision-making purposes. Restricted to students in the MBA program. Prerequisites: MBAD 6211. Same As: ACCY 6201.

MBAD 6221. Judgment, Uncertainty, and Decisions. 1.5 Credit.

Classical theories of decision making; recent findings on human cognitive limitations and biases. Analytical approaches useful in cases involving uncertainty, multiple objectives, and multiple stakeholders.

MBAD 6222. Data Analysis and Decisions. 1.5 Credit.

Statistical analysis—how it is used, when it should be used, and what can be learned from it. Statistical inference, hypothesis testing, and regression analysis. Prerequisite: MBAD 6221.

MBAD 6223. Operations Management. 1.5 Credit.

Concepts and techniques related to manufacturing and service operations. Process mapping, capacity analysis, production control, quality management, and supply chains. Integration of operations with a firm's overall business strategy as a powerful competitive weapon. Prerequisites: MBAD 6221 and MBAD 6222; or MBAD 6224; or DNSC 6202.

MBAD 6224. Decision Making and Data Analysis. 3 Credits.

Elements of decision making that enable managers to characterize their strengths, assess the competition, and forecast the future. Deterministic and probabilistic decision models. Analytical approaches involving uncertainty, multiple objectives, and multiple stakeholders. Probability concepts are used to develop and apply statistical models, with both exploratory and inferential statistical techniques used, including sampling, estimation, and hypothesis testing.

MBAD 6233. Financial Markets. 1.5 Credit.

Sources of managerial information provided by money and capital markets, primary and secondary markets, and cash and futures markets. Money and capital market instruments, relevant return measures, risk metrics for bonds and equities. Prerequisites: MBAD 6211; and MBAD 6222 or MBAD 6224; and MBAD 6242.

MBAD 6234. Financial Management. 1.5 Credit.

Theory, policy, and practice in financial management. Financial analysis, sources of funds, investing, capital planning and budgeting, dividend policy, and working capital management.

MBAD 6235. Finance. 3 Credits.

Financial management examined through financial analyses, fund sources, investing, capital planning/budgeting, dividend policy, and working capital management. Money and capital markets, primary and secondary markets, and cash and futures markets. Prerequisites: MBAD 6211, MBAD 6224 and MBAD 6242; or MBAD 6211, MBAD 6221, MBAD 6222 and MBAD 6242; or DNSC 6202, MBAD 6211 and MBAD 6242. Same As: IAFF 6193.

MBAD 6240. Competition in the Global Economy. 3 Credits.

Analysis of political risk using insights from practice and political science. Introduces international macroeconomics, geopolitics, frameworks for analyzing firm-level investment, and trade decisions. Overview of the global business environment.

MBAD 6241. Global Perspectives. 1.5 Credit.

Differences between the domestic and international environments and their implications for management. Differences in the organization of institutions of capitalism across countries.

MBAD 6242. Microeconomics for the World Economy. 1.5 Credit.

The economics of supply and demand in product markets. Theory of the firm (production and cost structure) and its competitive environment (perfect competition, monopoly, oligopoly, and monopolistic competition).

MBAD 6243. Macroeconomics for the World Economy. 1.5 Credit.

How firms are affected by the performance of the macro economy and the macroeconomic variables that should be factored into managers' decision-making processes. The behavior of output, employment, interest rates, inflation, and exchange rates.

MBAD 6244. International Management. 1.5 Credit.

The challenges of operating in different cultures, implications of cross-national differences in institutional environments, and difficulties of designing effective organizational structures for coordination and control in multinational operations. Prerequisite: MBAD 6241.

MBAD 6245. Global Perspectives. 3 Credits.

How decisions and processes are modified for the complex global arena. Differences between the domestic and international environments and the implications for management; variations in the organization of institutions of capitalism across countries. Challenges of operating in different cultures, effects of national differences in institutional environments, and design of organizational structures for coordination and control in multinational operations.

MBAD 6246. Global Economy. 1.5 Credit.

Linkages within the global economy. International macro and micro economic and financial developments and trends in developed, emerging, and developing economies. Focus on understanding macroeconomic data, sources of long-term growth, critical global issues that impact long-term development, mega trends, globalization and technological advances, and cyber security issues. Restricted to students in the World Executive MBA program.

MBAD 6247. Consulting Practicum and International Residency. 3 Credits.

Students gain consulting experience with an actual company in areas including global economics, finance, and cyber-security. Combination of on-campus coursework and overseas travel. Restricted to students in the world executive MBA program.

MBAD 6250. Technology for Business in DC. 1.5 Credit.

Real-world applications and management of technology such as business-IT alignment, digital transformation, strategic IT, cloud outsourcing, digital platform strategy and big data analytics. Students work on projects from DC metro area organization.

MBAD 6252. Management of Information Systems. 1.5 Credit.

An introduction to bridging the gap between the decision-making needs of managers and the terminology of technical personnel within an organization. The transformation of organizations in the digital economy.

MBAD 6253. Management of Technology and Innovation. 1.5 Credit.

Business, technological, economic, and political factors that influence the development and adoption of new technology. Management concepts and practices useful in enhancing corporate innovation. Corporate venture divisions and organizational alternatives.

MBAD 6254. Database and Data Warehousing. 1.5 Credit.

An introduction to the model, design, and use of database and data warehousing systems for identifying, understanding, and designing database-centric solutions for business and organizations.

MBAD 6261. Organizations and Leadership. 1.5 Credit.

A behavioral perspective on core leadership concepts at the individual, team, and organizational level. Students apply these concepts to examine their own leadership qualities in organizations. Experiential exercises and participation in team projects.

MBAD 6262. Managing Human Capital. 1.5 Credit.

Issues of corporate culture, strategy implementation, growth management, employee recruitment and retention, organizational behavior, diversity, ethics, and legal aspects of business. How human resource policies and practices can become a source of competitive advantage.

MBAD 6263. Organizations and Human Capital. 3 Credits.

Formal and informal organizational dynamics related to leading and managing human capital. Motivation and compensation, managing diversity, power and employee relations, organizational culture and change, leadership and decision making, and staffing and performance management. Restricted to MBA students. Credit cannot be earned for this course and BADM 3103.

MBAD 6265. Entrepreneurship. 1.5 Credit.

Focus on the total enterprise creation process starting with an introduction to the creative and innovative practices, lifestyle commitment and the skills necessary for entrepreneurial success. Develop skills and knowledge to be effective as entrepreneurs, members of entrepreneurial teams, intra (entrepreneurs and managers of intrapreneurs. Explore how to identify and develop solutions to the most common leadership and personal challenges faced by entrepreneurs via a lean startup strategy.

MBAD 6272. Nature of Markets. 1.5 Credit.

Marketing as an organizational function as well as a set of processes for creating, communicating, and delivering value to customers and for managing customer relationships in ways that benefit the organization and its stakeholders.

MBAD 6273. Marketing Decisions. 1.5 Credit.

Formulation and implementation of marketing strategy, applying the analytic perspectives, decision tools, and concepts of marketing to the elements of marketing strategy. Prerequisite: MBAD 6272.

MBAD 6274. Marketing. 3 Credits.

Marketing as an organizational function creating, communicating, and delivering value to customers, while managing customer relationships in ways that benefit both the organization and its stakeholders. Formulation and implementation of the elements of marketing strategy through the application of concepts of marketing, analytic perspectives, and decision tools. Credit cannot be earned for this course and BADM 3401.

MBAD 6281. Business Ethics. 1.5 Credit.

Businesses are experiencing increasing challenges and opportunities to ensure that they demonstrate integrity in all of their activities, both internal and external to their operations. Perspectives, information, and skill development in advancing the value of integrity in business organizations.

MBAD 6284. Business and Public Policy. 1.5 Credit.

Provides a foundation for understanding business in its broader social context; emphasis on interaction of the market system and public policy process. Instructor's active guidance with students to develop a public policy strategy proposal for a live partner.

MBAD 6285. Business Law. 1.5 Credit.

The legal environment of business, with particular attention to the liability of organizations and their managers for contracts, torts, and crimes. Strategies for avoiding litigation, including the development of clear, concise, and accurate writing.

MBAD 6286. Strategic Management I. 1.5 Credit.

An introductory approach to strategic management, stressing the general concepts and methodologies used in strategic management and providing a foundation for the MBA learning experience.

MBAD 6287. Strategic Management II. 1.5 Credit.

An integrative approach to strategic management, stressing the general manager's perspective, strategy formulation, implementation of strategy and policy, and evaluation and control of strategy in various types of organizations.

MBAD 6288. Strategic Management. 3 Credits.

An integrative approach to strategic management; general manager's perspective, strategy formulation, implementation of strategy and policy, and evaluation and control of strategy in various types of organizations. MBAD 6235 may be taken concurrently. Prerequisites: MBAD 6211, MBAD 6235 and MBAD 6274.

MBAD 6289. Business Ethics and Public Policy. 3 Credits.

Political, legal, social, economic, and ethical forces acting upon business. Interaction of the market system and public policy process in the development of law and regulation.

MBAD 6290. Special Topics. 3 Credits.

May be repeated to a maximum of 3 times. Same As: FINA 6290, MKTG 6290.

MBAD 6291. Business Communications. 1.5 Credit.

Practical and effective written and oral communication skills for the business environment. Focus on developing and delivering messages clearly, concisely, and effectively, and on learning to write in plain English. The purpose and mechanics of different forms of business communications. Strategies for routine communications challenges.

MBAD 6292. Consulting I. 3 Credits.

See attached.

MBAD 6293. Consulting I. 3 Credits.

Instruction in and application of the integrative problem-solving, communications, and leadership skills required by the successful management consultant.

MBAD 6294. Consulting Abroad Project. 3 Credits.

Students gain practical experience in the global environment through engagement in projects provided by international or foreign companies. A representative of the company visits GW to work with students during the associated practicum. Students work on projects during the seven-week practicum prior to the international residency.

MBAD 6295. Interdisciplinary Projects. 1-6 Credits.

Project and experiential studies of an interdisciplinary nature involving student teams and faculty from more than one field of study. Permission of the MBA program director required prior to enrollment. May be repeated for credit.

MBAD 6296. Business Challenge. 1.5 Credit.

Students identify a business challenge in their own organization and formulate a proposal to address the challenge within the organization's social, political, and technical contexts. The problem and proposal are formally presented at the end of the course. Restricted to students in the World Executive MBA program.

MBAD 6297. Business and Innovation. 1.5 Credit.

Innovation as a core business process involving technological, market, and organizational change. Strategic decisions, capabilities, and moves made or developed in established firms to create, deliver, and capture value. Restricted to students in the World Executive MBA program.

MBAD 6298. Graduate Internship in Business and Management. 0 Credits.

Structured practical experience. Permission of the instructor required prior to enrollment.

MATHEMATICS (MATH)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

Note: MATH 1220 and MATH 1221 each cover one-half the material of MATH 1231. Because MATH 1221, MATH 1231, and MATH 1252 are related in their subject matter, credit for only one of the three may be applied toward a degree. Information on the placement exam, which is an option for placing into MATH 1051, MATH 1220, MATH 1231, or MATH 1252 is at: <http://math.columbian.gwu.edu/gw-mathematics-placement-test>. (<http://math.columbian.gwu.edu/gw-mathematics-placement-test/>)

MATH 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

MATH 1007. Mathematics and Politics. 3 Credits.

A mathematical treatment of fair representation, voting systems, power, and conflict; impossibility theorems of Balinski and Young and of Arrow; the electoral college; the prisoner's dilemma.

MATH 1008. History of Mathematics. 3 Credits.

The history of mathematics, with emphasis on its importance in the evolution of human thought. Students learn some useful mathematics from areas such as geometry, number theory, and probability and develop an appreciation of the mathematical endeavor.

MATH 1009. Mathematical Ideas I. 3 Credits.

Elementary mathematical models of growth and decay, scaling, chaos, and fractals.

MATH 1010. Mathematical Ideas II. 3 Credits.

Continuation of MATH 1009. Elementary graph theory, scheduling, probability theory.

MATH 1051. Finite Mathematics for the Social and Management Sciences. 3 Credits.

Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Restricted to students with a minimum score of 61 on the ALEKS placement examination.

MATH 1099. Variable Topics. 1-36 Credits.**MATH 1220. Calculus with Precalculus I. 3 Credits.**

An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisites: students with a minimum score of 61 on the ALEKS placement examination.

MATH 1221. Calculus with Precalculus II. 3 Credits.

Continuation of MATH 1220. An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite: MATH 1220.

MATH 1231. Single-Variable Calculus I. 3 Credits.

Limits and continuity; differentiation and integration of algebraic and trigonometric functions with applications. Restricted to students with a minimum score of 76 on the ALEKS placement examination.

MATH 1232. Single-Variable Calculus II. 3 Credits.

The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: MATH 1221 or MATH 1231.

MATH 1252. Calculus for the Social and Management Sciences. 3 Credits.

Differential and integral calculus of functions of one variable; applications to business and economics. Students who might wish to take MATH 1232 should take one of its prerequisites, MATH 1221 or MATH 1231, instead of this course. Prerequisites: A minimum test score of 61 on the ALEKS placement examination.

MATH 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small, seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester. See department for more details.

MATH 2020. Joint Math and Physics Seminar. 1 Credit.**MATH 2184. Linear Algebra I. 3 Credits.**

Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations. Credit cannot be earned for both MATH 2184 and MATH 2185. Prerequisites: MATH 1221 or MATH 1231 or MATH 1252; or permission of the instructor.

MATH 2185. Linear Algebra I for Math Majors. 3 Credits.

For current or prospective math majors. Introduction to theory and computations involving linear equations, matrices, inverses, determinants, vector spaces, rank, eigenvalues, diagonalization, inner products, norms, and orthogonality. Credit may not be earned for both MATH 2185 and MATH 2184. MATH 2971 or MATH 2971W may be taken as a corequisite. Prerequisites: MATH 1221 or MATH 1231; and MATH 2971 or MATH 2971W.

MATH 2233. Multivariable Calculus. 3 Credits.

Partial derivatives and multiple integrals. Vector-valued functions. Line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: MATH 1232.

MATH 2971. Introduction to Mathematical Reasoning. 3 Credits.

Introduction to the fundamental abstract concepts of modern mathematics; various proof techniques demonstrated using examples from discrete and continuous mathematics. MATH 1232 may be taken as a corequisite. Prerequisites: MATH 1232 or permission of the department undergraduate advisor.

MATH 2971W. Introduction to Mathematical Reasoning. 3 Credits.

Introduction to the fundamental abstract concepts of modern mathematics; various proof techniques demonstrated using examples from discrete and continuous mathematics. Math 1232 may be taken concurrently; permission of instructor or the departmental undergraduate advisor may substituted for the prerequisite. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: MATH 1232.

MATH 2991. Introductory Special Topics. 1-3 Credits.

Permission of the instructor required prior to enrollment. May be repeated for credit.

MATH 3099. Variable Topics. 1-12 Credits.**MATH 3120. Elementary Number Theory. 3 Credits.**

Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler's phi function, and applications to cryptography and primality testing. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3125. Linear Algebra II. 3 Credits.

Advanced topics in linear algebra; duality of vector spaces, normal and self-adjoint operators, the singular value decomposition theorem, the spectral theorem, bilinear and quadratic forms, the geometry of orthogonal operators, the Jordan canonical form, and minimal polynomials. Prerequisites: MATH 2971 or MATH 2971W and MATH 2185.

MATH 3257. Introduction to Complex Variables. 3 Credits.

Analytic functions and power series; contour integration and the calculus of residues; conformal mapping; physical applications. Prerequisites: MATH 2184 or MATH 2185; MATH 2233; and MATH 2971 or MATH 2971W.

MATH 3342. Ordinary Differential Equations. 3 Credits.

A first course in ordinary differential equations, with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first-order and second-order linear equations, linear systems, and phase portraits. Prerequisites: MATH 2233; MATH 2184 or MATH 2185.

MATH 3343. Partial Differential Equations. 3 Credits.

A first course in partial differential equations. Fourier series and separation of variables, vibrations of a string, Sturm-Liouville problems, series solutions, Bessel's equation, linear partial differential equations, wave and heat equations. Prerequisite: MATH 3342.

MATH 3359. Introduction to Mathematical Modeling. 3 Credits.

Introduction to the fundamental modeling ideas of dimensional analysis, scaling, and elementary approximations of curves and functions; applications to development of models from science and engineering. Prerequisites: CSCI 1011 or CSCI 1012 or CSCI 1041 or CSCI 1111 or CSCI 1121 or CSCI 1131; and MATH 3342.

MATH 3410. Mathematics of Finance. 3 Credits.

Mathematical development and analysis of realistic models for financial option pricing; mathematical underpinnings and financial concepts. Prerequisite: MATH 2233.

MATH 3411. Stochastic Calculus Methods in Finance. 3 Credits.

Review of probability theory, Brownian motion, Ito integrals, Ito's formula, martingales, stochastic differential equations, boundary value problems, the Dirichlet problem, the Black-Scholes equation, optimal stopping, and American options. Prerequisites: MATH 2184 or MATH 2185; and MATH 3410; or permission of the instructor.

MATH 3553. Introduction to Numerical Analysis. 3 Credits.

Accuracy and precision; linear systems and matrices; direct and iterative methods for solution of linear equations; sparse matrices; solution of nonlinear equations. Interpolation and approximate representation of functions, splines. Prerequisites: MATH 2184 or MATH 2185; and MATH 2233; and CSCI 1011 or CSCI 1012 or CSCI 1041 or CSCI 1111 or CSCI 1121 or CSCI 1131.

MATH 3613. Introduction to Combinatorics. 3 Credits.

Introduction to combinatorial enumeration; basic counting techniques, inclusion-exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3632. Introduction to Graph Theory. 3 Credits.

Fundamental concepts, techniques, and results of graph theory; connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3710. Introduction to Mathematical Logic. 3 Credits.

Symbolic logic as a precise formalization of deductive thought; logical correctness of reasoning; formal languages, interpretations, and truth; propositional logic and first-order quantifier logic suited to deductions encountered in mathematics; Goedel's completeness theorem; compactness. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3720. Axiomatic Set Theory. 3 Credits.

Cantor's theory of sets. Russell's paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. The Zermelo-Fraenkel axioms and the axiom of choice. Finite, countable, and uncountable sets; ordinal and cardinal arithmetic. The continuum hypothesis. Prerequisites: MATH 2971 or MATH 2971W or permission of instructor.

MATH 3730. Computability Theory. 3 Credits.

The unlimited register machine as a model of an idealized computer. Computable and partial computable functions; Church-Turing thesis. Kleene's recursion theorem. Algorithmic enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Discussion of Goedel's incompleteness theorem. Prerequisites: MATH 2971 or MATH 2971W or permission of instructor.

MATH 3740. Computational Complexity. 3 Credits.

Automata and languages; deterministic and nondeterministic Turing machines; space and time complexity measures and classes; P-versus-NP problem; traveling salesman problem and other NP-complete problems; intractability; circuit complexity; introduction to probabilistic and quantum algorithms. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3806. Introduction to Topology. 3 Credits.

Metric spaces: completeness, compactness, continuity: Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisites: MATH 2971 or MATH 2971W.

MATH 3848. Differential Geometry. 3 Credits.

Curves in space, regular surfaces, tensors, fundamental forms of a surface, Gauss-Bonnet theory, minimal surfaces; the geometry of the Gauss map. Prerequisites: MATH 2184 or MATH 2185; MATH 2233; and MATH 2971 or MATH 2971W.

MATH 4121. Introduction to Abstract Algebra I. 3 Credits.

Study of groups and associated concepts, including Lagrange's theorem, Cayley's theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisites: MATH 2184 or MATH 2185; and MATH 2971 or MATH 2971W.

MATH 4122. Introduction to Abstract Algebra II. 3 Credits.

Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisites: MATH 4121 or permission of the instructor.

MATH 4239. Real Analysis I. 3 Credits.

Rigorous study of differentiation, integration, and convergence; sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisites: MATH 1232 and MATH 2971 or MATH 2971W or permission of instructor. Same As: MATH 6201.

MATH 4239W. Real Analysis I. 3 Credits.

A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: MATH 1232; and MATH 2971 or MATH 2971W. Same As: MATH 4239, MATH 6201.

MATH 4240. Real Analysis II. 3 Credits.

Continuation of MATH 4239. Topology of n-dimensional space, derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. Prerequisites: MATH 2184 or MATH 2185; and MATH 2233; and MATH 4239 or MATH 4239W. Credit cannot be earned for this course and MATH 6202.

MATH 4981. Seminar: Topics in Mathematics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details. Prerequisites: MATH 2184 or MATH 2185; and MATH 2233.

MATH 4991. Special Topics. 1-12 Credits.

Permission of the instructor required prior to enrollment. May be repeated for credit.

MATH 4995. Reading and Research. 1-6 Credits.

Under the personal direction of an instructor. Limited to majors with demonstrated capability. May be repeated for credit. Restricted to permission from instructor.

MATH 5099. Variable Topics. 1-99 Credits.**MATH 6101. Algebra I. 3 Credits.**

Group theory including symmetric groups, free abelian groups, finitely generated abelian groups, group actions, Sylow theorems, solvable groups. Ring theory including factorization in commutative rings, rings of polynomials, chain conditions.

MATH 6102. Algebra II. 3 Credits.

Continuation of MATH 6101. Theory of modules, including modules over a principal ideal domain and tensor product of modules. Theory of fields, including finite fields and Galois theory.

MATH 6120. Topics in Algebra. 3 Credits.

Topics may include, but are not limited to, Lie groups and Lie algebras, non-associative algebras, abelian groups, classical groups, algebraic number theory, representation theory, algebraic geometry, and ring theory. May be repeated for credit with permission. Prerequisites: MATH 6101 and MATH 6102.

MATH 6201. Real Analysis I. 3 Credits.

A rigorous study of the real number system, metric spaces, topological spaces, product topology, convergence, continuity and differentiation. Topics include Dedekind's cuts, Tychonoff's theorem, sequences and series, Abel's theorem, continuity and differentiability of real-valued functions of a real variable. Credit may not be earned for both MATH 6201 and MATH 4239.

MATH 6202. Real Analysis II. 3 Credits.

Continuation of MATH 6201. Topics include Riemann-Stieltjes integrals, equicontinuity, Arzela-Ascoli theorem, Stone-Weierstrass theorem, derivatives of functions of several variables, contraction mapping theorem, inverse and implicit function theorems, differential forms, exterior differentiation, Stoke's theorem, differentiable manifolds. Credit may not be earned for both MATH 6202 and MATH 4240.

MATH 6214. Measure and Integration Theory. 3 Credits.

Lebesgue measure and integration in abstract spaces. Probability measures. Absolute continuity, the Radon-Nikodym theorem, measures on product spaces, and the Fubini theorem. LP spaces and their properties. Prerequisite: MATH 4239.

MATH 6215. Introduction to Functional Analysis. 3 Credits.

Topological and metric spaces; Tychonoff theorem; Banach spaces; linear functionals and operators; Hahn-Banach, closed graph, and open-mapping theorems; uniform boundedness; Hilbert spaces; eigenvalues, projections. Prerequisite: MATH 6214.

MATH 6225. Ergodic Theory. 3 Credits.

Ergodicity, mixing, the K-property and the Bernoulli property. Poincaré recurrence, the Rohlin lemma, the ergodic theorem, and entropy theory. Additional topics from isomorphism theory, spectral theory, the theory of joinings, and coding theory. Prerequisites: MATH 6214 or permission of the instructor.

MATH 6226. Dynamical Systems and Chaos. 3 Credits.

Linear and nonlinear systems, flows, Poincaré maps, structural stability. Examples of chaotic systems in the physical sciences. Local bifurcations, center manifold theory, normal forms, the averaging theorem. Hyperbolic invariant sets, strange attractors, the Smale horseshoe, symbolic dynamics. Prerequisites: MATH 2184 and MATH 4240; or permission of the instructor.

MATH 6230. Complex Analysis. 3 Credits.

Topology of the complex plane; complex differentiation and integration; Cauchy's theorem and its consequences; Taylor and Laurent series; classification of singularities; residue theory; conformal mapping; the Riemann mapping theorem. Prerequisite: MATH 4239.

MATH 6240. Topics in Real and Functional Analysis. 3 Credits.

Possible topics include Banach algebras, function algebras, spectral theory for bounded and unbounded operators, harmonic analysis on topological groups and semigroups, topological vector spaces and operator algebras. May be repeated for credit with permission. Prerequisites: Permission of the instructor.

MATH 6318. Applied Mathematics I. 3 Credits.

Boundary value problems in one dimension, first order equations, method of characteristics, shock waves, linear elliptic and evolution equations, calculus of variations. In addition to the specified prerequisites, students must have completed an undergraduate course in differential equations prior to enrollment. Prerequisites: MATH 2184 and Math 2233.

MATH 6319. Applied Mathematics II. 3 Credits.

Stability and bifurcation, perturbation methods, Sobolev spaces, wave equation, nonlinear partial differential equations. Students must have taken an undergraduate course in real analysis in addition to the specified prerequisites. Prerequisites: MATH 2184 and Math 2233.

MATH 6330. Ordinary Differential Equations. 3 Credits.

Existence and uniqueness of solutions, continuity and differentiability of solutions with respect to initial conditions. Properties of linear systems, phase portraits, planar systems and Poincaré-Bendixson theory. Prerequisite: MATH 4240.

MATH 6340. Modern Partial Differential Equations. 3 Credits.

Emphasis on modern theory and analytical techniques applied to the solution of partial differential equations. Topics include Sobolev spaces, generalized solutions, strong solutions and regularity; Sobolev imbedding theorem; Rellich-Kondrachov theorem; Leray-Schauder fixed-point theorems; nonlinear eigenvalue problems. Prerequisites: MATH 6319 or permission of the instructor.

MATH 6350. Topics in Applied Mathematics. 3 Credits.

Possible topics include, but are not limited to, the calculus of variations, control theory, nonlinear partial differential equations, and mathematical programming. May be repeated for credit with permission.

MATH 6441. Introduction to Financial Mathematics. 3 Credits.

Elementary finance. Basic probability. Discrete random variables. Forwards, futures, and options. Options and arbitrage. The binomial model. Cox-Ross-Rubenstein formula. Martingales. Continuous random variables. The continuous model as a limit of the binomial model. Prerequisites: MATH 2184 and MATH 2233.

MATH 6442. Stochastic Calculus Methods in Finance. 3 Credits.

Review of finance and probability theory. Brownian motion. Ito's formula. Martingales. Stochastic differential equations. The Black-Scholes equation. Optimal stopping. American options. Prerequisites: MATH 2184 and MATH 2233.

MATH 6522. Introduction to Numerical Analysis. 3 Credits.

Computer arithmetic and round-off errors. Solution of linear and nonlinear systems. Interpolation and approximations. Numerical differentiation and integration. Eigenvalues and eigenvectors. Prerequisite: MATH 1232 and MATH 2184 and knowledge of a programming language.

MATH 6523. Numerical Solution of Ordinary and Partial Differential Equations. 3 Credits.

Initial and boundary value problems for ordinary differential equations. Error propagation, convergence and stability. Finite difference and finite element methods for partial differential equations. Prerequisite: MATH 3342 and knowledge of a programming language.

MATH 6540. Topics in Numerical Analysis. 3 Credits.

Numerical methods and software. Introductions to the methods, tools, and ideas of numerical computation. Problem solving using standard mathematical software. Interpolation; linear and nonlinear equations. Differential equations. Prerequisites: MATH 3342 and knowledge of a programming language.

MATH 6610. Combinatorics. 3 Credits.

An introduction to fundamental methods and current research problems in partially ordered sets and enumeration. Prerequisites: Undergraduate modern algebra and linear algebra or permission of the instructor.

MATH 6620. Graph Theory. 3 Credits.

Graphical enumeration, factors, planarity and graph coloring, algebraic graph theory, extremal graph theory, applications. Prerequisites: Undergraduate modern algebra and linear algebra or permission of the instructor.

MATH 6630. Topics in Combinatorial Mathematics. 3 Credits.

Topics selected from a wide range of research subjects in combinatorics, its relations with other areas of mathematics, and applications. Recent selections have included matroid theory, topological methods in ordered sets, algebraic methods in combinatorics, fractional graph theory, combinatorics of polytopes, the symmetric group. May be repeated for credit with permission.

MATH 6710. Mathematical Logic. 3 Credits.

Model theory: the relation between a formal language (syntax) and its interpretations (semantics). Consistency, completeness, and compactness. Tarski's theorem on the inexpressibility of truth. Gödel's incompleteness theorem and its impact on mathematics.

MATH 6720. Topics in Logic. 3 Credits.

Topics selected from a broad spectrum of areas of logic and applications, based on students' suggestions and interests. Recent selections have included computable mathematics, computable model theory, computability theory, set theory, and algorithmic learning theory. May be repeated for credit with permission.

MATH 6810. General Topology. 3 Credits.

Topological spaces, bases and subbases, open sets and closed sets; continuous maps and homeomorphisms; connectedness and compactness; metric topology, product topology, and quotient topology; separation axioms; finite topological spaces, covering spaces, and fundamental groups.

MATH 6820. Algebraic Topology. 3 Credits.

Fundamental groups and the Van Kampen theorem; simplicial complexes, simplicial homology, and Euler characteristic; singular homology, Mayer-Vietoris sequences. Topics may include cohomology, cup products, and Poincaré duality; classification of surfaces; knots and their fundamental groups. Prerequisites: MATH 6810 or permission of the instructor.

MATH 6850. Knot Theory and Low Dimensional Topology. 3 Credits.

Introduction to fundamental methods and current research in knot theory and 3-dimensional topology. Topics include Reidemeister moves, Alexander invariants, Jones-type invariants, skein modules, Khovanov homology, incompressible surfaces, and torus decomposition. Prerequisites: MATH 6810 or permission of the instructor.

MATH 6860. Topics in Knot Theory and Low Dimensional Topology. 3 Credits.

Possible topics include, but are not limited to, topology of 3-manifolds and work of Perelman, quantum invariants and their categorizations, topology of 4-manifolds after Freedman and Donaldson, computational complexity in topology, and applications in biology, chemistry, and physics. May be repeated for credit with permission. Prerequisites: MATH 6850 or permission of the instructor.

MATH 6890. Topics in Topology. 3 Credits.

Topics may include hyperbolic structures on surfaces and 3-manifolds; knot theory; topology of 3-manifolds; topology of 4-manifolds. Prerequisite: MATH 6820 or permission of the instructor. May be repeated for credit with permission.

MATH 6991. Graduate Student Experience. 0 Credits.

Introduction to the experience of studying mathematics as a graduate student at GW. Understanding University rules and regulations, handling the literature in the subject, conducting research and delivering presentations, and pursuing a successful career as a mathematician. Restricted to graduate students in the department.

MATH 6995. Reading and Research. 12 Credits.

May be repeated for credit.

MATH 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

MECHANICAL AND AEROSPACE ENGINEERING (MAE)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MAE 1001. Introduction to Mechanical and Aerospace Engineering. 1 Credit.

Careers in mechanical and aerospace engineering and the necessary academic program. Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Basic aspects of engineering ethics. (Fall).

MAE 1004. Engineering Drawing and Computer Graphics. 3 Credits.

Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section view, dimensioning, tolerancing, and pictorial drawing. Introduction to computer graphics, including topics covered in manual drawing and computer-aided drafting. (Fall and spring).

MAE 1099. Variable Topics. 1-36 Credits.

MAE 1117. Introduction to Engineering Computations. 3 Credits.

Foundations of computational thinking focusing on data practices and computational problem-solving; handling data programmatically, variables and their type, logical operations; reading data from files and cleaning and organizing text data; handling multi-dimensional arrays; basic plotting; linear regression; exploratory data analysis, handling labeled data, and data visualization. (Spring, Every Year).

MAE 2117. Engineering Computations. 3 Credits.

Computational thinking: modeling and simulation practices. Numerical derivatives. Initial-value problems. Solving differential equations, direction fields, the phase plane. Geometry of linear algebra; eigenvalues and eigenvectors. Fourier analysis. Prerequisites: MAE 1117 and MATH 1232. (Fall, Every Year).

MAE 2131. Thermodynamics. 3 Credits.

Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: PHYS 1021. (Spring, Every Year).

MAE 2170. History and Impact of the U.S. Patent System. 3 Credits.

Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system.

MAE 3120. Methods of Engineering Experimentation. 3 Credits.

Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 2117.

MAE 3126. Fluid Mechanics I. 3 Credits.

Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: APSC 2058. (Fall, Every Year).

MAE 3127. Fluid Mechanics Lab. 1 Credit.

Measurement and analysis of the behavior of fluids. Hydrostatic pressure, Bernoulli equation, conservation of momentum, pipe flow and open channel flow Comparison of experimental data with computational simulations. Prerequisites: APSC 2058. Corequisites: MAE 3126. (Fall, Every Year).

MAE 3128. Biomechanics I. 3 Credits.

Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with permission of the department. Prerequisites: APSC 2057 and CE 2220. (Spring, Every Year).

MAE 3134. Linear System Dynamics. 3 Credits.

Modeling of linear mechanical, electrical, and fluid systems as transfer functions and in state space. Linearization, discretization. Laplace and z-transforms. Natural frequencies and damping, free vibration, forced vibration. Measurement techniques, parameter estimation, and computer simulation. Time and frequency domain analysis. Corequisite: APSC 2058. Prerequisite: APSC 2113. (Spring, Every Year).

MAE 3145. Orbital Mechanics and Spacecraft Dynamics. 3 Credits.

Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. Prerequisite: APSC 2058. (Fall).

MAE 3155. Aerodynamics. 3 Credits.

Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 3126.

MAE 3162. Aerospace Structures. 3 Credits.

Basic structural theory of lightweight aerospace structures; analysis of typical monocoque structures; load transfer in stiffened panel structures; virtual work and energy methods of structural analysis, bending of open and closed, thin walled beams, shear and torsion of beams, and structural idealization. Restricted to juniors and seniors; permission of the instructor may be substituted. Prerequisites: APSC 2057 and CE 2220. (Fall, Every Year).

MAE 3166W. Materials Science and Engineering. 3 Credits.

Mechanical properties, plastic deformation, dislocation, yielding, strengthening mechanisms, microstructure and properties, heat treatment steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, crack propagation. Prerequisites: CHEM 1111 and PHYS 1022. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MAE 3167W. Mechanics of Materials Lab. 1 Credit.

Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Tension, compression, bending, impact, and shear failures. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. MAE 3166W may be taken as a corequisite. Prerequisite: MAE 3166W. (Spring, Every Year).

MAE 3171. Patent Law for Engineers. 3 Credits.

Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department. (Spring).

MAE 3184. Robotics Lab. 1 Credit.

Forward and inverse kinematics modeling of robots, control design, trajectory planning, and force rendering. Corequisite: MAE 3197.

MAE 3187. Heat Transfer. 3 Credits.

Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisites: MAE 2131 and MAE 3126. (Spring, Every Year).

MAE 3191. Mechanical Design of Machine Elements. 3 Credits.

Strength of materials in a design context; stresses and deflections in engineering structures; theories of failure; design of mechanical components, such as fasteners, shafts, and springs; the use of computers in mechanical engineering design. Prerequisite: CE 2220. (Fall, Every Year).

MAE 3192. Manufacturing Processes and Systems. 3 Credits.

Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. MAE 1004 may be taken as a corequisite. Prerequisites: MAE 1004. (Fall, Every Year).

MAE 3193. Mechanical Systems Design. 3 Credits.

Creative engineering design, problem definition, and concept generation; design of mechanisms and mechanical systems; safety, reliability, manufacturability, material selections, cost, and integration in the design process; finite element analysis of mechanical systems, computer-aided design, and optimization. Prerequisite: MAE 3191. (Spring, Every Year).

MAE 3197. Robotic Systems Design and Applications. 3 Credits.

Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages. Design and selection of mechanical structures, actuators, transmissions, and sensors. Design of robotic control systems. Relevant computer hardware and software. Industrial applications and limitations of robot systems. Lab experiments. Same as ECE 4730. Prerequisite: MAE 3134.

MAE 4129. Biomechanics II. 3 Credits.

Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 3128.

MAE 4149. Thermal Systems Design. 3 Credits.

Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisites: MAE 3187. (Fall, Every Year).

MAE 4151. Capstone Design Project I. 1 Credit.

First in a two-course sequence. Students define objectives and an approach for a mechanical engineering project involving experimentation and apply mechanical engineering design, engineering, and laboratory skills in team project implementation. Prerequisites: MAE 3193. (Fall, Every Year).

MAE 4152W. Capstone Design Project II. 3 Credits.

Continuation of MAE 4151. Students define objectives and an approach for a mechanical engineering project involving experimentation and apply mechanical engineering design, engineering, and laboratory skills in team project implementation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Spring, Every Year).

MAE 4157. Aerodynamics Laboratory. 1 Credit.

Subsonic and supersonic wind tunnel experiments and simulations. Prerequisite: MAE 3155. (Fall).

MAE 4163. Airplane Performance. 3 Credits.

Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. Prerequisites: MAE 3126. (Fall, Every Year).

MAE 4168. Introduction to Biomaterials. 3 Credits.

Fundamentals of materials science and engineering applied to artificial materials in the human body. Biocompatibility, techniques to minimize corrosion or other degradation of implant materials, use of artificial materials in tissues and organs. Restricted to students who are not enrolled in the mechanical engineering program. Prerequisites: departmental permission. (Fall, Every Year).

MAE 4172. Engineering Design and the Patent System. 3 Credits.

Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisites: MAE 3171 and senior status. (Spring, Every Year).

MAE 4182. Electromechanical Control System Design. 3 Credits.

Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques. Prerequisites: MAE 2117 and MAE 3134. (Fall and spring, Every Year).

MAE 4183. Controls Lab. 1 Credit.

Modeling, control design, simulation, implementation, tuning, and operation of a control system. Corequisite: MAE 4182.

MAE 4194. Mechatronics Design. 3 Credits.

Data acquisition and digital signal processing. Sensors and their characteristics—displacement, position/velocity, force/pressure, piezoelectric. Actuators—mechanical, electrical, pneumatic, hydraulic. Modeling and simulation of dynamic systems. Mechanism design. Digital control systems. Microprocessors, digital logic/circuits, motor drives. Lab experiments. Prerequisite: MAE 4182.

MAE 4195. Mechatronics Lab. 0 Credits.

Designing and building a mechatronic system based around a programmable microcontroller; using sensors and actuators to create devices capable of sensing their surrounding environment and reacting to stimuli from that environment. Corequisites: MAE 6194 for students enrolled in MAE 6195, MAE 4194 for student enrolled in MAE 4195. (Spring, Every Year) Same As: MAE 6195.

MAE 4198. Research. 1-3 Credits.

Applied research and experimentation projects, as arranged. Restricted to juniors and seniors. (Fall and spring, Every Year).

MAE 4199. Student Design Project. 1-3 Credits.

Student projects involving extensive design of various mechanical engineering systems. May be taken for graduate credit with the expectation that additional work is required. Prerequisites: seniors. (Fall and spring, Every Year).

MAE 5099. Variable Topics. 1-99 Credits.**MAE 6194. Mechatronics Design. 3 Credits.**

Review of data acquisition and digital signal processing; mathematical models, design, and applications of sensors and actuators in mechatronic systems; theory and applications of mechanism design; microprocessor-based design integration, motor drives, and digital logic/circuits. Corequisite: MAE 6195. Restricted to graduate students. (Same as MAE 4194) (Spring, Every Year).

MAE 6195. Mechatronics Lab. 0 Credits.

Designing and building a mechatronic system based around a programmable microcontroller; using sensors and actuators to create devices capable of sensing their surrounding environment and reacting to stimuli from that environment. Corequisites: MAE 6194 for students enrolled in MAE 6195, MAE 4194 for student enrolled in MAE 4195. (Spring, Every Year) Same As: MAE 4195.

MAE 6204. Tissue Engineering. 3 Credits.**MAE 6207. Theory of Elasticity I. 3 Credits.**

Introduction to Cartesian tensors; deformation, stress, constitutive relations for linear elasticity; formulation of boundary value problems, variational principles, torsion and bending of prismatic rods, plane problems. Permission of the department required prior to enrollment. (Fall, Every Year) Same As: CE 6207.

MAE 6210. Continuum Mechanics. 3 Credits.

Tensor analysis; fundamental concepts of continuum mechanics; kinematics of continuum; derivation of balance laws of mass, linear momentum, angular momentum, energy and entropy; axioms of constitutive theory; formulation of constitutive theories; Onsager's principle; objectivity; representation theorem for isotropic functions; plasticity, including concepts of internal variables, yield surface, return mapping algorithm. Permission of the department required prior to enrollment. (Fall, Every Year).

MAE 6220. Applied Computational Fluid Dynamics. 3 Credits.

Basic principles of fluid dynamics and aerodynamics. Finite difference and finite volume methods. Fluid flow and heat transfer analysis of thermo-fluid mechanical systems. Computational aerodynamics codes. Individual hands-on experience with a commercial CFD code such as FLUENT. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6221. Fluid Mechanics. 3 Credits.

Continuum, kinematics of fluids; stress and strain rate tensors; fundamental equations of viscous compressible flows. Irrotational flows; sources, sinks, doublets, and vortices. Laminar flow of viscous incompressible fluids; boundary-layer concept. Permission of the department required prior to enrollment. (Fall, Every Year).

MAE 6223. Turbomachinery. 3 Credits.

Turbine, compressor, and pump types and uses; dimensional analysis of turbomachines; cycle analysis of gas and steam turbines; energy interchange in fluid machinery; design, characteristics, and performance of turbines, compressors, and pumps; comparison of types of turbines, compressors, and pumps. Prerequisite: MAE 6221.

MAE 6224. Viscous Flow. 3 Credits.

Exact solutions of Navier-Stokes equations; the laminar boundary-layer theory. Reynolds stresses and turbulence; internal, boundary-layer, and mixing flows. Applications to heat and mass transfer and to reacting flows. Prerequisites: APSC 6213 and MAE 6221. (Fall and spring, Every Year).

MAE 6225. Computational Fluid Dynamics. 3 Credits.

Theory of discrete methods for solving the governing equations of fluid dynamics. Potential flow, Euler equations, Navier-Stokes equations. Emphasis on algorithm development appropriate to modern supercomputers. Prerequisites: MAE 6221 and MAE 6286. (Fall and spring, Every Year).

MAE 6226. Aero- and Hydrodynamics. 3 Credits.

Inviscid flows in two and three dimensions and irrotational flow theory; conformal mapping and applications. Helmholtz theorems and vorticity dynamics. Applications such as airfoil theory, finite wing theory, panel methods, instabilities, free surface flow. Prerequisite: MAE 6221. (Fall and spring, Every Year).

MAE 6228. Compressible Flow. 3 Credits.

Thermodynamics and equations of compressible inviscid flow. One-dimensional flow. Isentropic flow. Normal and oblique shock waves. Quasi-one-dimensional flow. Unsteady one-dimensional and steady two-dimensional flow. Introduction to transonic flow. Prerequisites: APSC 6213 and MAE 6221. (As arranged, odd years).

MAE 6229. Propulsion. 3 Credits.

Basic concepts of propulsion: energy transformations in propulsive flows, gas dynamics of combustion. Thermal and propulsive efficiencies. Cycle and engine component analysis. Intake, nozzle performance. Drag and thrust generation. Augmentation. Propellers, turbojets, turbofans, ramjets, and rockets. Prerequisites: Graduate standing; or MAE 2131 and MAE 3126. (Spring, Every Year).

MAE 6230. Space Propulsion. 3 Credits.

Advanced chemical propulsion: dynamic combustion and instabilities in solid propellants. Injection, atomization, mixing in liquid propellant engine performance. Plasma propulsion: electrostatic, electromagnetic, and electrothermal instabilities (laser and microwave). Nuclear propulsion. Prerequisite: MAE 6229.

MAE 6232. Fracture Mechanics. 3 Credits.

Concepts, history, and recent developments of fracture mechanics. Singularity at the crack tip; solutions around crack tip; stress intensity factors; energy release rate; J-integral; direction of crack extension; Plasticity and slow crack growth; dynamic crack propagation; molecular dynamics simulation of fracture. Prerequisite: approval of department.

MAE 6234. Composite Materials. 3 Credits.

Principles of composites and composite reinforcement. Micromechanics and failure, interface reactions in various composites, reinforcing materials. Structure of composites: fiber-reinforced polymers, filler-reinforced polymers, fiber-reinforced metals, directionally solidified alloys, dispersion-strengthened metals. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6235. Deformation and Failure of Materials. 3 Credits.

Elastic and plastic deformation, yield, dislocation theory, strengthening mechanisms, creep, polymers, fracture, transition temperature, microstructure, fatigue. (Spring, odd years).

MAE 6238. Biomaterials. 3 Credits.

Applications of materials science and engineering to artificial materials in the human body with the objective of detailed understanding of synthetic materials and biopolymers. Biocompatibility and its consequences on tissue-implant interfaces. Design and development of new implant materials, drug delivery systems, and biosensors. Prerequisite: MAE 3166 or MAE 4168.

MAE 6239. Computational Nanosciences. 3 Credits.

Introduction to surface force measurements in nanosciences; continuum contact mechanics in nanoscience research; intermolecular forces; empirical potentials for transition metals; surface forces in liquids; large-scale atomic/molecular massively parallel simulator; force field development from quantum mechanical density-functional theory for organic/metal molecular systems. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6243. Advanced Mechanical Engineering Design. 3 Credits.

Design of mechanical engineering components and systems emphasizing computer-aided engineering (CAE), including interactive computer graphics, finite element analysis, and design optimization. Creation of a complete design on an engineering workstation. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6245. Robotic Systems. 3 Credits.

Classification, features, and applications of industrial robots. Spatial descriptions and transformations, forward and inverse kinematics. Jacobian matrix, velocities and static forces, manipulator dynamics and controls. Robot actuators, transmissions, sensors, end effectors, and programming. Prerequisite: MAE 4182 .

MAE 6246. Electromechanical Control Systems. 3 Credits.

State-space representations of dynamic systems; dynamics of linear systems; controllability and observability; linear observers; compensator design by separation principle; linear-quadratic optimal control; Riccati equations; random processes; Kalman filter; applications of optimal stochastic control theory to robotics and earthquake engineering. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6247. Aircraft Design I. 3 Credits.

Conceptual design methods used in response to prescribed mission and performance requirements, alternate configuration concepts. Configuration general arrangement and empennage sizing. Estimation of aircraft size, weight, and balance; lift, thrust and drag; system level tradeoff and sensitivity studies. Prerequisites: Graduate standing or MAE 4163. (Spring, Every Year).

MAE 6249. Spacecraft Design. 3 Credits.

Computer-aided design of spacecraft and satellites to meet specific mission requirements. Environment, propulsion, structure, heat transfer, orbital mechanics, control considerations. Use of modern computer codes for design studies. Prerequisites: MAE 3145 or graduate standing. (Spring, Every Year).

MAE 6251. Computer-Integrated Manufacturing. 3 Credits.

Automation techniques for processing metals, polymers, and composites. Use of sensing and process modeling in process control. Numerical control and robot applications and limitations. Integration, scheduling, and tool management in the computer-integrated factory. Quality control. Social and economic considerations in CIM. Prerequisite: MAE 3192 .

MAE 6254. Applied Nonlinear Control. 3 Credits.

Dynamic characteristics of nonlinear systems. State stability and input-output stability. Lyapunov stability theory and invariance principle. Nonlinear control systems, including feedback linearization, back-stepping, sliding mode control, and passivity-based design. Applications to robotics, aircraft, and spacecraft control systems. Geometric controls and hybrid systems. Prerequisites: departmental permission. (As arranged, Every Year).

MAE 6255. Plasma Engineering in Aerospace and Nanotechnology. 3 Credits.

Plasma fundamentals, electromagnetic waves in plasma, plasma-wall interactions, modeling and experimental techniques in plasmas, electrical discharge, plasma propulsion, plasma-based nanotechnology. Prerequisite: MAE 3126. (Fall, Every Year).

MAE 6257. Theory of Vibration. 3 Credits.

Damped and undamped natural vibration, response of single- and multiple-degrees-of-freedom systems to steady-state and transient excitations, modal analysis, nonproportional damping and complex modes, variation formulation of equations of motion, discretization of structural systems for vibrational analysis. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6258. Advanced Vibration Analysis and Control. 3 Credits.

Passive and active vibration control of discrete and continuous systems, dynamic vibration absorbers, random vibrations, failure analysis, modal analysis, nonlinear vibrations. Prerequisites: MAE 3134 and MAE 4182 or graduate standing. (Spring).

MAE 6260. Nanomechanics. 3 Credits.

Introduction to crystallography; interatomic potentials; phonon dispersion relations; molecular dynamics simulation; Nose-Hoover thermostat; coarse grained non-equilibrium molecular dynamics; multiple length/time scale theory of multi-physics; microcontinuum field theories; applications to nano materials/structures. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6261. Air Pollution. 3 Credits.

Introductory course on the generation, monitoring, and control of air pollution. Atmospheric pollutants; current levels and health problems. Combustion chemistry and mixing. Photochemical processes; smog and measurements. Atmospheric dispersion; inversion and acid rain. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6262. Energy Systems Analysis. 3 Credits.

Analysis of energy resources and conversion devices. Statistical data analysis, forecasting, I/O, and net energy analyses, mathematical modeling. Prerequisites: departmental permission. (Fall, Every Year).

MAE 6263. Energy and Sustainability. 3 Credits.

Review of thermodynamics, heat transfer, fluid dynamics, and materials technology used in the energy industries. New energy-efficient technologies in transportation and buildings; renewable energy (wind, solar, and biomass). Climate change and sustainability issues, such as carbon capture, cap and trade, carbon sequestration. (Spring, Every Year).

MAE 6270. Theoretical Acoustics. 3 Credits.

Basic acoustic theory in stationary and uniformly moving media; waves in infinite space; sound transmission through interfaces; sound radiation from simple solid boundaries, source and dipole fields; propagation in ducts and enclosures; elements of classical absorption of sound. Prerequisites: APSC 6213 and MAE 6221. (Fall and spring, Every Year).

MAE 6274. Dynamics and Control of Spacecraft. 3 Credits.

Fundamentals of satellite attitude dynamics and passive stabilization. Spacecraft attitude representation, rotational kinematics and kinetics. External torques. Dynamics of gyroscopes. Gravity gradient stabilization. Effect of internal energy dissipation on stability of spinning bodies and methods of despin. Dual spin satellites. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6275. Dynamics and Control of Aircraft. 3 Credits.

Derivation of equations of motion, Euler transformations and direction cosines, stability derivatives and linearization of equations of motion, stability of linear systems with application to longitudinal and lateral dynamics, Laplace transform techniques, and frequency-response analysis. Permission of the department required prior to enrollment. (Fall, even years).

MAE 6277. Spacecraft Attitude Control. 3 Credits.

Control of spinning and three-axis stabilized spacecraft. Elements of linear control theory for single-input, single-output systems and basic feedback control laws. Momentum management and actuator desaturation. Sensors for attitude determination. Application of modern control for multi-input, multi-output systems. Control system simulations using MatLab. (As arranged).

MAE 6280. Thermodynamics. 3 Credits.

Review of first and second laws of thermodynamics and combining the two through exergy; entropy generation minimization and applications. Single phase systems, exergy analyses, multiphase systems, phase diagrams and the corresponding states principle. Permission of the department is required prior to enrollment. (Fall, Every Year).

MAE 6282. Convective Heat/Mass Transfer. 3 Credits.

Heat and momentum transfer in laminar and turbulent flow. The laminar boundary-layer solution. Similarity and nondimensional parameters. Mass-momentum heat transfer analogy. Convective heat transfer at high velocity. Stability, transition, and turbulence. Free convection. Prerequisite: MAE 6221 .

MAE 6284. Combustion. 3 Credits.

Basic combustion phenomena. Rate processes and chemical kinetics. Chain reaction theory. Detonation, deflagration, diffusion flames, heterogeneous combustion. Experimental measurements. Impact of pollution regulations and alternate fuels. Permission of the department required prior to enrollment. (Fall, odd years).

MAE 6286. Numerical Solution Techniques in Mechanical and Aerospace Engineering. 3 Credits.

Development of finite difference and finite element techniques for solving elliptic, parabolic, and hyperbolic partial differential equations. (Fall, Every Year).

MAE 6287. Applied Finite Element Methods. 3 Credits.

Review of theory of elasticity. Basic aspects of theory and application of finite element methods. Utilization of MSC/NASTRAN for static, dynamic, linear, and nonlinear analyses of problems in mechanical, aeronautical, and astronautical engineering. Course emphasizes individual hands-on experience with the MSC/NASTRAN code. Permission of the department required prior to enrollment. (Fall and spring, Every Year).

MAE 6288. Advanced Finite Element Analysis. 3 Credits.

Review of variational formulation of the finite element method. Finite element analysis of large-strain thermomechanics. Applications to static and dynamic problems in finite elasticity, Fung elasticity (biomechanics), nonlocal theory, active stress in living biological tissues, biological growth, and large-strain plasticity. Recent developments in finite element methods. Permission of the department required prior to enrollment. (Fall and spring, Every Year) Credit cannot be earned for this course and CE 8330.

MAE 6291. Special Topics in Mechanical Engineering. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include tribology, power systems design, solar heating systems, HVAC, and plasticity theory. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6292. Special Topics in Aerospace Engineering. 3 Credits.

Selected subjects of current interest. Arranged by consultation between department faculty and students. Typical topics include environmental noise control, aeroacoustics, hypersonic flow, and flight vehicle aerodynamics. May be repeated for credit. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 6298. Research. 1-6 Credits.

Basic research projects as arranged. May be repeated for credit.

MAE 6998. MS Thesis Research. 3 Credits.

. (Fall and spring, Every Year).

MAE 6999. MS Thesis Research. 3 Credits.

. (Fall and spring, Every Year).

MAE 8350. Advanced Topics in Materials Science. 3 Credits.

Topics such as surface science that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 8351. Advanced Topics in Mechanical Engineering. 3 Credits.

Topics such as advanced analytical mechanics, advanced mechanics of continua, and advanced theory of elasticity that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 8352. Advanced Topics in Aerospace Engineering. 3 Credits.

Topics such as nonsteady flow, physical gas dynamics, turbulence, and nonlinear wave propagation that are of current research interest. Selected after consultation between department faculty and students. Prerequisite: Permission of the department. (Fall and spring, Every Year).

MAE 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination. (Fall and spring, Every Year).

MAE 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates. (Fall and spring, Every Year).

MEDICAL LABORATORY SCIENCE (MLS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MLS 0190. Blood Banking Exam Review. 0 Credits.

Review of professional knowledge in all areas of blood banking.

MLS 1101. Introduction to Laboratory Medicine I. 4 Credits.

The first in a two-course sequence. Introduction to laboratory medicine, including quality assurance and quality control, laboratory safety, specimen collection, laboratory math, basic hematology, urinalysis, and clinical chemistry. Restricted to Students in SMHS. Prerequisites: HSCI 1101, HSCI 1102 and HSCI 1103.

MLS 1102. Introduction to Laboratory Medicine II. 4 Credits.

The second in a two-course sequence. Introduction to the clinical laboratory; immunology, basic microbiology and infectious disease testing, blood banking and transfusion services, molecular diagnostics, and professionalism in the clinical laboratory. Restricted to Students in SMHS. Prerequisite: MLS 1101.

MLS 2000. Biology for Health Sciences. 3 Credits.

This course covers key concepts in biology with an emphasis on the similarities and differences between organisms and how they interact with their environment and with each other.

MLS 2001. Chemistry for Health Sciences. 3 Credits.

An introduction to basic concepts in general, organic and biological chemistry, including the nature of matter, chemical reactions, stoichiometry, solutions, and the chemistry of biomolecules.

MLS 2005. Plagues, Pandemics, and Epidemics. 3 Credits.

The biological, historical, ethical, and social implications of various diseases that have caused plagues, pandemics, and epidemics.

MLS 3000. Clinical Laboratory Mathematics. 3 Credits.

Basic mathematical techniques used in the clinical laboratory, including exponential and logarithms, measurement systems, solutions and concentrations, proportionality, graphing, statistics and quality control, and method evaluation; practical applications of data analysis. An equivalent college-level mathematics course or permission of the program director may be substituted for the prerequisite. Restricted to students in the medical laboratory science program. Prerequisite: HSCI 2117.

MLS 3001. Professional Ethics for Medical Laboratory Scientists. 3 Credits.

Ethical and professional conduct of and dilemmas encountered by medical laboratory professionals. Restricted to students in the medical laboratory science program.

MLS 3001W. Professional Ethics for Medical Laboratory Scientists. 3 Credits.

Ethical and professional conduct of and dilemmas encountered by medical laboratory professionals. Restricted to students in the medical laboratory science programs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

MLS 3003. Biochemistry for Laboratory Science. 3 Credits.

Concepts and principles of biochemistry applicable to laboratory science; structure and function of biological molecules, cellular energetics, and cellular metabolism in relation to human physiology and health. Prerequisites: BISC 1111, CHEM 1111, and CHEM 1112.

MLS 4106. Urogenital System Cytology. 2 Credits.**MLS 4115. Parasitology and Mycology. 1 Credit.**

Principles and procedures involved in the diagnosis of parasitic and fungal infections; disease causation, specimen collection and handling, laboratory identification, and treatment of medically significant fungi and parasites. Proctor fee.

MLS 4116. Clinical Bacteriology I. 3 Credits.

Principles of clinical microbiology with emphasis on pathogenic characteristics, isolation, and identification of bacteria related to human disease; theoretical approach to the current diagnostic techniques and identification systems used in clinical practice. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111.

MLS 4117. Clinical Bacteriology II. 2 Credits.

The etiology of infectious diseases in different body sites with an emphasis on the epidemiology, pathogenic mechanisms, and laboratory identification of suspected etiologic agents; specimen collection and handling, diagnosis and treatment of medically significant bacteria. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111.

MLS 4119. Parasitology, Mycology, and Virology. 2 Credits.

Principles and procedures involved in the diagnosis of parasitic, fungal, and viral infections; disease causation, specimen collection and handling, laboratory identification and treatment of medically significant fungi, parasites, and viruses. Proctor fee. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1112; or BISC 1116 and BISC 1126.

MLS 4121. Applied Microbiology. 4 Credits.

Physiology, metabolism and pathogenesis of medically important bacteria with an emphasis on their isolation and identification in the clinical microbiology laboratory. Restricted to students enrolled in the undergraduate certificate in clinical microbiology program or with the permission of the instructor. Prerequisites: BISC 1116 and BISC 1126.

MLS 4123. Clinical Microbiology I. 3 Credits.

Principles of clinical microbiology with emphasis on pathogenic characteristics, isolation, and identification of bacteria and viruses related to human disease; theoretical approach to the current diagnostic techniques and identification systems used in clinical practice; disease causation, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses. For prerequisites BISC 1115/ BISC 1125 an equivalent biology course and for HSCI 3106 an equivalent general microbiology course may be substituted at the instructor's discretion. Proctor fee. Recommended background: BISC 1111 and HSCI 3106.

MLS 4124. Clinical Microbiology II. 2 Credits.**MLS 4128. Hematology I. 2 Credits.**

Blood and blood-forming tissues with emphasis on hematologic techniques and cell identification; anemias and non-malignant leukocyte disorders are also presented. Proctor fee.

MLS 4129. Hematology II. 2 Credits.

Some of the more common hematologic disorders with emphasis on the laboratory diagnosis of these disorders; disorders of the hemostasis system. Proctor fee.

MLS 4130. Hematology I. 3 Credits.

Study of the blood and blood-forming tissues with emphasis on hematologic techniques and cell identification; anemias and non-malignant leukocyte disorders. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111.

MLS 4131. Hematology II. 3 Credits.

Study of the blood and blood-forming tissues with emphasis on white blood cell disorders; introduction to the hemostatic system and associated coagulation disorders. Restricted to students in the medical laboratory science program. Prerequisites: MLS 4130.

MLS 4136. Clinical Experience I. 2 Credits.

Supervised clinical experience in clinical chemistry. Proctor fee.

MLS 4137. Clinical Experience II. 2 Credits.

Supervised clinical experience in microbiology. Proctor fee.

MLS 4138. Clinical Experience III. 2 Credits.

Supervised clinical experience in hematology, coagulation and urinalysis. Proctor fee.

MLS 4139. Clinical Experience IV. 2 Credits.

Supervised clinical experience in transfusion medicine and serology. Proctor fee.

MLS 4141. Immunology and Serology. 3 Credits.

Principles of the immune system's components, functions, interactions with microorganisms, and the clinical applications of immunologic assays to human health and disease.

MLS 4145. Clinical Biochemistry I. 3 Credits.

This course studies the methodologies employed in the chemical analysis of human blood and body fluids. This includes an examination of the fundamentals of measurement and the principles of instrumentation as they relate to the assay of each analyte studied. In addition, the laboratory results are correlated with the clinical significance and pathophysiology which may generate changes in the analyte. Throughout the course, the quality assurance measures required to ensure reliability and validity of the laboratory results are also emphasized. [add to end of description: Proctor fee.

MLS 4146. Clinical Biochemistry II. 3 Credits.

This second course in clinical biochemistry continues the study of the measurement and interpretation of chemical constituents in human blood and body fluids. The laboratory results of each analyte are correlated with the clinical significance and pathophysiology which may generate changes in the analyte. Throughout the course, the quality assurance measures required to ensure reliability and validity of the laboratory results are also emphasized.

MLS 4150. Immunohematology. 3 Credits.

The major blood group systems that affect the practice of transfusion medicine and examines the processing and distribution of blood products supplied by transfusion services. Proctor fee.

MLS 4151. Molecular Diagnostics. 3 Credits.

Introduction to the molecular techniques used to diagnose human disease; technology, theory, and methodology of specific molecular protocols that can be used within a clinical laboratory setting to aid in disease diagnostics including those of genetic, oncogenic, and infections origin. Proctor fee.

MLS 4158. Laboratory Management and Operations. 3 Credits.

Introduction to critical concepts of lab management, including leadership theory, management principles, human resource management, financial management, quality management, and laboratory operations. Proctor fee.

MLS 4159. Capstone Seminar. 1 Credit.

Comprehensive review of medical laboratory science, which prepares students to sit for the board of certification examination. Integration of knowledge gained in didactic and practicum courses within the various laboratory disciplines, including hematology, microbiology, chemistry, and immunohematology. Proctor fee.

MLS 4160. Blood Bank Practicum. 4 Credits.

Clinical practicum in which students apply medical knowledge and clinical skills gained in MLS 4150. Prerequisites: MLS 4150.

MLS 4161. Clinical Biochemistry Practicum. 4 Credits.

Application of the medical knowledge and clinical skills gained in the didactic clinical biochemistry I and clinical biochemistry II courses. Proctor fee.

MLS 4162. Hematology Practicum. 2 Credits.

Analyses and laboratory testing of human blood specimens.

MLS 4163. Immunology and Serology Practicum. 1 Credit.

Supplemental, hands-on clinical experience applying medical knowledge and clinical skills gained in the didactic Immunology and serology course. For students who need to meet additional requirements for state licensure as a medical laboratory professional. Restricted to students in the medical laboratory science program.

MLS 4164. Clinical Microbiology Practicum. 4 Credits.

Students apply medical knowledge and clinical skills gained in MLS 4123 (Clinical Microbiology I), MLS 4124 (Clinical Microbiology II), and MLS 4151 (Molecular Diagnostics). Proctor fee.

MLS 4165. Urinalysis Practicum. 1 Credit.

Active engagement in applying medical knowledge and clinical skills in the analysis of urine and body fluids.

MLS 4166. Coagulation Practicum. 1 Credit.

One-week required rotation for students in the Bachelor of Science in Health Science in Medical Laboratory Science (MLS), Post-baccalaureate MLS, or Post-baccalaureated in Hematology for MLS certificate programs. Focus on analyses and laboratory testing of human blood specimens.

MLS 4170. Introduction to Molecular Biology. 3 Credits.

Foundational course in molecular biology; DNA replication, DNA repair, transcription, translation and gene regulation. Prerequisites: BISC 1111.

MLS 4171. Human Genetics. 3 Credits.

Hereditary and molecular genetics as it applies to humans. Prerequisites: BISC 1111.

MLS 4172. Molecular Diagnostics Capstone. 3 Credits.

Culmination course for the BSHS in molecular diagnostic sciences program. Provides an overview of molecular diagnostics using a case-based approach. Students must have earned a minimum grade of C in all prerequisite courses in order to enroll in this course. Program director approval may be substituted for prerequisite courses. Proctor fee. Prerequisites: MLS 4170, MLS 4171, MLS 4217 and MLS 4242.

MLS 4179. Microbiology Laboratory Operations. 3 Credits.

Quality assurance, quality control, and regulatory requirements in a clinical microbiology laboratory, with particular emphasis on laboratory operations and management. Restricted to students enrolled in the undergraduate certificate in clinical microbiology program or with the permission of the instructor. Prerequisites: BISC 1116 and BISC 1126.

MLS 4216. Clinical Bacteriology Laboratory. 1 Credit.

Hands-on experience in current diagnostic techniques and identification systems used in clinical practice; principles, procedures, techniques and data interpretation for the isolation and identification of clinically significant bacteria. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111. Corequisites: MLS 4116.

MLS 4217. Molecular Techniques. 3 Credits.

Theory and processes of current molecular techniques used to diagnose human disease. Prerequisites: BISC 1111.

MLS 4219. Parasitology, Mycology, and Virology Laboratory. 1 Credit.

Principles and procedures involved in the diagnosis of parasitic, fungal, and viral infections; disease causation, specimen collection and handling, laboratory identification and treatment of medically significant fungi, parasites and viruses. Laboratory fee. Corequisite MLS 4119. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1112; or BISC 1116 and BISC 1126.

MLS 4230. Hematology Laboratory. 1 Credit.

Diagnostic analyses used to evaluate disease states associated with human blood cells; quality assurance in the hematology lab and on the evaluation of stained blood smears and microscopic differentiation of blood cells. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111. Corequisites: MLS 4130.

MLS 4242. Applications of Molecular Testing. 3 Credits.

Application of molecular testing to diagnose various human diseases and disorders. Prerequisites: BISC 1111; or BISC 1115 and BISC 1125.

MLS 4246. Clinical Biochemistry Laboratory. 1 Credit.

Practical laboratory course covering the principles and procedures of various diagnostic testing procedures performed in the clinical biochemistry laboratory; measurement and interpretation of chemical constituents in human blood and body fluids. Laboratory fee. Corequisite: MLS 4145. Prerequisites: CHEM 1111 and CHEM 1112. Recommended background: students in the medical laboratory science program.

MLS 4250. Immunohematology Laboratory. 1 Credit.

Performance of routine blood banking procedures, including blood group and Rh typing, antibody screens, antibody identification, cross matching, and elution and absorption techniques. Restricted to students in the medical laboratory science program.

MLS 4251. Molecular Diagnostics Laboratory. 1 Credit.

An introduction to the theory of and laboratory techniques in molecular biology with an emphasis on molecular and serological techniques, including DNA extraction and quantitation, restriction enzyme digestion, polymerase chain reaction, agarose gel electrophoresis, flow cytometry, and ELISA. Restricted to students in the medical laboratory science program.

MLS 4252. Applications of Molecular Testing Laboratory. 2 Credits.

Molecular-based testing to determine human disease causation. Prerequisites: BISC 1111.

MLS 4266. Molecular Diagnostics Practicum. 6 Credits.

Application of molecular techniques in a clinical setting to facilitate the diagnosis of human diseases. Students must have earned a minimum grade of C in all prerequisite courses. Instructor permission may be substituted for prerequisites. Prerequisites: MLS 4170, MLS 4171, MLS 4217 and MLS 4242.

MLS 5099. Variable Topics. 1-99 Credits.**MLS 6114. Advanced Clinical Microbiology I. 2 Credits.**

Pathogenic characteristics, isolation techniques, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses with emphasis on current diagnostic techniques used in clinical practice.

MLS 6115. Advanced Clinical Parasitology and Mycology. 1 Credit.

Specimen collection, symptomology, pathology, diagnostic procedures, and treatment of the various parasites and fungi that cause human infections.

MLS 6116. Advanced Clinical Bacteriology I. 3 Credits.

Principles of clinical microbiology with emphasis on pathogenic characteristics, isolation, and identification of medically significant bacteria. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111.

MLS 6117. Advanced Clinical Bacteriology II. 2 Credits.

Etiology of infectious diseases in different body sites using a case study-based approach; epidemiology, pathogenic mechanisms, and laboratory identification of suspected etiologic agents; commonly encountered clinical bacterial species. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111 and MLS 6116.

MLS 6119. Advanced Parasitology, Mycology, and Virology. 2 Credits.

Provides a systematic approach to the biology and epidemiology of human parasitic, fungal, and viral diseases. Proctor fee. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1112; or BISC 1116 and BISC 1126.

MLS 6123. Advanced Clinical Microbiology I. 3 Credits.

Pathogenic characteristics, isolation techniques, specimen collection and handling, laboratory identification, and treatment of medically significant bacteria and viruses; current diagnostic techniques used in clinical practice. Prerequisites: BISC 1111 and HSCI 3106 or equivalents.

MLS 6124. Advanced Clinical Microbiology II. 2 Credits.

The etiology of human infectious diseases using an organ system approach.

MLS 6130. Advanced Hematology I. 3 Credits.

Blood and blood-forming tissues with emphasis on hematologic techniques and cell identification; anemias and non-malignant leukocyte disorders. Proctor fee. Restricted to students in the medical laboratory science program. Recommended background: BISC 1111.

MLS 6131. Advanced Hematology II. 3 Credits.

Hematopoiesis and hemostatic disorders. Proctor fee. Restricted to students in the medical laboratory science program. Prerequisite: MLS 6130.

MLS 6132. Molecular Epidemiology. 3 Credits.

The range of molecular and genetic techniques used and their applications in epidemiological investigations.

MLS 6141. Advanced Immunology and Serology. 3 Credits.

The immune system, various immune-related diseases, and the clinical applications of immunology related to the diagnosis and monitoring of human diseases.

MLS 6145. Advanced Clinical Biochemistry I. 3 Credits.

Methodologies employed in the chemical analysis of human blood and body fluids and the associated pathophysiology of each analyte measured; measurement of carbohydrates, proteins, lipids, and clinically significant enzymes. Proctor fee. Restricted to students in the medical laboratory science program. Prerequisites: CHEM 1111 and CHEM 1112.

MLS 6146. Advanced Clinical Biochemistry II. 3 Credits.

Methodologies used in the chemical analysis of human blood and body fluids and the associated pathophysiology of each analyte measured; measurement of hormones, urinalysis and body fluids, biomarkers, and toxins. Proctor fee. Restricted to students in the medical laboratory science program. Prerequisites: CHEM 1111, CHEM 1112 and MLS 6145.

MLS 6150. Advanced Immunohematology. 3 Credits.

Blood group systems that impact the practice of transfusion medicine; processing and distribution of blood products supplied by blood donor centers and transfusion services. Proctor fee. Restricted to students in the medical laboratory science program. Prerequisites: BISC 1111.

MLS 6151. Advanced Molecular Diagnostics. 3 Credits.

Overview of molecular biology and genetic concepts as well as molecular techniques used to diagnose human diseases. The technology, theory, and methodology of molecular protocols used within a clinical and research laboratory setting.

MLS 6158. Advanced Laboratory Management and Operations. 3 Credits.

An introduction to critical concepts of lab management, including leadership theory, management principles, human resource management, financial management, quality management, and laboratory operations. Prerequisites: HSCI 2100 and HSCI 2117; for HSCI 2100 an equivalent English course and for HSCI 2117 an equivalent college-level math course may be substituted at the instructor's discretion.

MLS 6159. Leadership in Laboratory Medicine. 3 Credits.

Leadership characteristics and styles and assessment of their strengths and weaknesses. Applying effective leadership strategies and decision making in the laboratory medicine setting.

MLS 6160. Data Analytics and Research Methods in Laboratory Medicine. 3 Credits.

Basic methods and practices for conducting valid and ethical research in the clinical laboratory. Literature review, research populations and designs, research ethics, data management and analytics, and research publication. Prerequisites: HSCI 6263.

MLS 6166. Molecular Diagnostics Practicum. 3 Credits.

During this practicum course, the student is actively engaged in applying molecular techniques to diagnose various human diseases.

MLS 6201. Advanced Clinical Biochemistry. 3 Credits.

The structure and function of biological molecules, including proteins, carbohydrates, lipids, nucleic acids, vitamins, hormones, and buffers as well as their anabolism, catabolism, and regulatory mechanisms. The role of these molecules with regard to human health and the manifestation of disease.

MLS 6203. Clinical Immunohematology I. 5 Credits.**MLS 6204. Clinical Immunohematology II. 5 Credits.****MLS 6207. Clinical Practicum: Blood Banking I. 5 Credits.**

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MLS 6208. Clinical Practicum: Blood Banking II. 5 Credits.

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MLS 6209. Clinical Pract: Blood Banking III. 5 Credits.**MLS 6210. Clinical Immun: Prin & Lab Diag. 4 Credits.****MLS 6211. Hematopoiesis & Blood Pathophys. 2 Credits.****MLS 6212. Organization and Management of Blood Banks. 3 Credits.**

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MLS 6213. Seminar in Immunohematology. 2 Credits.**MLS 6214. Specialized Practicum. 4 Credits.****MLS 6215. Research Project. 3 Credits.****MLS 6216. Microbial Pathogenesis. 3 Credits.**

A comprehensive overview of the molecular basis of diseases caused by microbial pathogens with a focus on model microbial systems to illustrate mechanisms of the human infectious disease process.

MLS 6217. Medical Biotechnology. 3 Credits.

Comprehensive overview of current molecular technologies and how they are used in modern medicine.

MLS 6218. Genetics. 3 Credits.

This course covers hereditary and molecular genetics, with an emphasis on genomics and human diseases.

MLS 6219. Molecular Biology. 3 Credits.

This course emphasizes the molecular mechanisms of DNA replication, repair, transcription, translation and gene regulation in prokaryotic and eukaryotic cells.

MLS 6242. Molecular Pathology. 3 Credits.

This course investigates human disease processes with an emphasis on the molecular and genetic mechanisms of disease. The goal of this class is to advance students' understanding of how molecular, cellular and genetic approaches are used to investigate human diseases. Current knowledge of the molecular and cellular events which lead to various human diseases is covered, including cardiovascular, neurological and musculoskeletal abnormalities, autoimmunity, endocrine defects, infectious disease and cancer. Through lectures, assigned readings and discussions, current applications and limitations of modern diagnostic medicine and the importance of basic and applied research to further the understanding of human disease are addressed.

MLS 6243. Education and Assessment in MLS. 3 Credits.

This course studies the process of instructional design and applied to the education and training of MLS professionals. Topics include a fundamental review of instructional strategies, needs assessment, task analysis, analysis of subject-matter content, the development of goals and objectives, lesson design, and the assessment of instructional outcomes. This is a project-oriented course in which students design, develop, and evaluate a set of MLS instructional materials and assessment tools. In addition, current trends in instructional design as applied to the MLS field are also explored.

MLS 6244. Research Ethics and Integrity. 3 Credits.

This course addresses traditional and modern topics in research ethics and scientific integrity. The purpose of this course is to emphasize ethical theory and principles of bioethics while planning and conducting scientific studies. Through lectures, reading assignments, case studies and discussion sessions, the following topics are covered: ethical theory and principles, scientific and academic integrity, informed consent in research; Institutional Review Boards and the use of human subjects in research. IACUC and the use of animals in research, Institutional Biosafety Committees and the use of recombinant DNA in research; conflicts of interest and commitment; authorship and publication; the peer-review process; collaboration and mentoring; methodology, data reporting and data management; ownership of data and intellectual property; whistleblowing and dispute resolution; and privacy and confidentiality. Students learn to conduct unbiased peer-review, conduct research and report on an independent examination of a case of research misconduct or other ethical issue, and participate in oral scientific and ethical discussions.

MLS 6245. Current Topics in Medical Laboratory Science. 3 Credits.

Novel findings within each area of the medical laboratory science field, including hematology and hemostasis, immunology and serology, clinical microbiology, immunohematology, clinical chemistry, molecular diagnostics, and laboratory operations and management. The course is designed to enhance critical thinking and problem solving skills. Current topics are integrated into the development of a project proposal for the capstone research project that the student completes the following semester.

MLS 6246. Capstone Project. 3 Credits.

This course allows students to apply the knowledge gained throughout the program through the completion of an independent, mentored project. A proposal for the capstone project is developed by the student as a component of the Current Topics course of the previous semester.

MLS 6247. Advanced Clinical Biochemistry Practicum. 2 Credits.

Practical application of the medical knowledge and clinical skills gained in MLS 6145 and MLS 6146. Restricted to students in the medical laboratory science program. Prerequisites: MLS 6145 and MLS 6146.

MLS 6248. Advanced Blood Bank Practicum. 2 Credits.

Application of the medical knowledge and clinical skills gained in the prerequisite courses. Restricted to students in the medical laboratory science program. Prerequisites: MLS 6141 and MLS 6150.

MLS 6249. Advanced Coagulation Practicum. 1 Credit.

Practical application of the medical knowledge and clinical skills gained in MLS 6130 and MLS 6131. Restricted to students in the medical laboratory science program. Prerequisites: MLS 6130, MLS 6131 and MLS 6141.

MLS 6250. Advanced Hematology Practicum. 1 Credit.

Practical application of the medical knowledge and clinical skills gained in the prerequisite courses. Restricted to students in the medical laboratory science program. Prerequisites: MLS 6130 and MLS 6131.

MLS 6251. Advanced Clinical Microbiology Practicum. 2 Credits.

Practical application of the medical knowledge and clinical skills gained in ML 6116, MLS 6117, and MLS 6119. Restricted to students in the medical laboratory science program. Prerequisites: MLS 6116, MLS 6117, MLS 6119 and MLS 6141.

MLS 6252. Advanced Urinalysis Practicum. 1 Credit.

Practical application of the medical knowledge and clinical skills gained in MLS 6145 and MLS 6146. Restricted to students in the medical laboratory science program. Prerequisites: MLS 6141, MLS 6145 and MLS 6146.

MICROBIOLOGY, IMMUNOLOGY, AND TROPICAL MEDICINE (MICR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

MICR 1099. Variable Topics. 1-36 Credits.

Variable topics.

MICR 5099. Variable Topics. 1-99 Credits.**MICR 6220. Biology of Parasitism: Parasite Strategies of Infection, Survival, and Transmission. 2 Credits.**

A comprehensive course examining the strategies parasites use to infect their hosts, how they survive and thrive within their host, and the developmental adaptations they use to ensure transmission of their offspring to the next host. Prerequisites: BISC 2339 or permission of the instructor.

MICR 6236. Fundamentals in Geonomics and Proteomics I. 2-3 Credits.**MICR 6237. Fundamentals in Geonomics and Proteomics II. 2 Credits.**

. Credit cannot be earned for this course and BIOC 6237.

MICR 6292. Tropical Infectious Diseases. 2 Credits.

Lecture course. Pathogenesis, natural history, and epidemiology of the major infectious diseases that occur in developing countries.

MICR 8210. Infection and Immunity. 3 Credits.

An introduction to the fields of virology, bacteriology, and parasitology, as well as the main concepts of immune response.

MICR 8214. Microbiology and Immunology Seminar. 1 Credit.

Current and emerging topics with presentations and discussions facilitated by leading experts from GW and outside institution; student-led journal club and oral presentation opportunities. Prerequisites: BMSC 8210 and BMSC 8212.

MICR 8230. Molecular and Cellular Immunology. 3 Credits.

Major aspects of immunology, including T and B cell effector function, innate immune cell function, mucosal immunology, and immune regulation. Prerequisites: MICR 8210 or other similar introductory immunology course or with approval of staff.

MICR 8270. Advanced Topics in Immunology. 3 Credits.

Seminar series on topics chosen jointly by students and faculty; students present and critique original manuscripts. May be repeated for credit. Prerequisites: MICR 8210 and MICR 8230.

MICR 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

MICR 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

MOLECULAR MEDICINE (MMED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NAVAL SCIENCE (NSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NURSING (NURS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

NURS 3101. Ethical Foundations of Nursing. 3 Credits.

Ethical theory and principles as they relate to a variety of common ethical and moral dilemmas that challenge nursing professionals in their clinical practice.

NURS 3102. Nutrition for Health Professionals. 3 Credits.

Human nutrition fundamentals and the scientific foundation; nutritional requirements related to changing individual and family needs, food choices, health behaviors, food safety, prevention of chronic disease and nutrition-related public health in the United States and other countries.

NURS 3103. Human Anatomy and Physiology I. 4 Credits.

Fundamental structures and functions as they relate to the human body: homeostasis, anatomical language and body organization, tissues and histology, integumentary; skeletal; muscular; nervous, and endocrine systems. Students should have a basic background in introductory cell/molecular biology before enrolling.

NURS 3104. Human Anatomy and Physiology II. 4 Credits.

Fundamental structures and functions as they relate to the human body: homeostasis, anatomical language and body organization, tissues and histology, cardiovascular, lymphatic, respiratory, digestive, urinary, and reproductive systems. Students should have a basic background in introductory cell/molecular biology before enrolling. Prerequisite: NURS 3103.

NURS 3105. Microbiology for Health Professionals. 4 Credits.

The structural and functional characteristics of microbes; prokaryotic, eukaryotic, and viruses, in the context of human health.

NURS 3106. Introduction to Statistics for Health Professionals. 3 Credits.

A concepts-based course introducing students to the theory, practice, and application of probability and statistics to health care research questions.

NURS 3110W. Transition into the Nursing Profession. 2 Credits.

Values and characteristics of the nursing profession in the context of history and current legal, regulatory, and ethical contexts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

NURS 3111. Health Assessment. 3 Credits.

Knowledge and skills necessary for conducting comprehensive and need-specific health assessments for individuals in both family and community contexts and determining areas in which health promotion activities should be implemented or reinforced. Corequisites: NURS 3112, NURS 3113, NURS 3118 and NURS 3119. Restricted to students enrolled in the bachelor of science in nursing program.

NURS 3112. Nursing Practice and Clinical Reasoning I: Adult and Aging Acute and Chronic Illness. 3 Credits.

Values, knowledge, and competencies at the foundation of safe, evidence-based, and professional holistic nursing care of adults with common medical and surgical needs. Restricted to students in the bachelor of science in nursing program.

NURS 3113. Clinical and Nursing Skills Lab: Adult Medical-Surgical I. 8 Credits.

Values, knowledge, skills, and competencies at the foundation of safe, evidence-based, professional, and holistic nursing care of adults with common medical and surgical needs; critical thinking and communication skills in clinical and laboratory environments. Corequisites: NURS 3111 and NURS 3118. Restricted to students in the bachelor of science in nursing program.

NURS 3114. Nursing Practice and Clinical Reasoning II: Advanced Adult Medical-Surgical. 3 Credits.

Builds on the basic concepts introduced in NURS 3112, incorporating complex, multi-system disease processes; assessing and managing clients/patients in a hospital environment; providing safe, evidence-based professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs. Corequisite: NURS 3116. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3112 and NURS 3113.

NURS 3115. Clinical and Nursing Skills Lab: Adult Medical-Surgical II. 4 Credits.

Safe, evidence-based, professional, and holistic nursing care related to the management of clients with advanced medical and surgical needs; knowledge, skills, and competencies for assessing and managing clients/patients in a hospital environment. Restricted to students enrolled in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3118, NURS 3119 and NURS 3213.

NURS 3116. Nursing Practice and Clinical Reasoning III: Psychiatric Mental Health Nursing. 3 Credits.

Theoretical principles, concepts, and skills needed to provide safe and effective nursing interventions to clients across the lifespan who are experiencing psychiatric and mental health conditions. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118 and NURS 3119.

NURS 3117. Nursing Practice and Clinical Reasoning IV: Maternity and Women's Health Care. 3 Credits.

Nursing interventions used in health promotion, risk reduction, clinical decision making and management of women's health issues, perinatal care of mothers and infants, gynecological health, and men's reproductive health. Includes clinical experiences. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3114, NURS 3115, NURS 3116, NURS 3118, NURS 3119 and NURS 4118.

NURS 3118. Pharmacology I. 2 Credits.

The underlying principles of pharmacology and medication administration. Restricted to students in the bachelor of science in nursing program.

NURS 3119. Pathophysiology. 3 Credits.

Pathophysiology and diagnostic assessments of common disease conditions affecting individuals across the lifespan. Restricted to students in the bachelor of science in nursing program.

NURS 3120. Foundations of Professional Nursing. 6 Credits.

Basic nursing concepts and skills the beginning nurse needs to provide client- and family-centered care to diverse client populations. Prepares students to use the nursing process. Restricted to students in the BSN program.

NURS 3121. Health Assessment and Promotion. 3 Credits.

The knowledge and skills needed to conduct comprehensive and need-specific health assessments. Concepts of health promotion and disease prevention. Restricted to students in the BSN program.

NURS 3122. Principles of Safe Client Care. 2 Credits.

Client safety core concepts and values of professional nursing. Restricted to students in the BSN program.

NURS 3123. Quality Interprofessional Care of the Client. 2 Credits.

Basic concepts of improvement science in nursing and interprofessional health care. Builds on concepts of safety learned in NURS 3122.

NURS 3124. Adult and Geriatric Nursing I. 6 Credits.

Didactic/clinical course focusing on primary, secondary, and tertiary care in the adult and geriatric client. Incorporates the nursing process into the provision of client- and family-centered care. Restricted to students in the BSN program.

NURS 3125. Mental Health Nursing. 3 Credits.

Didactic/clinical course focusing on the application of theories and implementation of evidence-based care for clients with psychiatric/mental health issues. Restricted to students in the bachelor of science in nursing program.

NURS 3213. Adult Medical-Surgical Lab I. 4 Credits.

Values, knowledge, skills, and competencies at the foundation of safe, evidence-based, professional, holistic nursing care of adults with common medical and surgical needs; critical thinking and effective communication skills used in clinical and lab environments to deliver safe, evidence-based care. Laboratory fee. Corequisites: NURS 3111 and NURS 3112.

NURS 4099. Variable Topics. 1-6 Credits.

Assigned topics determined by the School of Nursing. Restricted to students with prior permission of the undergraduate division of the School of Nursing.

NURS 4109. Introduction to Perioperative Nursing. 3 Credits.

The role of the perioperative nurse and the fundamental knowledge, skills, and competencies needed to deliver safe, evidence-based, holistic care within a perioperative setting. Includes clinical experiences. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118, NURS 3119, NURS 3114, NURS 3115, NURS 3116 and NURS 4118.

NURS 4116. Children and Families. 3 Credits.

Focus on families with usual childhood issues and with children who require acute and chronic care. Working with persons of diverse backgrounds, nursing colleagues, and other members of the interdisciplinary team, students prioritize and provide nursing care in hospital and community-based settings. Includes clinical experiences. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118, NURS 3119, NURS 3114, NURS 3115, NURS 3116 and NURS 4118.

NURS 4118. Pharmacology II. 1 Credit.

Principles of pharmacology and mechanisms of action of drug prototypes used in clinical practice. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3118 and NURS 3119.

NURS 4119. Patient Safety and Health Care Quality. 3 Credits.

Processes and skills needed to provide safe, quality nursing care, encompassing the five critical competencies: providing safe, patient-centered care; working in interdisciplinary teams; employing evidence-based practice; applying quality improvement; and using informatics. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3114, NURS 3115, NURS 3116 and NURS 4118.

NURS 4121. Nursing Advancement Portfolio. 15 Credits.

Collection of evidences to demonstrate student learning and competency throughout the curriculum as they relate to achievement of nursing baccalaureate program outcomes. The portfolio provides a means of organizing student accomplishments in their academic work and in their pursuit of professional career pathways.

NURS 4122. Capstone: Transition Into Professional Practice. 2 Credits.

Critically analyze, synthesize, and apply knowledge, theories, and concepts learned in the program to make the transition from nursing student to graduate nurse. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3114, NURS 3115, NURS 3116, NURS 3117, NURS 3118, NURS 3119, NURS 4116, NURS 4118, NURS 4119, and NURS 6203.

NURS 4123. Senior Practicum: Transition Into Clinical Practice. 5 Credits.

Students partner with a registered nurse in a clinical setting to synthesize and apply concepts and skills learned in previous coursework in professional practice. Restricted to students in the bachelor of science in nursing program. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3213, NURS 3114, NURS 3115, NURS 3116, NURS 3117, NURS 3118, NURS 3119, NURS 4116, NURS 4118, NURS 4119, and NURS 6203.

NURS 4203. Dynamics of Nursing Leadership and Management. 3 Credits.

Introduction to concepts of nursing leadership and management, showcasing the importance of each, while noting the crucial differences between them.

NURS 4205. Nurse's Role in Health Care Policy. 3 Credits.

Framework for understanding the social, political, economic, and population based dimensions of U.S. health care policy using the "triad" of quality, access, and cost.

NURS 4207. Principles of Nursing Research and Evidence-Based Practice. 3 Credits.

Development of student skills in research and practice-related knowledge necessary to implement evidence-based practice. May be repeated for credit.

NURS 4217. Community and Public Health Nursing. 4 Credits.

Introduction to the principles of community and public health nursing with an emphasis on vulnerable populations. Prerequisites: NURS 3110W, NURS 3111, NURS 3112, NURS 3212, NURS 3114, NURS 3115, NURS 3116, NURS 3118, NURS 3119 and NURS 4116.

NURS 4417. Community and Public Health Nursing. 3 Credits.

Roles and responsibilities of nurses in community and population-based health. Concepts of community, public health, and health policy affecting culturally diverse and vulnerable populations locally, nationally, and globally. Identifying community health needs and appropriate primary, secondary, and tertiary prevention strategies. Restricted to students in the RN to BSN program.

NURS 6001. Clinical Experience in San Jose, Costa Rica. 0 Credits.

GW students work with nursing students and faculty from Universidad Hispanoamericana to provide basic health care, health screening, and patient education to children and adults in various community facilities and homes in San Jose, Costa Rica. Restricted to students enrolled in the School of Nursing.

NURS 6002. Clinical Experience in Quito, Ecuador. 0 Credits.

In collaboration with Universidad San Francisco de Quito, GW students work with local communities to provide basic health services and health education programs for adults and children in Quito and neighboring areas. Graduate students may have an opportunity to work with local physicians. Restricted to students enrolled in the School of Nursing who are fluent Spanish speakers.

NURS 6003. Clinical Experience in Mukono District, Uganda. 0 Credits.

In collaboration with GW partner Omni Med, students will focus on training volunteer community health workers to screen for hypertension and provide health education programs on topics such as maternal – child health, sanitation and nutrition in Mukono District, Uganda. Restricted to students enrolled in the School of Nursing.

NURS 6004. Clinical Experience in Thomonde, Haiti. 0 Credits.

Students and faculty from the GW's medical, physician assistant, and public health programs work in collaboration with partner organization Project Medishare to provide health services and education and disease prevention programs in rural clinics, schools, and villages in Thomonde, Haiti.

NURS 6005. Clinical Experience in Caracol, Haiti. 0 Credits.

In collaboration with health care providers from GW School of Nursing partner institution Pusan National University Yangsan Hospital, South Korea, and SAE-A Trading Company Ltd., students provide basic health services, health screening and education, and disease prevention programs to individuals and communities attending the medical mission clinic in Caracol, Haiti. Restricted to students enrolled in the School of Nursing.

NURS 6006. Clinical Experience in Maribor, Slovenia. 0 Credits.

In collaboration with the University of Maribor in Slovenia, GW students work with community health care workers to deliver basic nursing care to selected populations in the community. Students have opportunities to research selected health problems and their impact on the health of individuals and communities in Maribor.

NURS 6181. Creativity and Innovation in Health Care. 3 Credits.

The theoretical conceptualizations and practical applications to promote creativity and innovation in generating ideas, identifying opportunities, and solving problems.

NURS 6202. Concepts in Population Health. 3 Credits.

Students integrate and synthesize concepts associated with quality, health promotion, disease prevention, and chronic health problems within communities, the general population, and specific population groups; issues related to culturally diverse and vulnerable populations.

NURS 6203. Nursing Leadership. 3 Credits.

Evidence-based leadership skills as a core competency in nursing to improve patient care quality and strengthen nursing as a profession; theories of leadership, personal leadership, skill building, team building techniques, change, conflict resolution, motivation, and communication skills.

NURS 6204. Health Information and Technology. 3 Credits.

Key issues and concepts related to the use of technology and information management to support the provision of high quality health care and outcomes.

NURS 6205. Health Policy, Quality, and Political Process. 3 Credits.

Health policy process and analysis relevant to the three main components of policy: cost, quality, and access.

NURS 6207. Evidence-Based Practice for Health Care Researchers. 3 Credits.

Methodological issues of health care research; knowledge and skills needed to critically appraise and synthesize research results and evidence-based methods.

NURS 6208. Biostatistics for Health Care Research. 3 Credits.

Basic concepts and modeling approaches used in biostatistics through the use of health care research data.

NURS 6215. Pediatric Adversity and Early Childhood Development and Health. 3 Credits.

How major adversity in childhood can weaken developing brain architecture and impact physical and mental health; the impact of poverty and other social determinants of health on child well-being over the life cycle.

NURS 6220. Advanced Physiology and Pathophysiology. 3 Credits.

System-focused advanced physiology and pathophysiology for analysis of health deviations across the life span.

NURS 6222. Advanced Health Assessment and Diagnostic Reasoning. 4 Credits.

Nurse practitioner and nurse-midwifery students will acquire the knowledge, skills and clinical foundation for advanced health assessment and diagnostic reasoning in the ambulatory health care setting. This course is a prerequisite to all other clinical courses and includes a Campus Learning and Skills Intensive (CLASI).

NURS 6224. Adult/Gerontology Primary Care Nurse Practitioner I: Practice Introduction. 4 Credits.

First clinical practicum course in the adult-gerontology primary care nurse practitioner program; theoretical and practical foundations of common primary care conditions in the adult patient. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6225. Adult/Gerontology Primary Care Nurse Practitioner II: Adolescent and Adult. 8 Credits.

Second clinical practicum course in the adult-gerontology primary care nurse practitioner program. Synthesis and integration of advanced decision making skills including diagnostic reasoning and clinical judgment, health assessment, health promotion, technology, and evidence-based practice. Prerequisites: NURS 6220, NURS 6222, NURS 6224, and NURS 6234.

NURS 6227. Family Nurse Practitioner Clinical Practicum. 1-7 Credits.

Clinical practicum providing foundations of family primary care; focus on chronic health problems faced by families from culturally diverse backgrounds. Corequisites: NURS 6250, NURS 6251 and NURS 6252 Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6229. Adult/Gerontology Primary Care Nurse Practitioner III: Adult, Older/Frail. 8 Credits.

Third clinical practicum course in the adult-gerontology primary care nurse practitioner program; theoretical and evidence-based practice foundations for assessment and management of the patient across the aging continuum. Prerequisites: NURS 6220, NURS 6222, NURS 6224, NURS 6225, and NURS 6234.

NURS 6230. Family Nurse Practitioner I: Lifespan Primary Care/Diagnosis/Management. 4 Credits.

First clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on common and chronic health problems across the lifespan. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6231. Family Nurse Practitioner II: Lifespan Primary Care/Diagnosis/Management. 8 Credits.

Second clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on common and chronic health problems across the lifespan. Prerequisites: NURS 6230.

NURS 6232. Family Nurse Practitioner III: Professional Issues/Diagnosis/Management. 8 Credits.

Third clinically-based course for family nurse practitioner students. Didactic and clinical experiences in primary care focusing on common/chronic problems across the lifespan. Prerequisites: NURS 6220, NURS 6222, NURS 6223, NURS 6230 and NURS 6231.

NURS 6233. Genetics for Health Care Providers. 3 Credits.

Basic scientific principles of genetics and their clinical applications.

NURS 6234. Advanced Pharmacology for Nursing. 3 Credits.

Pharmacologic concepts commonly seen in advanced practice nursing; major pharmacological classes for selected disease states and application in therapeutic decision making to encounters across the lifespan. Prerequisite: NURS 6220.

NURS 6235. Adult-Gerontology Acute Care Nurse Practitioner I: Introduction to Practice. 4 Credits.

First clinical practicum course in the adult-gerontology acute care nurse practitioner program. Scientific underpinnings and practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6236. Adult-Gerontology Acute Care Nurse Practitioner II: Complex and Acute Illness. 8 Credits.

Second clinical course in the adult-gerontology acute care nurse practitioner program. Management of complex, acute stable, and unstable conditions experienced by a variety of age groups from adolescents, to middle-aged adults, to the elderly. Prerequisites: NURS 6220, NURS 6222, NURS 6234, and NURS 6235.

NURS 6237. Adult-Gerontology Acute Care Nurse Practitioner III: Complex and Chronic Disease Mgt Adolesc/Elderly. 8 Credits.

Third clinical practicum course for the adult-gerontology acute care nurse practitioner program. Scientific underpinnings and practical management of complex acute and chronic conditions across a spectrum of care delivery situations from subacute rehabilitation, to urgent care, emergency department, hospital-based care, and critical care. Prerequisites: NURS 6220, NURS 6222, NURS 6234, NURS 6235, and NURS 6236.

NURS 6241. The Health Care Enterprise. 3 Credits.

Overview of general management business principles related to health care systems; strategic management of patient-centered care delivery and strategic health care leadership. Same As: HSCI 6241.

NURS 6242. Psychopharmacology. 3 Credits.

Overview of the neurobiological and psychopharmacological principles for the clinical management of psychotropic medications in the treatment of mental illnesses across the lifespan; integrates neuroanatomy, pharmacogenomics, neurophysiology, pathophysiology, biochemistry, pharmacology and behavioral science. Prerequisites: NURS 6220, NURS 6222 and NURS 6234.

NURS 6243. Addiction and Change. 3 Credits.

Principles of addiction and change with a focus on correlating how changes in behavior lead to recovery in addictions. Models of addiction and change, the neurobiology of addiction, behavior change theories and models, and treating addictions through behavioral mechanisms.

NURS 6244. Psychiatric/Mental Health Nursing with Families and Groups Across the Life Span. 3 Credits.

Theoretical and conceptual models related to the developmental and functional processes within family systems, therapy groups, and psychoeducation groups; the PMHNP's scope of practice as it relates to conducting family and group psychotherapy. Concurrent clinical practicum under preceptor and faculty supervision for a minimum of 75 hours over the course of the semester. Prerequisites: NURS 6242 and NURS 6245.

NURS 6245. Psychiatric/Mental Health Diagnostic Assessment Across the Lifespan. 4 Credits.

Theoretical and foundational knowledge for assessing, diagnosing, treating, and managing mental illnesses across the lifespan. Concurrent clinical practicum under the supervision of preceptors and faculty. Students must complete a minimum of 150 clinical hours. Prerequisites: NURS 6220, NURS 6222, and NURS 6234.

NURS 6246. Psychiatric/Mental Health Advanced Practice Nursing with Individuals Across the Life Span. 3 Credits.

Examines, analyzes, and evaluates treatment models and evidence-based interventions for the care of individuals living with acute and chronic mental illnesses across the lifespan. Concurrent clinical practicum under the supervision of preceptors and faculty. Students must complete a minimum of 75 clinical hours. Prerequisites: NURS 6242 and NURS 6245.

NURS 6247. Population-Based Psychiatric/Mental Health Advanced Practice Nursing Across the Life Span. 3 Credits.

Clinical practicum designed to build psychiatric mental health nurse practitioner skills in a variety of clinical settings. Students integrate foundational knowledge from coursework to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: NURS 6242, NURS 6244, NURS 6245, and NURS 6246.

NURS 6248. Integrated Application of Psychiatric/Mental Health Advanced Practice Nursing. 3 Credits.

Clinical practicum. Students develop competency in the psychiatric-mental health nurse practitioner role; integration of foundational knowledge from coursework to provide safe and competent behavioral healthcare to individuals across the lifespan. Prerequisites: NURS 6242, NURS 6244, NURS 6245, NURS 6246, and NURS 6247.

NURS 6250. Family Nurse Practitioner I for Nurse Practitioners: Adult Primary Care Diagnosis Management. 2 Credits.

First clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on prevention and common/chronic health problems across the lifespan. Corequisite: NURS 6227.

NURS 6251. Family Nurse Practitioner II for Nurse Practitioners: Lifespan Primary Care Diagnosis Management. 4 Credits.

Second clinically-based course for family nurse practitioners. Didactic and clinical experiences in primary care focusing on common/chronic health problems across the lifespan. Corequisite: NURS 6227. Prerequisite: NURS 6250.

NURS 6252. Family Nurse Practitioner III for Nurse Practitioners: Lifespan Primary Care Diagnosis Management. 4 Credits.

Third theory course for family nurse practitioner students nationally certified in another APRN population. Covers common acute and chronic problems across the lifespan. Corequisite: NURS 6227. Prerequisites: NURS 6250, NURS 6251.

NURS 6258. Leadership Capstone Practicum I. 3 Credits.

First course in a two-semester mentored internship practicum. Students apply knowledge and refine abilities related to leadership in a setting and practice area mutually agreed upon by the student and instructor. Prerequisites: NURS 6202, NURS 6203, NURS 6204, NURS 6205, NURS 6207, NURS 6241, NURS 6274 and NURS 6295.

NURS 6259. Leadership Capstone Practicum II. 3 Credits.

Second course in a two-semester mentored internship practicum. Students apply knowledge and refine abilities related to leadership in a setting and practice area mutually agreed upon by the student and instructor. Prerequisite: NURS 6258.

NURS 6262. Leadership Coaching in Nursing. 3 Credits.

Client health coaching and leadership and management coaching; theoretical foundations, evidence for leadership coaching in nursing, and applications of coaching in nursing management.

NURS 6263. Teaching and Learning in Health Care. 3 Credits.

Application of instructional design methods to develop, deliver, and evaluate academic and professional health care curricula and education.

NURS 6274. Health Economics and Finance. 3 Credits.

Health care economics, finance, and policy for effective management in a complex health care environment.

NURS 6282. Teaching and Learning in Health Care I: Foundations of Instructional Design. 3 Credits.

Principles of instructional design. Active, authentic learning and assessment methods in academic and health care delivery settings; analyzing needs, defining objectives, and assessing outcomes for learning; strategies to support learner mastery.

NURS 6284. Teaching and Learning in Health Care III: Program and Curriculum Development. 3 Credits.

Design, development, implementation and evaluation of academic, clinical, and professional educational programs in nursing and other health professions; analysis and integration of national, professional and institutional policies, requirements, and standards to develop an outcomes-based curriculum.

NURS 6290. Global Health for Health Care Professionals. 3 Credits.

Global health problems and issues from interdisciplinary and comparative perspectives.

NURS 6291. Advanced Topics. 1-9 Credits.

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NURS 6295. Health Care Quality Process. 3 Credits.

Application of change processes that are critical to improving health quality by integrating theory and implementation; the role of systems assessment and measurement as fundamental to quality improvement.

NURS 6297. Independent Study. 1-9 Credits.**NURS 6298. NP Clinical Completion. 1-5 Credits.****NURS 6299. Nurse Practitioner Technology Enhanced Community Health. 0 Credits.**

Prepares students to integrate social determinants of health while using telehealth and digital health technologies to improve care for people living in rural and urban underserved communities.

NURS 8400. Epidemiology and Population Health. 3 Credits.

Integration of population and determinants of health with epidemiological principles. Examination and application of biostatistical and epidemiological methods of analysis. Restricted to students in DNP program. Prerequisites: NURS 6208.

NURS 8401. Organizational Concepts in Nursing. 3 Credits.

Health care delivery systems, the nurse's role in interprofessional/interdisciplinary teams, and organizational development from a nursing perspective.

NURS 8402. Knowledge Management in Nursing. 3 Credits.

The use of knowledge management and information technology as it applies to health care; strategies to improve the efficiency and effectiveness of health care with the use of technology.

NURS 8403. Translating Research into Practice. 3 Credits.

Models and processes of evidence-based practice, strategies to translate evidence into practice, and tools useful for promoting practices in health care settings.

NURS 8405. Health Care Quality Improvement. 3 Credits.

Multidisciplinary background for the science of healthcare quality management; concepts, principles, and philosophy of quality improvement.

NURS 8407. Grant Writing. 3 Credits.**NURS 8409. Health Care Quality Practicum. 3 Credits.**

Quality improvement (QI) processes and patient safety theories, models, methods, and tools in health care settings and their application to conceiving and executing a QI project in an organizational setting.

NURS 8410. Executive Presence I. 2 Credits.**NURS 8411. Executive Presence II. 2 Credits.**

This is a continuation of Executive Presence I. In this course, the student will examine power shifts in leadership, revisit change as a stimulus for innovation, participate in an interactive session for individuals who can practice communicating their practicum proposals and receiving friendly feedback and constructive input from their peers, and re-evaluate the leadership development plan designed in Executive Presence I.

NURS 8412. HC Finance for Nurse Leaders. 3 Credits.**NURS 8413. Adult-Gerontology Acute Care Nurse Practitioner: Advanced Role Immersion. 3 Credits.**

Students develop and integrate bedside with systems and population level competencies; role development, leadership, interdisciplinary collaboration, systems management, and evidenced-based practice are discussed and applied to concurrent clinical experiences; independent practice skills in the context of interdisciplinary teams. Prerequisites: NURS 6235, NURS 6236 and NURS 6237. Recommended background: prior enrollment in NURS 6220, NURS 6234 and NURS 6222.

NURS 8414. DNP Residency. 3 Credits.

Seminar and clinical practicum that focuses on developing and integrating DNP competencies; role development, leadership, interprofessional collaboration, population health, and evidence-based practice; the development of independent practice skills and integration of DNP program outcomes. Prerequisites: NURS 6220, NURS 6222, NURS 6233 and NURS 6234; NURS 6224 or NURS 6230; NURS 6225 or NURS 6231; and NURS 6229 or NURS 6232.

NURS 8416. Entrepreneurship for Nurse Leaders. 3 Credits.

Various aspects of entrepreneurship in the context of the nursing profession.

NURS 8417. Health Policy and Analysis. 3 Credits.

Application of evidence based methods, policy frameworks, cost effectiveness, and cost benefit analysis related to current policy issues.

NURS 8418. Health Care Economics, Finance, and Reimbursement. 3 Credits.

Application of economic concepts to health care financing and reimbursement policy; the effects of historical, current, and emerging models of financing on quality, access, and cost.

NURS 8419. Analytical Methods and Appraisal for Evidence-Based Practice. 3 Credits.

Examination of the merits of common methods and designs for evidence-based practice and practice inquiry. Acquire skills in searching for, critically appraising and grading evidence. Synthesis of research findings to develop practice recommendations. Restricted to students in DNP program. Prerequisites: NURS 6208.

NURS 8420. The Health Policy Process. 3 Credits.

The impact of governmental structures and processes on health policy, access, quality, and cost; the role of nurses in shaping health system change.

NURS 8421. The Legislative and Judicial Processes and Health Policy. 3 Credits.

Health policy legislation and the role of the judiciary. Students develop briefing materials, provide verbal or written testimony, give public comments regarding proposed bills, and assess impact of policy-oriented boards. Includes visits to Capitol Hill or state capitals.

NURS 8422. Health Policy Practicum. 3 Credits.

Students collaborate with a policy expert in a professional organization, government agency, advocacy group, or other entity to develop policy on a specific issue related to cost, quality, or access relevant to patient experience of care.

NURS 8423. The Regulatory Process and Health Policy. 3 Credits.

Knowledge and skills for analyzing rulemaking and regulatory processes that affect health-related issues; workforce scopes of practice; safety of the public; and roles and influence of federal agencies and private organizations charged with implementing newly passed legislation.

NURS 8440. Philosophy of Science and Theories. 4 Credits.

Philosophy of science and scientific methodology in historical context; competing philosophical viewpoints about the nature of scientific knowledge and the implication for knowledge development in nursing science; theoretical foundations of research studies. Restricted to Majors Only.

NURS 8441. Statistics for Health Care Research I. 3 Credits.

Intermediate-level statistics applicable to the analysis of health care data.

NURS 8442. Statistics for Health Care Research II. 3 Credits.

Advanced statistical methods commonly used in health care research. Analysis and interpretation of healthcare data using a variety of statistical techniques, including simple and multiple linear, linear-mixed effects, logistic, and Poisson regression, repeated measures designs, and survival analysis.

NURS 8443. Research Program Development Seminar I. 2 Credits.

Foundational content related to the conduct of research, including research ethics, data management, and modes of new knowledge dissemination. Ethical and other influences that impact the development, implementation, and sharing of discovery science.

NURS 8444. Research Program Development Seminar II. 1 Credit.

Introduction to select professional roles and guidance on preparation for associated responsibilities; forming an effective research team; generating meaningful and impactful scholarship.

NURS 8445. Experimental and Quasi-Experimental Research Designs. 3 Credits.

Formulation of research questions, hypotheses, measurement, sampling, data collection, and statistical approaches for various experimental and quasi-experimental research designs.

NURS 8446. Qualitative Research Design. 3 Credits.

Qualitative methods and designs applicable to translational health science research problems; qualitative epistemology, methods, data collection, and data analysis. Credit cannot be earned for this course and THS 8123.

NURS 8447. Measurement for Health Care Research. 3 Credits.

Measurement theories, principles, and techniques essential for the development and analysis of assessment instruments used in health care research; reliability and validity analysis, generalizability theory, item analysis, linking and scaling procedures, and adjustments for measurement error.

NURS 8448. Systematic Review and Meta-Analysis. 3 Credits.

Systematic reviews and meta-analyses, and their relative utility in answering research questions; formulating questions, defining criteria for including or excluding studies, methods for data extraction, grading the risk for various kinds of bias, and performing a meta-analysis.

NURS 8449. Non-Experimental Research Design. 3 Credits.

Evaluation of secondary data analysis, surveys, case-control studies, cohort studies, and mixed methods approaches.

NURS 8450. Research Rotation. 2 Credits.

Participatory research experience where students and faculty members interact on research-related activities; data collection, data management, data analysis, table and figure preparation, and abstract development.

NURS 8451. Research Practicum. 3 Credits.

Practical experience in an area designated as necessary for additional content expertise, such as systematic review of the literature, survey development, secondary data acquisition and cleaning, or data collection. Student will conduct preliminary research activities in support of the dissertation research. Restricted to doctoral candidates.

NURS 8452. Team Science and Collaboration. 3 Credits.

Measuring team effectiveness by integrating team science, cross-disciplinary research, and methodology; developing research designs to address complex health science problems; and team science and science of team science approaches to promoting team effectiveness. (Same as THS 8103, HSCI 6285).

NURS 8453. Leadership and Health Policy. 3 Credits.

Introduction to integration of health policy and leadership concepts in the use and analysis of research affecting systems and populations; exploration of social, political, and economic principles and theories as they relate to the incorporation of policy analysis and implementation.

NURS 8454. Proposal Development Seminar. 2 Credits.

Faculty supervision and ongoing peer feedback for development of the dissertation proposal.

NURS 8455. Dissertation. 10 Credits.

Culminating research experience for students in the doctoral program in nursing. Following defense of the dissertation proposal, students work with the research advisor and dissertation committee to design and implement a research study, analyze data, and interpret and contextualize findings using the study framework and current state of the science.

NURS 8489. DNP Project Scholarly Inquiry. 3 Credits.

Development of scholarly writing skills, exploration of a phenomenon of interest, and development of skills needed for the responsible conduct of translation of research into practice. Students identify a scholarly topic addressing a practice issue. Restricted to students in DNP program.

NURS 8490. DNP Project Planning. 3 Credits.

Foundational knowledge to support the student in creating a DNP project proposal that includes a project plan, implementation, and evaluation plan. Students identify a practice issue, develop a DNP project plan, and formulate a scholarly project development process. Prerequisite: NURS 8403.

NURS 8491. DNP Project Implementation. 3 Credits.

Implementation of DNP project using leadership, project management, and team building skills. Restricted to DNP students. Prerequisite: NURS 8490.

NURS 8492. DNP Project Evaluation and Dissemination. 3 Credits.

Data collection and evaluation of results from the DNP project using rigorous evaluation criteria and outcome measures. Restricted to DNP students. Prerequisite: NURS 8491.

OCCUPATIONAL THERAPY (OT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

OT 5099. Variable Topics. 1-99 Credits.**OT 8214. Evidence-Based Occupational Therapy Practice. 3 Credits.**

Principles of evidence-based practice applied to clinical questions in the field of occupational therapy. Restricted to occupational therapy majors.

OT 8215. Quality Improvement through Translational Practices. 3 Credits.

Concepts in quality improvement and its connection with evidence-based practice and translational science. The development and validation of quality indicators, including both process and outcome indicators; tracking and monitoring quality improvement projects. Recommended background: Occupational therapy majors.

OT 8220. Measurement of Human Function and Learning. 3 Credits.

Selection, implementation, and evaluation of assessment tools. Changes in performance that occur in clinical environments, in adult educational settings, and in research programs. Levels and purposes of measurement; proximity of the measure to the "intervention;" utility, including reliability and validity; precision, including range, targeting, and sensitivity to change; efficiency and practicality. Recommended background: Occupational therapy majors.

OT 8261. Foundations in Team Science and Clinical and Translational Research. 3 Credits.

Overview and analysis of the translational research principles and practice through the application of basic, clinical, community health, and health services research concepts. Recommended background: Occupational therapy majors. (Same as HSCI 6261).

OT 8272. Mixed Methods in Translational Health Sciences. 3 Credits.

An introduction to mixed methods as a legitimate design tradition, with a unique set of procedures for data collection, analysis, and strategies to assure rigor and accuracy. Students design a mixed methods study to address a translational research question. Recommended background: occupational therapy majors.

OT 8274. Program Theory and Health Innovations. 3 Credits.

Program theory as the basis for designing health and educational innovations that can be tested using scientific methods, replicated in practice, and inform policy. Recommended background: occupational therapy majors.

OT 8275. Doctoral Capstone Preparation. 3 Credits.

Through a combination of didactic information, peer discussion, and advisor discussions, students are trained to communicate more effectively the purpose, rationale/theory, and design of their proposed doctoral capstone. Restricted to occupational therapy majors. Prerequisites: OT 8274.

OT 8276. Doctoral Capstone. 3 Credits.

Mentored doctoral capstone project representing the culmination of the post-professional OTD degree. The purpose of the project is for students to demonstrate advanced skills in evidence-based occupational therapy practice. Restricted to occupational therapy majors with permission of the instructor. Prerequisites: OT 8274.

OT 8448. Neurocognitive Disorders. 3 Credits.

Multifactorial etiology of neurocognitive disorders, including a range of diagnostic subtypes such as Alzheimer's disease, frontotemporal dementia, Lewy bodies dementia, vascular dementia, and Parkinson's disease dementia; effects on the biopsychosocial and occupational health of individuals with neurocognitive disorders and their families. Recommended background: Occupational therapy majors.

OT 8450. Cognition and Cognitive Rehabilitation. 3 Credits.

Advanced principles and theories of cognitive rehabilitation, emphasizing the latest research in information processing. Analysis of cognitive assessment instruments. Cognitive impairments are considered in terms of intervention for persons with stroke, traumatic brain injury, schizophrenia, substance abuse, and related conditions. Recommended background: Occupational therapy majors.

ORGANIZATIONAL SCIENCES (ORSC)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

ORSC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

ORSC 1109. Introduction to Organizational Sciences. 3 Credits.

Introduction to organizations, systems theory, and organizational characteristics; structure, leadership, culture, strategy, and organizational life cycles in the context of modern and dynamic environments. Organizational theory as a tool for developing strategic thinking.

ORSC 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. See department for more details. Restricted to CCAS sophomores.

ORSC 2046. Global Organizations. 3 Credits.

The globalization of organizations as the engine for the global movement of talented and skilled professionals; the increasing focus of organizations on attracting, utilizing, and developing such individuals. Issues related to the formulation of global strategy and the leadership of global talent. Prerequisites: ORSC 1109.

ORSC 2099. Variable Topics. 1-36 Credits.**ORSC 2116. Leading Change. 3 Credits.**

An in-depth introduction to and analysis of concepts and techniques of leadership, including motivation, goal alignment, incentives, teamwork, and communication. Conceptual and empirical background of the management of change. Prerequisites: ORSC 1109.

ORSC 2123. Negotiation and Conflict Resolution. 3 Credits.

Theories in psychology, management, and communication as applied to individual-, group-, and organizational-level contexts of negotiation and conflict resolution. Prerequisites: ORSC 1109.

ORSC 2143. Leadership and Performance. 3 Credits.

Leadership from an organization system perspective. Theory, research, and applications pertaining to how leaders can reduce uncertainty through appropriate adaptive change. Prerequisites: ORSC 1109.

ORSC 2544. Industrial/Organizational Psychology. 3 Credits.

Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Prerequisites: ORSC 1109 or PSYC 1001. (Same as PSYC 2544).

ORSC 2560. Group Dynamics. 3 Credits.

Relationship of the individual to groups, collectivities, and larger social systems. Theory, research, and applications of group and organizational processes. Prerequisites: ORSC 1109 or PSYC 1001.

ORSC 3099. Variable Topics. 1-12 Credits.

ORSC 3141. Strategy in Organizations. 3 Credits.

Processes and theories of strategic management in the profit and nonprofit sectors. Analysis of behavioral, sociopolitical, and economic forces underlying strategy formulation. Strategic competitive advantage; corporate diversification; multinational corporations; evaluation and choice; and implementation of functional and corporate strategies. Prerequisites: ORSC 1109.

ORSC 3159. Extreme Decisions. 3 Credits.

Processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Prerequisites: ORSC 1109.

ORSC 3165. Organizational Network Analysis. 3 Credits.

A relational view of organizations, emphasizing the ways in which business, nonprofit, public, and governmental entities engage with a multitude of actors in pursuit of their goals. Organizational embeddedness and how an organization's position in a web of relations helps or hinders it. Prerequisite: ORSC 1109.

ORSC 3190. Special Topics. 1-3 Credits.

Topics to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisites: ORSC 1109.

ORSC 3161. Research Methods in Organizational Sciences. 3 Credits.

Fundamentals of qualitative, correlational, quasi-experimental, and experimental research design in organizational settings. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating results of a variety of research efforts. Prerequisite: STAT 1053 and ORSC 1109. Restricted to organizational science majors.

ORSC 4195. Independent Study. 1-3 Credits.

Opportunity for work on individual research projects. Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the department. Prerequisites: ORSC 1109.

ORSC 4197. Senior Research Seminar. 3 Credits.

Capstone course limited to organizational sciences majors in their senior year. Real world applications of organizational research. Students work on an individually designed research project with results presented in a major paper. Restricted to seniors in the organizational science program. Prerequisites: ORSC 1109 and ORSC 4161. Same As: ORSC 4197W.

ORSC 4197W. Senior Research Seminar. 3 Credits.

Capstone course limited to organizational sciences majors in their senior year. Real world applications of organizational research. Students work on an individually designed research project with results presented in a major paper. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: ORSC 1109 and ORSC 4161. Same As: ORSC 4197.

ORSC 5099. Variable Topics. 1-99 Credits.

ORSC 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.

Introductory study of statistical techniques for research problems. Restricted to graduate students in fields other than statistics who have no previous statistics training. Credit cannot be earned for this course and STAT 6104.

ORSC 6165. Organizational and Communication Networks. 3 Credits.

The application of tools of social network analysis to organizational settings and behavior as well as communication processes, both within and among organizations. Restricted to graduate students. (Same as COMM 6165).

ORSC 6209. Management Systems. 3 Credits.

An overview of theoretical frameworks, evolution, concepts, and methods of complex organizational systems. Modern organization theory using systems thinking and concepts. Organizational and management systems paradigm shifts. Problem solving and decision making, stakeholder theory, organizational environments, organizational effectiveness.

ORSC 6212. Current Issues in Personnel Testing and Selection. 3 Credits.

Psychometric, legal, and organizational issues in personnel employment testing and selection, reliability and validity of selection instruments, and the utility of selection systems. The legal environment, including test fairness in selection, adverse impact, and statistical models of test fairness and specific selection techniques. Prerequisite: STAT 2104.

ORSC 6214. Personnel Training and Performance Appraisal Systems. 3 Credits.

Management training programs and training evaluation techniques. Performance appraisal techniques, appraisal systems, relationship of rewards to performance and the appraisal interview. Training and rating systems that satisfy legal requirements and stimulate employee productivity.

ORSC 6216. Theories and Management of Planned Change. 3 Credits.

A systems view of organizational change and development, including intervention strategies, data collection, diagnosis, and the integration and management of system-wide organizational change.

ORSC 6217. Productivity and Human Performance. 3 Credits.

Definitions and measurement of individual, team, and organizational productivity, effectiveness, and efficiency. Models for the analysis of organizational and individual productivity and productivity growth in industrialized nations. Techniques for increasing productivity.

ORSC 6219. Managerial Economics. 3 Credits.

Intermediate microeconomic theory; production and costs, market structure and pricing, risk analysis, and investment theory and capital budgeting. Students who receive credit for this course can receive credit for only one of ECON 6217 or ECON 6219. Restricted to graduate students.

ORSC 6222. Theory and Practice of Compensation Management. 3 Credits.

Analysis of contemporary compensation systems from both theoretical and practical perspectives, including the latest decisions of courts and regulatory agencies. Examination of motivational theories of pay, determinants and effects of salary structures on performance, incentive plans, performance-based compensation, and managerial compensation systems.

ORSC 6223. Collective Bargaining. 3 Credits.

Analysis of federal and state employee relations laws and regulations. Topics include the bargaining environment, wage and benefit issues in arbitration, arbitration of grievances, employee relations in non-union organizations, and behavioral theories of labor negotiations.

ORSC 6224. Persuasion and Negotiation. 3 Credits.

Theories drawn from the psychology, management, and communication literature pertaining to core concepts of social influence, persuasion, and negotiation. Critical assessment of proposals within organizations that use these strategies.

ORSC 6241. Strategic Management and Policy Formation. 3 Credits.

Processes and theories of strategic management in the profit and not-for-profit sectors. Analysis of behavioral, sociopolitical, and economic forces underlying strategy formulation. Issues of strategic competitive advantage; corporate diversification; multinational corporations; evaluation and choice; and implementation of functional and corporate strategies.

ORSC 6242. Organizational Communication and Conflict Management. 3 Credits.

Theories drawn from the communication psychology and management literature pertaining to core concepts of social influence, persuasion, and negotiation. Critical assessment of proposals within organizations that use these strategies. (Same as COMM 6242).

ORSC 6243. Seminar: Leadership in Complex Organizations. 3 Credits.

The view of leadership taken in this seminar extends theories beyond the interpersonal, near-immediate time frame toward an organizational perspective in which cause-and-effect linkages are traced. The leadership role as an attribute of a system. How effective leaders reduce uncertainty through appropriate adaptive change.

ORSC 6245. Seminar: Organizational Behavior. 3 Credits.

Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. Restricted to graduate students. Same As: PSYC 8245.

ORSC 6246. Comparative Management. 3 Credits.

International dimensions of management over a broad spectrum of topics, including cross-national transfer and management practices in a global economy; cross-cultural interaction; business-government relations; expatriation and repatriation processes; international strategic management; technology transfer; globalization of human resources management.

ORSC 6248. Strategic Human Resource Planning. 3 Credits.

Overview of the principles of human resource planning. Model for determining human resource requirements, including forecasting, goal setting, human resource auditing, and environmental scanning. Analysis of the interfaces between human resource planning and personnel selection, job design, training, compensation, and related functions.

ORSC 6250. Leadership Coaching: Principles and Practices. 3 Credits.

An introduction to leadership coaching, including behavioral sciences roots: communication and conflict resolution skills, motivation, personality and performance assessments. Coaching vs. related practice areas; business coaching vs. personal coaching. Professional and ethical standards.

ORSC 6251. Team Coaching and Facilitation. 3 Credits.

Application of the fundamentals and governing values of leadership coaching to the development of productive work groups and communities. The art and practice of facilitation as applied to team learning and the encouragement of breakthrough thinking and team problem solving. Prerequisites: ORSC 6242 and ORSC 6250.

ORSC 6259. Psychology of Individual and Group Decision Making. 3 Credits.

Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Restricted to graduate students. Credit cannot be earned for this course and PSYC 8259.

ORSC 6261. Research Methods in Organizational Sciences. 3 Credits.

Fundamentals of qualitative, correlational, quasi-experimental, and experimental research designs. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating research results.

ORSC 6262. Action Research. 3 Credits.

A qualitative approach to action research problems. Students work with a client on an action research project and produce a research report.

ORSC 6295. Directed Research. 1-12 Credits.

Supervised research in selected fields within organizational sciences. Permission of the faculty advisor and instructor required prior to enrollment.

ORSC 6297. Special Topics. 3 Credits.

Special topics in human resource strategic planning, computer-based learning, human-computer interaction, management information technology, knowledge management, coaching, and organizational design.

ORSC 6298. Directed Readings. 1-12 Credits.

Supervised readings in selected fields within organizational sciences. Permission of the faculty advisor and instructor required prior to enrollment.

ORSC 8261. Research Methods in Organizational Sciences. 3 Credits.

Fundamentals of qualitative, correlational, quasi-experimental, and experimental research designs. Defining a research question, designing a research study, conducting and interpreting statistical analyses, and communicating research results.

PATENT PRACTICE (PATN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PEACE STUDIES (PSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSTD 1010. Introduction to Peace Studies and Conflict Resolution. 3 Credits.

Major thinkers and themes in the field of peace studies and conflict resolution. Focus on philosophical and religious foundations of peace and justice movements in the twentieth century. Examination of peace and conflict through an interdisciplinary lens and on personal, local, and international levels.

PSTD 1099. Variable Topics. 1-36 Credits.**PSTD 3099. Variable Topics. 1-12 Credits.****PSTD 3190. Capstone Seminar. 3 Credits.**

Capstone seminar for peace studies majors and minors in their junior or senior year. Taken concurrently with a relevant internship or as part of a long-term research project to probe the relationship between peace studies and conflict resolution in practice and in theory. Offered in the fall semester only. Restricted to peace studies majors and minors.

PSTD 3191. Special Topics Peace Studies. 1-6 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

PSTD 3999. Independent Study. 1-3 Credits.

Tutorial designed by an undergraduate student under the guidance of a faculty member to pursue an academic topic in the area of Peace Studies and Conflict Resolution outside available course offerings.

PSTD 5099. Variable Topics. 1-99 Credits.

PERSIAN (PERS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PERS 1001. Beginning Persian I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

PERS 1002. Beginning Persian II. 4 Credits.

Continuation of PERS 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

PERS 1099. Variable Topics. 1-36 Credits.**PERS 2001. Intermediate Persian I. 4 Credits.**

Continuation of PERS 1001 and PERS 1002. Further development of speaking, understanding, reading, and writing skills of Modern Standard Persian. Laboratory fee. Prerequisites: PERS 1001 and PERS 1002.

PERS 2002. Intermediate Persian II. 4 Credits.

Continuation of PERS 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Persian. Laboratory fee. Prerequisites: PERS 1001 and PERS 1002.

PERS 3001. Advanced Persian. 3 Credits.

Development of writing, reading, speaking, and listening skills at the advanced level of proficiency. Laboratory fee. Prerequisites: PERS 2001 and PERS 2002.

PERS 3002. Media Persian. 3 Credits.

Critical analysis of authentic news through the study of a variety of media sources, such as print, radio, and television.

PERS 3002W. Media Persian. 3 Credits.

Critical analysis of authentic news through the study of a variety of media sources, such as print, radio, and television. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PERS 3001.

PERS 3099. Variable Topics. 1-12 Credits.**PERS 3502. Post-Revolutionary Iranian Cinema. 3 Credits.**

Study of social, political, and cultural issues in contemporary Iran through an examination of the country's post-revolutionary cinema; gender dynamics, challenges faced by youth, and the role of art in society. This course is taught in English.

PERS 3502W. Post-Revolutionary Iranian Cinema. 3 Credits.

Study of social, political, and cultural issues in contemporary Iran through an examination of the country's post-revolutionary cinema; gender dynamics, challenges faced by youth, and the role of art in society. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. This course is taught in English.

PERS 3901. Directed Project. 1-3 Credits.

Individual advanced reading or research, to be arranged with a member of the faculty. May be repeated for credit. Permission of the instructor and department required prior to enrollment.

PERS 5099. Variable Topics. 1-99 Credits.**PERS 702. Beginning Persian II. 3 Credits.**

PHARMACOGENOMICS (PHRG)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHRG 1101. Introduction to Pharmacy Practice I. 2 Credits.

Applications of interpersonal communication and teamwork, basic pharmacology, medication-related mathematics, pharmacy technologies and pharmaceuticals, patient safety and quality, resource management, drug therapy-related legal and ethical standards, and principles of patient-centered care. Prerequisite: HSCI 1101. Recommended background: prior completion of a course in mathematics.

PHRG 1102. Introduction to Pharmacy Practice II. 2 Credits.

Continuation of topics introduced in PHRG 1101. Restricted to Students in SMHS. Prerequisite: PHRG 1101. Recommended background: Prior completion of a course in mathematics.

PHRG 2141. Mol. Bio for Pharmacogenomics. 4 Credits.**PHRG 2142. Molecular Technology for Pharmacogenomics. 2 Credits.****PHRG 4151. Introduction to the Pharmacy Profession. 1.5 Credit.**

The evolving role of the pharmacist in the health care system. Attributes, attitudes, and ethical standards expected of the profession. Concepts of patient-centered care, collaborative care, and the pharmacist as an advocate, educator and health promoter. Pharmacy career paths.

PHRG 4152. Pharmaceutics I. 2 Credits.**PHRG 4153. Pharmaceutics II. 4 Credits.**

The legal, practical, and scientific bases of drug products and pharmaceutical delivery systems. Physiochemical theories, terminology, pharmaceutical skills, and interpretation of the formulation and performance of pharmaceutical products. Laboratory component PHRG 4173.

PHRG 4154. Biomedical Sciences I. 2 Credits.

Advanced biomedical science topics, including biochemistry, molecular biology, and cell biology. Serves as a foundation for study of immunology, medical microbiology, pathophysiology, toxicology, pharmacogenomics, pharmacology, and pharmacotherapeutics.

PHRG 4155. Biomedical Sciences II. 3 Credits.

Advanced topics, including immunology, oncology, and medical microbiology. Serves as a foundation for the study of pathophysiology, toxicology, pharmacogenomics, pharmacology, and pharmacotherapeutics.

PHRG 4156. Integrated Pathophysiology I. 3 Credits.

Pathophysiology of the endocrine, nervous, GI, and musculoskeletal systems. Serves as a foundation for the study of pharmacology, therapeutics, and pharmacogenomics.

PHRG 4157. Integrated Pathophysiology II. 3 Credits.

The pathophysiology of the cardiovascular, renal, respiratory, and reproductive systems. Serves as a foundation for the study of pathophysiology, therapeutics, and pharmacogenomics.

PHRG 4160. Introduction to Physical Assessment. 1 Credit.

How pharmacists use physical assessment in the patient care process. The fundamentals of physical assessment necessary for the practice of pharmacy. Medical terminology, medical abbreviations, documentation of physical assessment findings, and wellness and preventive health. Taken as part of the sequence PHRG 4160-PHRG 4161.

PHRG 4161. Physical Assessment Lab. 1 Credit.

Practical experience in laboratory activities designed to introduce physical assessment and critical thinking skills necessary for the practice of pharmacy. Taken as part of the sequence PHRG 4160-PHRG 4161.

PHRG 4163. Pharmacogenomics Essentials. 2 Credits.**PHRG 4165. Communication in Pharmacy Practice. 2.5 Credits.**

Students develop and apply the communication, interpersonal, and psychosocial skills needed to interact effectively in a changing health care environment. Communicating with patients and health care providers. Cultural issues, psychological and sociological challenges, and health care disparities that affect communication with patients.

PHRG 4167. Intro. Pharm. Pract. Exp. I. 2 Credits.**PHRG 4168. Intro. Pharm. Pract. Exp. II. 2 Credits.****PHRG 4169. Nonprescription Products. 3 Credits.****PHRG 4170. Out. Pharm. Prac. Lab. 1 Credit.****PHRG 4171. Sterile Compounding Lab. 1 Credit.****PHRG 4172. Clin. Drug Info. Skills. 1 Credit.****PHRG 4173. Pharmaceutical Sciences II Laboratory. 1 Credit.**

Laboratory course to accompany PHRG 4153 Pharmaceutics II.

PHRG 5099. Variable Topics. 1-99 Credits.

PHARMACOLOGY (PHAR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHAR 5099. Variable Topics. 1-99 Credits.**PHAR 6116. Pharmacogenomics and Personalized Medicine. 3 Credits.**

Relationships between human genetic variability and drug responsiveness, susceptibility to disease, and disease severity. Scientific, clinical, legal, and ethical challenges in applying pharmacogenomics to drug discovery and clinical development. Application of pharmacogenomics to personalized medicine. Students who have not completed PHAR 6205 or its equivalent prior to enrollment must complete a pharmacology preparatory primer. Restricted to graduate students enrolled in the biomedical sciences program or in Year 2 of the anatomical and translational sciences program. Prerequisites: permission of the instructor.

PHAR 6205. Pharmacology. 5 Credits.

Basic principles of pharmacology, including receptor mechanisms, drug distribution and metabolism, and pharmacokinetics. The interactions of drugs and biological systems as a basis for rational disease therapy. Prerequisites: BMSC 8210 and BMSC 8212; or permission of the instructor. Recommended background: Enrollment in an MA or PhD program in medical-related sciences.

PHAR 6206. Advanced Pharmacology. 5 Credits.

The interactions of drugs and specific organ systems. Current research in pharmacology and toxicology. Prerequisite: PHAR 6205. Recommended background: Enrollment in an MA or PhD program in medical-related science program.

PHAR 6207. Basic Principles of Pharmacology. 2 Credits.

Drug disposition. Autonomic nervous system, cardiovascular and gastrointestinal drugs. Psychopharmacology. Analgesics, sedatives, anticonvulsants. Chemotherapy, toxicology, endocrinology.

PHAR 6208. Pharmacology in Disease Pathophysiology For Health Sciences Students. 2 Credits.

Rational background on which to base understanding of therapeutics in the context of clinical pathophysiology. Representative drugs from various classes are presented. Builds on concepts introduced in PHAR 6207. Restricted to Health Sciences Students. Prerequisite: PHAR 6207.

PHAR 6322. Advanced Professional and Communication Skills. 3 Credits.

Best practices and strategies for attaining success in MS and PhD graduate programs and in future professional career paths, both in and outside academia. Restricted to graduate students. Recommended background: graduate students in STEM fields.

PHAR 6501. Readings in Pharmacology. 1-12 Credits.

Readings, discussions, and/or preparation of report. Student can choose to work with one or more faculty members in the department on a topic of mutual interest.

PHAR 6502. Clinical Use of Drugs. 3 Credits.

Discussion of the rational use of drugs in the treatment of disease. Independent reading and study.

PHAR 8211. Physiology. 3 Credits.

Basic medical science examining the normal function of the body and the control systems that maintain its homeostasis, integrating biochemistry and anatomy at the organ and organismal level. Prerequisites: BMSC 8210 and BMSC 8212.

PHAR 8214. Physiology and Pharmacology Seminar. 1 Credit.

Current and emerging topics with presentations and discussions facilitated by leading experts from GW and outside institution; student-led journal club and oral presentation opportunities. May be repeated for credit. Prerequisites: BMSC 8210 and BMSC 8212.

PHAR 8281. Molecular Pharmacology and Neurobiology of Excitable Tissues. 3 Credits.

Basic principles of molecular pharmacology and neurobiology of excitable tissues, the methods used in these disciplines, and current and emerging research in the field. Prerequisites: BMSC 8210 and BMSC 8212.

PHAR 8998. Advanced Reading and Research. 1-12 Credits.

Restricted to doctoral candidates preparing for the qualifying examination. May be repeated for credit.

PHAR 8999. Dissertation research. 3-12 Credits.

Restricted to doctoral candidates. May be repeated for credit.

PHILOSOPHY (PHIL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHIL 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PHIL 1051. Introduction to Philosophy. 3 Credits.

Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will?

PHIL 1062. Philosophy and Film. 3 Credits.

Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV, video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films.

PHIL 1099. Variable Topics. 1-36 Credits.**PHIL 1153. The Meaning of Mind. 3 Credits.**

Introductory course for students with no background in philosophy or the sciences of the mind. The central questions, assumptions, and hypotheses about the human mind. The nature of thought, consciousness, and self; knowledge of other minds; implications of the sciences of the mind for freedom of the will and responsibility; and the relationship between the mind and the brain.

PHIL 1193. Introduction to Existentialism. 3 Credits.

The philosophical themes of selfhood, mortality, authenticity, and ethical responsibility from an existentialist perspective, including the writings of Kierkegaard, Heidegger, Nietzsche, Camus, and Sartre. The place of existentialism in the history of philosophy.

PHIL 2045. Introduction to Logic. 3 Credits.

Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic.

PHIL 2111. History of Ancient Philosophy. 3 Credits.

History of Western philosophy from the Pre-Socratics to the Stoics (sixth century BCE to first century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.

PHIL 2111W. History of Ancient Philosophy. 3 Credits.

History of Western philosophy from the Pre-Socratics to the Stoics (sixth century BCE to first century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 2112. History of Modern Philosophy. 3 Credits.

History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: PHIL 1051.

PHIL 2124. Philosophies of Disability. 3 Credits.

Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability—historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights. Same As: PHIL 2124W.

PHIL 2124W. Philosophies of Disability. 3 Credits.

Disability presents an intense and interesting challenge to traditional philosophical presuppositions and principles. This course examines various philosophical approaches to disability—historical, individual, and medical paradigms as well as those that rely on frameworks of social or human rights. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: PHIL 2124.

PHIL 2125. Philosophy of Race and Gender. 3 Credits.

Differing theoretical perspectives on how race, sexuality, gender, class, and ethnicity inform (and re-form) individual as well as group identities; consequences of being marginalized because one is associated with an allegedly inferior race, sex, and/or gender.

PHIL 2125W. Philosophy of Race and Gender. 3 Credits.

A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 2131. Ethics: Theory and Applications. 3 Credits.

Examination of leading ethical theories (e.g., utilitarianism, deontology, virtue ethics), and methodology in ethics. Engagement with contemporary problems.

PHIL 2132. Social and Political Philosophy. 3 Credits.

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy.

PHIL 2132W. Social and Political Philosophy. 3 Credits.

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 2133. Philosophy and Nonviolence. 3 Credits.

Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide, and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory.

PHIL 2134. Philosophy of Human Rights. 3 Credits.

Conceptual, ethical, and theoretical analyses of human rights with emphasis on the justification of human rights, the debate over cultural relativism, and the application of human rights norms in domestic and global contexts.

PHIL 2135. Ethics in Business and the Professions. 3 Credits.

Ethical theories and basic concepts for analysis of moral issues arising in business and in professional practice.

PHIL 2136. Contemporary Issues in Ethics. 3 Credits.

Introduction to a range of debates in applied ethics, including both classic debates concerning topics such as the permissibility of abortion, animal treatment, and suicide as well as more current debates concerning our interactions with the environment and our obligations to the poor in a global context.

PHIL 2140. Philosophy of Love, Sex, and Friendship. 3 Credits.

Introduction to the philosophy of love, sex, and friendship through historical and contemporary texts; the differences between love and friendship, whether love and friendship require an ethical justification, and feminist approaches to sex and sexuality.

PHIL 2281. Philosophy of the Environment. 3 Credits.

Three models of environmental sustainability: the current paradigm in economic and cultural thinking (neoclassical economics); redistribution of resources toward greater global equity (a macroeconomic perspective); and de-growth in the developed economies (ecological economics). The models offer different perspectives on what environmental sustainability means and how it can impact the cultural, religious, moral, metaphysical, and existential situation.

PHIL 3099. Variable Topics. 1-12 Credits.**PHIL 3100. Selected Topics. 3 Credits.**

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 3100W. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 3113. Nineteenth-Century Philosophy. 3 Credits.

European philosophy of the nineteenth century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Prerequisite: PHIL 1051.

PHIL 3113W. Nineteenth-Century Philosophy. 3 Credits.

European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PHIL 1051. Same As: PHIL 3113.

PHIL 3121. Symbolic Logic. 3 Credits.

Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisites: Permission of the instructor.

PHIL 3142. Philosophy of Law. 3 Credits.

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality.

PHIL 3142W. Philosophy of Law. 3 Credits.

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 3151. Philosophy of Science. 3 Credits.

Philosophical issues raised by the sciences. The distinction between scientific and non-scientific explanations, the nature of causality and natural laws, the role of empirical evidence in science, the status of unobservable, theoretical posits in science, and the historical sources of scientific hypotheses. A 2000-level philosophy course may be substituted for the prerequisite. Prerequisite: PHIL 1051.

PHIL 3151W. Philosophy and Science. 3 Credits.

Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PHIL 1051 or two semesters of college-level science.

PHIL 3152. Theory of Knowledge. 3 Credits.

Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense experience, and language. Prerequisite: PHIL 1051. Recommended background: PHIL 2112.

PHIL 3153. Mind, Brain, and Artificial Intelligence. 3 Credits.

Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. Prerequisites: PHIL 1051 or PHIL 1153 or PHIL 2112 or permission of the instructor.

PHIL 3161. Philosophy and Literature. 3 Credits.

Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, and others.

PHIL 3162. Philosophy of Art. 3 Credits.

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Prerequisite: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113. Same As: PHIL 3162W.

PHIL 3162W. Philosophy of Art. 3 Credits.

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on nonrepresentational works of art and their interpretation. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PHIL 1051 or PHIL 2111 or PHIL 2112 or PHIL 3113. Same As: PHIL 3162.

PHIL 3172. American Philosophy. 3 Credits.

A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty.

PHIL 3172W. American Philosophy. 3 Credits.

A survey of American philosophical thought, focusing on the late nineteenth through mid-twentieth centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: PHIL 3172.

PHIL 3201. Perspectives on Math and Science. 3 Credits.

Topics and episodes in the history of science and math. Processes by which math and science evolve. Perspectives include biology, physics, geology, astronomy, chemistry, and math. Historical perspectives on the content and direction of the sciences. Same As: GTCH 3201.

PHIL 3251. Philosophy of Biology. 3 Credits.

An introduction to conceptual and methodological issues raised by contemporary biology, including teleology, reductionism, units of selection, the structure of evolutionary theory, genetics, taxonomy, and the nature of scientific explanation. Other issues may include the nature-nurture debate, creationism/intelligent design, the evolution of altruism, and the relevance of evolutionary theory to ethical questions.

PHIL 4000. Special Topics in the History of Philosophy. 3 Credits.

In-depth reading of two Kantian masterpieces, Critique of Pure Reason (1781; second edition 1787) and Groundwork for the Metaphysics of Morals. Restricted to juniors. Prerequisites: PHIL 2111, or PHIL 2112, or PHIL 3113 or PHIL 4193.

PHIL 4192. Analytic Philosophy. 3 Credits.

The dominant movements of twentieth-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke, et al. Students must have completed one other upper-division philosophy course prior to enrollment. Recommended background: PHIL 2112 and PHIL 3121.

PHIL 4193. Twentieth-Century Continental Philosophy. 3 Credits.

An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Prerequisites: PHIL 2112 or PHIL 3113.

PHIL 4193W. Twentieth-Century Continental Philosophy. 3 Credits.

An intensive, systematic introduction to the phenomenological and hermeneutic traditions in philosophy through some of their best-known representatives: Husserl, Heidegger, Gadamer, Sartre, Beauvoir, and Merleau-Ponty. Central topics of discussion include consciousness, anguish/anxiety, discourse, interpretation, the Other, death, and ambiguity. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PHIL 2112 or PHIL 3113. Same As: PHIL 4193.

PHIL 4195. Topics in Value Theory. 3 Credits.

Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4195W. Topics in Value Theory. 3 Credits.

Various topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy, such as contemporary philosophy of religion. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: PHIL 4195.

PHIL 4196. Topics in Theory of Knowledge. 3 Credits.

Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one upper-division course on related subject matter or permission of the instructor.

PHIL 4198. Proseminar. 3 Credits.

Variable topics; preparation and presentation of a major research paper. May be repeated for credit. Restricted to juniors and seniors in the philosophy program with permission of the major advisor.

PHIL 4198W. Proseminar in Philosophy. 3 Credits.

Preparation and presentation of a major research paper. May be repeated for credit provided the topic differs. Topics vary by semester. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors in the philosophy program with permission of the major advisor.

PHIL 4199. Readings and Research. 1-3 Credits.

Independent study to be arranged with a faculty sponsor. Permission of the department required prior to enrollment.

PHIL 4199W. Readings and Research. 3 Credits.

Independent study to be arranged with a faculty sponsor. Departmental approval is required prior to enrollment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHIL 5099. Variable Topics. 1-99 Credits.

PHIL 6000. Topics in Advanced Analytic Philosophy. 3 Credits.

The application of the methods and insights of twentieth and twenty-first century analytic philosophy to contemporary questions and/or social issues; philosophy of language, philosophy of mind, epistemology, and value theory. Topics vary by semester. See department for details. Restricted to graduate students; undergraduate students may enroll only with the permission of the instructor.

PHIL 6201. Readings and Research. 3 Credits.

Advanced readings and reports. Investigation of special problems.

PHIL 6202. Readings and Research. 3 Credits.

Advanced readings and reports. Investigation of special problems.

PHIL 6211. Topics in the History of Ancient Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6212. Topics in the History of Modern Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6221. Advanced Logic. 3 Credits.

Intensive reading of a difficult text in an advanced logical system or a series of logical systems. Focus on analyzing reasoning under partial information, using the formal system to analyze fallacies of reasoning and analyzing quantum phenomena using the formal system. Restricted to graduate students. Recommended background: Good formal training in logic - propositional logic: natural deduction, tables and trees; first-order logic: language (translation from English), trees and natural deduction; some limitative results, eg, decidability, compactness, completeness, Löwenheim-Skolem properties, soundness, etc.

PHIL 6222. Philosophy of Mathematics. 3 Credits.

Examination of several philosophies of mathematics, with in-depth concentration on Field's "fictionalism." A fictionalist believes that all of the ontology of mathematics is favorably compared to a fictional object, so it does not literally exist. Students develop reactions to Field's philosophical position using the resources of alternative philosophical positions. Restricted to graduate students. Recommended background: Basic understanding of first-order logic.

PHIL 6223. Philosophy of Logic. 3 Credits.

Central concepts in the philosophy of logic, including truth, reasoning, inference, deduction, induction, judgment, assertion, warrant, proof, demonstration, meaning, semantics, syntax, paradox, mathematical models, and the relationship between a formal representation of logical reasoning and the philosophical ideal of the practice of reasoning. Recommended background: Some grounding in first-order logic is presupposed.

PHIL 6225. Queer(ing) Philosophy. 3 Credits.

Examination of how queer theory, which emerged as a field in its own right in the early 1990s, has posed significant challenges to traditional, taken-for-granted understandings of time, space, the body, race, sexuality, normality, culture, violence, and disability. Restricted to graduate students.

PHIL 6230. Ethical Issues in Policy Arguments. 3 Credits.

Critical analysis of ethical foundations of public policy arguments, e.g., about protection of the environment or health and safety, equality of opportunity. Case studies of appeals to "welfare improvements," to norms of duty, to "the social contract," and to rights-claims. Attention to historical contexts and biases. May be taken for undergraduate credit with permission of the instructor.

PHIL 6231. Seminar: Economic Justice. 3 Credits.

Ethical and economic analysis of equity and efficiency of current U.S. income distribution patterns. Theories of justice; economic theories of distribution; assessment of redistribution policies. May be taken for undergraduate credit with permission of the instructor.

PHIL 6232. Topics in Contemporary Political Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6233. Contemporary Moral Philosophy. 3 Credits.

Investigation of contemporary debates in normative ethics and/or metaethics. Topics may include the virtue ethics revival in the twentieth century, the distinction between the right and the good, or important metaethical positions such as fictionalism, expressivism, and constitutivist accounts of moral principles. Restricted to graduate students.

PHIL 6234. Consequentialism and Its Critics. 3 Credits.

An overview of the debate over consequentialism, culminating in discussion of recent literature. Forms of consequentialism (act, rule, motive, cooperative); direct versus indirect; classic objections and replies; partiality; friendship; agent-relative considerations; doctrine of doing and allowing; doctrine of double effect. Restricted to graduate students.

PHIL 6236. Moral Status. 3 Credits.

Examination of the question of what sorts of beings matter morally in their own right and how much they matter. While the paradigm bearers of moral status are persons, the course considers competing ways of thinking about the possible moral status of human nonpersons, nonhuman persons, great apes, dolphins, other sentient animals, nonsentient lifeforms, the environment, future people, and advanced forms of artificial intelligence. Restricted to graduate students.

PHIL 6237. Animal Ethics. 3 Credits.

The moral status of animals and the ethics of human use of animals. Major topics include models of moral status, animals' mental life, and specific ethical issues associated with the eating of animal products, the use of animals in research, and the keeping of animals in homes and zoos. Restricted to graduate students.

PHIL 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems, such as respecting cultural differences, dependency, disability. Prerequisites: PHIL 2125 or PHIL 2131. (Same as WGSS 6238).

PHIL 6239. Virtue Ethics. 3 Credits.

Historical and/or contemporary approaches to virtue ethics and key readings in the virtue ethical tradition. Topics include empirical work on virtue in philosophy and psychology, the divide between "radical" virtue ethics and contemporary virtue ethics, "hybrid" approaches to virtue ethics (e.g., consequentialist virtue ethics), and meta-ethical issues relevant to the study of virtue. Restricted to graduate students.

PHIL 6242. Philosophy, Law, and Social Policy. 3 Credits.

Consideration of the relationship between legal interpretation and policy goals. Theories concerning the role of the judiciary in a constitutional democracy and methods of constitutional and statutory interpretation. Representative policy topics include capital punishment, pornography, affirmative action, welfare, property rights, racial gerrymandering, gun control.

PHIL 6245. Biomedical Ethics. 3 Credits.

An in-depth introduction to the field of biomedical ethics. Following a brief review of ethical theory, the course proceeds to several central topics in biomedical ethics before ending with students' presentations of their original research. The emphasis is on normative ethical reasoning, with considerable attention to the empirical assumptions underlying particular ethical judgments and to policy dimensions of several of the central topics.

PHIL 6250. Topics in Health Policy. 3 Credits.

Topics in health policy from the perspective of philosophical ethics, including human and animal research, the enhancement of human traits, justice and health care allocation.

PHIL 6251. Advanced Introduction to Philosophy of Mind. 3 Credits.

Critical examination of classical philosophical arguments pertaining to the mind/body problem, the problem of consciousness, the problem of intentionality, the problem of freedom of the will, and the problem of personal identity. Focus on careful analysis of classical philosophical writings on these topics. Restricted to graduate students.

PHIL 6252. Advanced Introduction to Philosophy of Cognitive Science. 3 Credits.

The emergence of cognitive phenomena in phylogeny and ontogeny, social cognition, nativist vs. empiricist approaches to cognition, models of reasoning and decision-making, representationalist vs. embodied/embedded/enactive approaches to cognition, and theories of perception, memory, and concepts. Restricted to graduate students.

PHIL 6253. Cognitive Science and Public Policy. 3 Credits.

The cognitive sciences are providing new insights into the nature of human decision making at an accelerating pace. Cognitive psychology, cognitive neuroscience, neuroeconomics, evolutionary psychology, and developmental and comparative psychology are rewriting theories about human nature with significant implications for public policy. The course examines recent work in the cognitive sciences with the intent of drawing out its public policy implications.

PHIL 6254. Mental Representation. 3 Credits.

Thoughts are like pictures of the world in that they represent the world. But thoughts sometimes represent the world in ways that don't correspond to the way it actually is. How do thoughts come to have representational content? Why do we have thoughts? Such questions are considered through the careful reading of recent work on the subject. Restricted to graduate students.

PHIL 6257. The Nature of Animal Minds. 3 Credits.

Do nonhuman animals have minds? If so, what are they like? How are they similar and how are they different from our minds? What might count as evidence that an animal has a mind? Consideration of some of the questions philosophers and scientists have been asking and issues these questions raise when we think about the possibility that nonhuman animals are thinking creatures. Restricted to graduate students.

PHIL 6262. Normative Issues in Foreign Policy. 3 Credits.

Selected issues on foreign policy from a normative perspective; emphasis on human rights, economic globalization, global poverty, sustainable development, and the ethics of military intervention.

PHIL 6281. Environmental Philosophy and Policy. 3 Credits.

Examination of philosophical frameworks for assessing policy approaches to environmental problems. Representative topics include duties to future generations, environmental justice, legal rights for natural objects, critiques of cost-benefit analysis, sustainability, risk measurement, the intrinsic value of nature.

PHIL 6290. Special Topics in Public Policy. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

PHIL 6293. Contemporary Continental Philosophy. 3 Credits.

Focus on several powerful philosophical concepts introduced by late twentieth/early twenty-first-century continental scholars, and the influence these scholars have had upon one another. Critical examination of the theoretical resources the works provide in articulating some of the most urgent ethical, social, and political demands of contemporary human existence. Restricted to graduate students.

PHIL 6294. Special Topics in Continental Philosophy. 3 Credits.

Topic announced in the Schedule of Classes. Restricted to graduate students.

PHIL 6998. Thesis Research. 3 Credits.**PHIL 6999. Thesis Research. 3 Credits.**

PHYSICAL THERAPY (PT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PT 5099. Variable Topics. 1-99 Credits.**PT 8201. Functional Anatomy. 5 Credits.**

Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structure and functional relationships. Common pathologies and individual and age-related differences examined.

PT 8202. Applied Physiology. 4 Credits.

Normal function of major organ systems of the human body and related rehabilitation concepts. Exercise testing, prescription, progression and expected outcomes examined. Effects of exercise in healthy individuals across the lifespan and in special populations.

PT 8203. Neuroscience in Rehabilitation I. 3 Credits.

Normal structure and function of the nervous system across the life span. Injury to neural structures and response to injury examined. Application of principles of neuroplasticity to clinical practice. Clinical correlations.

PT 8204. Movement Science I. 2 Credits.

Normal human movement, structure and function examined using biomechanics and kinesiology principles. Biomechanical function of musculoskeletal tissues explored with special emphasis on articular systems.

PT 8205. Movement Science II. 3 Credits.

Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including deficits in musculoskeletal system, posture, and gait. Examination of complex activities such as locomotion.

PT 8206. Neuroscience in Rehabilitation II. 2 Credits.

Neurologic mechanisms of normal and impaired posture, mobility and extremity function examined. Application of motor learning and skill acquisition principles applied. Neurological examination using case studies and clinical correlates.

PT 8207. Clinical Medicine and Pharmacology. 4 Credits.

Systems approach to diseases requiring physical therapy. Pharmacological principles and impacts of certain pharmacological agents on physical therapy intervention. Drug interactions, systems review, and "red flags" requiring physician referral addressed.

PT 8208. Medical Imaging. 1 Credit.

Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning.

PT 8271. Research in Practice. 3 Credits.

Critical appraisal of the literature related to the validity of research methods and interpretation of statistical results. Application of evidence to clinical practice as it relates to physical therapy examination, diagnosis, intervention, and prognosis.

PT 8272. Research Seminar. 3 Credits.

Evidence based analysis of physical therapy literature with application of principles of research design, data analysis and synthesis to evaluate outcomes within the context of patient management. Ethical considerations are addressed.

PT 8311. Foundations of Examination. 4 Credits.

Examination within the patient/client management model of physical therapy. Development of proficiency in basic systems review, selection and administration of tests and measurements, and diagnostic classifications.

PT 8312. Foundations of Interventions. 4 Credits.

Intervention within the patient/client management model of physical therapy. Development of proficiency in basic patient care skills and selection and administration of therapeutic exercise.

PT 8313. Therapeutic Modalities. 2 Credits.

Administration of physical, thermal, mechanical, and electrical interventions consistent with patient diagnosis and prognosis. Critical appraisal of the literature to apply best evidence to practice and clinical decision making.

PT 8314. Management of Cardiopulmonary Dysfunction. 4 Credits.

Physiology and pathophysiology of the cardiopulmonary system as basis for management of the patient/client with cardiopulmonary dysfunction. Examination, evaluation, diagnosis, prognosis and implementation of evidence-based interventions in all care settings. Focus on health promotion and wellness.

PT 8315. Management of Musculoskeletal Dysfunction I. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to the extremities.

PT 8316. Management of Musculoskeletal Dysfunction II. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction. Ergonomic principles used to address industrial health related issues.

PT 8317. Management of Integumentary Dysfunction. 1 Credit.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascular, metabolic, and immune system impairments.

PT 8318. Management of Neuromotor Dysfunction. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for adults with neuromotor impairments and functional limitations.

PT 8320. Management of the Pediatric Client. 4 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions for the pediatric client. Selection and administration of outcome measures for children with neuromuscular and musculoskeletal dysfunction. Psychosocial, ethical and legal factors specific to the pediatric client.

PT 8321. Women's Health. 1 Credit.

Physical therapy for issues related to women's health within the patient/client management model.

PT 8322. Management of the Aging Adult. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, musculoskeletal, and cardiopulmonary dysfunction in the aging population. Comorbidities, psychosocial, ethical, and legal factors.

PT 8323. Prosthetics and Orthotics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices.

PT 8351. Professional Issues in Physical Therapy Health Care Management I. 4 Credits.

Professional practice expectations including legal and regulatory boundaries. Interdisciplinary health care team examined and significance of effective communication. Ethical issues related to physical therapy within the context of professional core values. Patient management models introduced along with evidence based practice.

PT 8352. Teaching in Physical Therapy Practice. 2 Credits.

Principles and strategies for effective teaching in academic and clinical environments. Patient/client, peer, and professional presentations.

PT 8355. Professional Issues in Physical Therapy Health Care Management II. 3 Credits.

Administration and practice management, including marketing, fiscal management, billing, reimbursement, and administrative procedures related to physical therapy practice. Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy and patient advocacy.

PT 8356. Health Promotion and Wellness. 1 Credit.

The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and nontraditional strategies for the promotion of healthy lifestyles.

PT 8357. Capstone Seminar. 1 Credit.

Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development.

PT 8361. Clinical Conference I. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8362. Clinical Conference II. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8363. Clinical Conference III. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8364. Clinical Conference IV. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8365. Clinical Conference V. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8366. Clinical Conference VI. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional practice expectations and practice management issues.

PT 8383. Prosthetics and Orthotics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity of persons with functional limitations. Prescription, fabrication, and fitting of prosthetic and orthotic devices.

PT 8402. Exercise Physiology. 2 Credits.

Lecture/laboratory. Effects of exercise in healthy individuals and special populations, including aged and immobilized patients and those with neuromusculoskeletal deficits.

PT 8403. Functional Anatomy. 5 Credits.

Lecture/laboratory. Human gross anatomy with cadaveric dissection. Clinical correlations. Normal structures and functional relationships. Common abnormalities and individual and age-related differences.

PT 8404. Kinesiology. 4 Credits.

Kinematics and kinetics of movement. Normal and pathological mechanics of functional movement, including deficits in musculoskeletal system, posture, and gait. Interventions and functional outcomes.

PT 8407. Medical Imaging. 1 Credit.

Principles of medical imaging related to physical therapy management, including diagnosis and intervention planning.

PT 8416. Management of Musculoskeletal Dysfunction II. 3 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with musculoskeletal dysfunction related to spinal dysfunction.

PT 8417. Management of Integumentary Dysfunction. 1 Credit.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for patients/clients with integumentary impairments and functional limitations as well as peripheral vascul.

PT 8420. Pediatrics. 4 Credits.

Lecture/laboratory. Development issues related to pediatric impairments and functional limitations. Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for chi.

PT 8421. Women's Health. 1 Credit.

Lecture/laboratory. Physical therapy for issues related to women's health within the patient/client management model.

PT 8422. Geriatrics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for the geriatric population. Typical age-related changes in function. Outcome measures for neuromotor, mus.

PT 8423. Prosthetics and Orthotics. 2 Credits.

Examination, evaluation, diagnosis, prognosis, and implementation of evidence-based interventions. Selection and administration of outcome measures for persons with functional limitations in need of assistive technology that enhances functional capacity (.

PT 8454. Health Promotion and Wellness. 1 Credit.

The role of the physical therapist in health promotion and disease prevention across the life span. Focus on screening, client education, and traditional and nontraditional strategies for the promotion of healthy lifestyles.

PT 8455. Administration and Management of Physical Therapy Practice. 2 Credits.

Administration and practice management, including marketing, fiscal management, billing, reimbursement, and administrative procedures related to physical therapy practice.

PT 8456. Health Policy and Advocacy. 1 Credit.

Introduction to health care policy as related to the profession of physical therapy. Policy development, macro and micro health policy.

PT 8457. Capstone Seminar. 1 Credit.

Exploration of professional practice issues, including lifelong learning. Professional electronic portfolios presented. Assessment of educational experiences focusing on quality improvement and professional development.

PT 8462. Clinical Conference II. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8463. Clinical Conference III. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8464. Clinical Conference IV. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8465. Clinical Conference V. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8466. Clinical Conference VI. 1 Credit.

Case-based seminars serve as integrative units throughout the curriculum. Clinical decision-making models applied to cases covering all physical therapy diagnostic practice patterns. Best practice and evidence-based practice emphasized. Professional pract.

PT 8481. Interprofessional Community Practicum. 1 Credit.

Students explore the concepts of community health, health prevention/wellness, cultural competence, continuous quality improvement, and team building through active participation in a university community health service learning project.

PT 8483. Integrated Clinical Experience I. 1 Credit.

Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations.

PT 8484. Integrated Clinical Experience II. 1 Credit.

Part-time physical therapy clinical experiences in a range of clinical settings. Supervised integration and implementation of components of the patient/client management model and professional practice expectations in preparation for full-time clinical in.

PT 8490. Externship Elective. 8 Credits.

Interested students can apply for consideration of an externship in advanced clinical practice, teaching, research, or governmental affairs. Credit varies based on the length of stay and demands of the externship.

PT 8491. Clinical Education Experience I. 5 Credits.

Full-time physical therapy clinical experience in various settings. Implementing all aspects of patient management and professional practice expectations for clients with non-complex/complex problems at advanced-beginner level. Prerequisites: PT 8483 and PT 8484 and successful completion of all comprehensive examinations.

PT 8492. Clinical Education Experience II. 8 Credits.

Full-time physical therapy clinical experience in various settings. Implementing all aspects of patient management and professional practice expectations for clients with non-complex/complex problems at advanced-intermediate/entry-level competence. Prerequisites: PT 8483, PT 8484, and PT 8491 and successful completion of all comprehensive examinations.

PT 8493. Clinical Education Experience III. 9 Credits.

Full-time physical therapy clinical experience in various settings. Implementing all aspects of patient management and professional practice expectations for clients of all ages with non-complex/complex problems at entry-level competence. Prerequisites: PT 8483, PT 8484, PT 8491, and PT 8492 and successful completion of all comprehensive examinations.

PHYSICIAN ASSISTANT (PA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PA 5099. Variable Topics. 1-99 Credits.**PA 6101. Clinical Assessment I. 4 Credits.**

Foundations of comprehensive history taking, physical exam assessments, and the proper documentation of these components in the medical record. Integrates concepts of effective communication and basic knowledge of human anatomy and physiology.

PA 6102. Clinical Assessment II. 1 Credit.

Builds upon Clinical Assessment I. Integration of effective communication and knowledge of human anatomy, physiology, clinical medicine, and pharmacology. Introduction to techniques to assess common abnormal physical exam findings. Development critical thinking skills in the areas of differential diagnoses and development of treatment plans.

PA 6103. Clinical Assessment III. 1 Credit.

Further development of clinical decision making skills and refinement of techniques involved in history taking and physical examinations. Integration of effective communication and knowledge of human anatomy, physiology, clinical medicine, and pharmacology.

PA 6104. Integration into Clinical Concepts I. 2 Credits.

Application of knowledge gained in concurrent didactic courses to clinical problems and to clinical decision making. The course is conducted by faculty facilitators in a small-group discussion format.

PA 6105. Integration into Clinical Concepts II. 2 Credits.

Application of knowledge gained in concurrent didactic courses to clinical problems and to clinical decision making. Builds upon skills learned in Clinical Concepts I. The course is conducted by faculty facilitators in a small-group discussion format.

PA 6106. Integration into Clinical Concepts III. 2 Credits.

Application of knowledge gained in concurrent didactic courses to clinical problems and to clinical decision making. Builds upon skills learned in Clinical Concepts I and II. The course is conducted by faculty facilitators in a small-group discussion format.

PA 6109. Foundations of Medicine. 5 Credits.

The Foundations of Medicine course is designed to provide the first year physician assistant student with a baseline level of knowledge of the basic sciences (biochemistry, pathology, medical microbiology, genetics, and laboratory medicine) to the study of health and disease upon which studies in medicine further build.

PA 6110. Evidence Based Practice for PA Students. 3 Credits.

Introduction to research including methodology, statistical analyses, formulating research questions, and evaluating research designs with an emphasis on studies assessing therapeutic interventions, diagnostic testing, and prognostic indicators of health and disease as part of evidence-based clinical practice.

PA 6111. Evidence Based Practice for PA/MPH Students. 1 Credit.

Advanced application of research-, statistical-, and evidence-based medicine concepts presented in public health courses. Emphasis on studies assessing therapeutic interventions, diagnostic testing, and prognostic indicators of health and disease.

PA 6112. Clinical Medicine I. 7 Credits.

A systematic review and discussion of the epidemiology, pathophysiology, clinical manifestations, diagnosis, and management of the most common diseases in humans.

PA 6113. Clinical Medicine II. 7 Credits.

This course is a systematic review and discussion of the epidemiology, pathophysiology, clinical manifestations, diagnosis and management of the most common diseases in humans. It builds upon the foundation of basic science knowledge and clinical assessment skills.

PA 6116. Clinical Skills I. 2 Credits.

Development of diagnostic and therapeutic skills essential to clinical practice. Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films.

PA 6117. Clinical Skills II. 1 Credit.

Development of diagnostic and therapeutic skills essential to clinical practice. Fundamentals of electrocardiography and interpretation of basic EKG patterns. Effects of drugs and electrolyte imbalance on EKG patterns. Interpretation of radiologic films.

PA 6118. Health, Justice, and Society I. 2 Credits.

Presentation and discussion of issues including social determinants of health, cultural competency, ethical principles, epidemiology, and patient safety. A related community service component is included in PA 6119.

PA 6119. Health, Justice, and Society II. 1 Credit.

Continuation of PA 6118. Students interact with community clinicians and/or members of communities with vulnerable populations, developing communication and team practice skills through participation in team projects. Prerequisites are PA 6118 for MSHS PA students; PUBH 6007 for joint degree PA/MPH students.

PA 6120. Human Behavior. 2 Credits.

Integration of concepts of behavioral health in patient-centered care; comprehensive overview of psychiatry. Restricted to students in the physician assistant program.

PA 6121. Clinical Specialties. 6 Credits.

Foundations of patient management in surgical, pediatric, and emergency medicine.

PA 6122. Role of PA in American Health Care. 2 Credits.

The history, development, and current status of the physician assistant profession within the context of the U.S. health system, such as practice roles, legal issues, and economic aspects of the profession.

PA 6259. Introduction to Clinical Education. 2 Credits.

Provides physician assistant students with the necessary knowledge and skills to facilitate the transition from the academic to the clinical environment and to promote high quality clinical education experiences. Prerequisites: successful completion of all components of the didactic phase of the program.

PA 6261. Inpatient Medicine Clinical Practicum. 5 Credits.

Clinical practicum for the second-year physician assistant students. Focus on the role of the PA in hospital based inpatient care. Using an evidence-based approach, students evaluate and manage problems encountered in inpatient settings. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6262. Primary Care Practicum. 5 Credits.

Clinical practicum for second-year physician assistant students. Focus on the role of the physician assistant in the care of pediatric patients. Using an evidence-based approach, students evaluate and manage pediatric medical problems. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6263. Surgical Inpatient Clinical Practicum. 5 Credits.

Clinical practicum for second-year physician assistant students. Focus on the role of the physician assistant in the care of the surgical patient and on the surgical patient management team. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6264. Women's Health Clinical Practicum. 5 Credits.

Clinical practicum for second-year physician assistant students. Focus on the role of the physician assistant in women's health. Using an evidence-based approach, students evaluate and manage women's health problems. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6265. Pediatrics Clinical Practicum. 5 Credits.

Clinical practicum for second-year physician assistant students. Focus on the role of the physician assistant in the care of pediatric patients. Using an evidence-based approach, students evaluate and manage pediatric medical problems. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6266. Emergency Medicine Clinical Practicum. 5 Credits.

Clinical practicum for second-year physician assistant students. Focus on the role of the physician assistant in emergency care. Using an evidence-based approach, students evaluate and manage emergency medicine problems. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6267. Behavioral Medicine Clinical Practicum. 5 Credits.

Clinical practicum for second-year physician assistant students. Focus on the role of the physician assistant in psychiatric and/or behavioral medicine. Using an evidence-based approach, students evaluate and manage psychiatric/behavioral problems. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6268. Elective Clinical Practicum. 5 Credits.

Clinical practicum providing students with an opportunity to develop additional competencies in one or more areas of medicine or a related field. Prerequisites: successful completion of all components of the didactic phase of the physician assistant program.

PA 6299. Independent Study. 1-12 Credits.

Faculty approved didactic or clinical coursework primarily used for remediation purposes.

PA 6300. Introduction to Professional Practice. 2 Credits.

Examination of contemporary issues in physician assistant practice as the student transitions to a professional role. By emphasizing continuous professional development; career trajectories; professional practice issues such as ethics, regulatory issues, credentialing, privileging, and malpractice; and maintenance of certification, the students is prepared to manage their emerging professional role and responsibilities.

PHYSICS (PHYS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHYS 1000. Dean's Seminar. 4 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. See department for more details Restricted to first-year students. Recommended background: Prior completion of courses in basic algebra and calculus and high school physics.

PHYS 1003. Physics for Future Presidents. 4 Credits.

A serious but accessible presentation of topics important for leaders to know—energy, global climate, high-tech devices, space travel, nuclear weapons, etc. Students possessing any level of scientific background are equipped with the concepts and analytical tools needed to make informed decisions and to argue their view persuasively. Laboratory fee.

PHYS 1003W. Physics for Future Presidents. 4 Credits.**PHYS 1005. How Things Work. 4 Credits.**

Primarily for non-science majors. Physical principles are introduced through a study of everyday objects to see what makes them tick. This unconventional approach is primarily conceptual in nature and intended for students seeking a connection between science and the world in which they live. Prerequisite: high school algebra and trigonometry. Laboratory fee.

PHYS 1007. Music and Physics. 4 Credits.

Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee.

PHYS 1007W. Music and Physics. 4 Credits.

Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Laboratory fee. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: high school algebra and geometry.

PHYS 1008. Origin and Evolution of Ideas in Physics. 4 Credits.

Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee.

PHYS 1008W. Origin and Evolution of Ideas in Physics. 4 Credits.

Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great physicists of the past, the division of physics into many sub-disciplines is avoided and a humanistic approach is achieved. Laboratory fee. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: high school algebra.

PHYS 1011. General Physics I. 4 Credits.

Classical physics; mechanics, including Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Laboratory fee.

PHYS 1012. General Physics II. 4 Credits.

Classical and modern physics; electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Prerequisites: PHYS 1011 or PHYS 1021 or PHYS 1025.

PHYS 1021. University Physics I. 4 Credits.

Classical mechanics and thermodynamics using calculus. Newtonian mechanics: force, momentum, work and energy, mechanical equilibrium, linear, and rotational motion. Gravitation and fields; atoms, physical properties of matter; energy transfer and waves, sound. Prerequisites: MATH 1220 or MATH 1221 or MATH 1231. Credit cannot be earned for this course and PHYS 1025.

PHYS 1022. University Physics II. 4 Credits.

Periodic motion, waves, and classical electromagnetism using calculus; waves and sound. Electrostatics, Gauss's law, capacitance; electric resistance, electric current; magnetism. Electrodynamics and electromagnetic induction; Maxwell's theory and electromagnetic radiation. Geometric and physical optics. Prerequisites: PHYS 1021 or PHYS 1025; and MATH 1232. Credit cannot be earned for this course and PHYS 1026.

PHYS 1025. University Physics I with Biological Applications. 4 Credits.

Classical mechanics and thermodynamics using calculus; Newtonian mechanics (force, momentum, work and energy, mechanical equilibrium, linear and rotational motion, fluids). Energy transfer, statistical models, and entropy. Credit cannot be earned for both PHYS 1025 and PHYS 1021. Prerequisites: MATH 1220 or MATH 1221 or MATH 1231. Credit cannot be earned for this course and PHYS 1021.

PHYS 1026. University Physics II with Biological Applications. 4 Credits.

Periodic motion waves, and classical electromagnetism using calculus; waves and sound. Electrostatics, Gauss's law, capacitance; electric resistance, electric current; magnetism; electrostatics in ionic solutions and cells, circuit models for nerves and ion channels; geometric and physical optics; physics principles and problem solving taught with examples and problems from the life sciences. Credit cannot be earned for both PHYS 1026 and PHYS 1022. Prerequisites: MATH 1232; and PHYS 1021 or PHYS 1025. Credit cannot be earned for this course and PHYS 1022.

PHYS 1099. Variable Topics. 1-36 Credits.**PHYS 2000. Sophomore Colloquium. 3 Credits.**

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

PHYS 2023. Modern Physics. 3 Credits.

Modern physics using calculus; relativity; wave-particle duality, quantum mechanics; the hydrogen atom, Pauli principle; quantum statistics and radiation; quantum theory of the condensed state, superconductivity; nuclear physics; applications to astrophysics and nucleosynthesis; general relativity; the big bang theory. Prerequisites: PHYS 1022 or PHYS 1026; MATH 2233.

PHYS 2151. Intermediate Laboratory I: Techniques and Methods. 3 Credits.

Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Laboratory fee.

PHYS 2151W. Intermediate Laboratory I: Techniques and Methods. 3 Credits.

Experiments in electromagnetism, classical and quantum mechanics, atomic and nuclear physics with emphasis on experimental methods. Prerequisites: PHYS 2023. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PHYS 2152. Intermediate Laboratory II: Instrumentation. 3 Credits.

Elementary electric and electronic analog and digital circuits. Topics include passive and active components in DC and AC circuits and operational amplifiers, with emphasis on measurement techniques. Laboratory fee.

PHYS 2183. Computational Modern Physics. 3 Credits.**PHYS 3099. Variable Topics. 1-12 Credits.****PHYS 3100. Math Methods for Physics. 3 Credits.**

Applications of infinite series, complex variables, linear algebra, vector analysis Fourier series, differential equations, probability theory, and calculus of variations in various physical contexts. Prerequisites: MATH 3342 and PHYS 2023.

PHYS 3127. Biophysics: Macroscopic Physics in the Life Sciences. 3 Credits.

Physical principles applied to biological systems and medicine; blood flow, ultrasonics, spectroscopy, radiation biology, bioenergetics, ordering theory, and neural networks. Prerequisites: MATH 2233; and PHYS 1022 or PHYS 1026.

PHYS 3128. Biophysics: Microscopic Physics in the Life Sciences. 3 Credits.

Physical principles applied to biological systems on the nanometer scale; intermolecular forces, statistical principles applied to biological microstates, determining protein and nucleic acid structures, operation of protein motors and transport systems, and nanotechnology and instrumentation. Prerequisites: PHYS 1022 or PHYS 1026; MATH 2233.

PHYS 3161. Mechanics. 3 Credits.

Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. Prerequisites: MATH 3342 and PHYS 2023.

PHYS 3163. Physical and Quantum Optics. 3 Credits.

Wave motion, electromagnetic aspects of light, dispersion of light in media, geometrical optics, polarization and optical properties of crystals, interference, diffraction, lasers, holography; mathematical tools, including Fourier methods, developed as needed; the quantum description of light complements the classical description. Prerequisites: MATH 2233 and PHYS 2023.

PHYS 3164. Thermal and Statistical Physics. 3 Credits.

Principles and application of thermodynamics to reversible and irreversible processes, with derivation from statistical postulates applied to the microscopic behavior of large systems at or near equilibrium; equilibrium thermodynamics, statistical mechanics, and kinetic theory of gases. Prerequisites: MATH 3342 and PHYS 2023.

PHYS 3165. Electromagnetic Theory I. 3 Credits.

Electrostatics and magnetostatics, electric and magnetic fields in matter, scalar and vector potentials, electromagnetic induction. Maxwell's equations. Methods of vector and tensor calculus are developed as needed, as are the method of images, Fourier series, and some computational methods. Prerequisites: MATH 3342 and PHYS 2023.

PHYS 3166. Electromagnetic Theory II. 3 Credits.

Conservation laws, electromagnetic waves, radiation, relativistic formulation of electrodynamics and potential fields. Prerequisites: PHYS 2023, PHYS 3165, MATH 2184, MATH 3342 and MATH 3343; or permission of the instructor.

PHYS 3167. Principles of Quantum Physics. 3 Credits.

Conceptual framework and mathematical formalism of quantum mechanics; wave-particle duality, wave functions, and eigenvalues; Schrödinger equation and one-dimensional potential problems; angular momentum, central potentials, and the hydrogen atom; identical particles and spin; scattering theory; perturbation theory. Prerequisites: MATH 3342 and PHYS 2023.

PHYS 3181. Computational Physics. 3 Credits.

Numerical methods with physics, math, and engineering applications; numerical integration, ODE, PDE, Monte-Carlo methods, linear algebra, and other relevant numerical techniques. In addition to the course prerequisites, students must be familiar with a programming language. Prerequisites: MATH 3342 and PHYS 3161.

PHYS 4170. Solid-State Physics. 3 Credits.

Structure of solids, lattices and lattice defects, deformation, vibrational and electronic contribution to specific heats, binding energies, electronic states in metals and semiconductors, magnetic properties of solids, superconductivity. Prerequisites: MATH 2233 and PHYS 2023.

PHYS 4175. Nuclear Physics. 3 Credits.

Application of quantum physics to the description of nuclei and their interactions; properties of nuclei, nuclear models, nuclear forces, and nuclear reactions are considered. Includes the deuteron, n-p scattering, the optical model, the shell model, the liquid-drop model, beta decay, fission, and fusion. Prerequisites: MATH 2233 and PHYS 2023.

PHYS 4190. Special Topics. 1-4 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details.

PHYS 4192. Independent Study. 1-3 Credits.

Independent readings or directed study under the supervision of a faculty member. Credit varies, depending upon the nature of the work. May be repeated once for credit.

PHYS 4195. Physics Capstone. 3 Credits.

Students work in a mentored learning environment to design and conduct research in physics in an ethical manner, explore and prepare for various careers in physics, and disseminate research findings to different audiences. May be repeated for credit. Restricted to physics majors with junior standing.

PHYS 4195W. Physics Capstone. 3 Credits.

Students work in a mentored learning environment to design and conduct research in physics in an ethical manner, explore and prepare for various careers in physics, and disseminate research findings to different audiences. May be repeated for credit. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to physics majors with junior standing.

PHYS 4196. Undergraduate Research in Biophysics. 3 Credits.

Research on problems in biophysics approved by the faculty. May be repeated once for credit.

PHYS 4197. Undergraduate Research in Nuclear Physics. 3 Credits.

Research on problems in nuclear physics approved by the faculty. May be repeated once for credit.

PHYS 4200. Physics Symposium. 1 Credit.

Culmination of physics undergraduate studies. Communication of physics research orally and in writing with peer review of presentations and reports. Restricted to physics majors with senior standing.

PHYS 5099. Variable Topics. 1-99 Credits.**PHYS 5701. Selected Topics. 4 Credits.****PHYS 6110. Mathematical Methods of Theoretical Physics. 4 Credits.**

Calculus of variations. Group theory. Tensor calculus. Review of techniques of linear algebra. Hilbert spaces and operator theory. Special functions and expansion in complete orthogonal sets of functions. Solutions of partial differential equations, Green's functions method and boundary-value problems. Integral equations. Complex analysis and theory of analytic functions. Permission of the department graduate advisor required prior to enrollment. Corequisite: PHYS 6130.

PHYS 6120. Advanced Mechanics. 4 Credits.

Analytic methods of mechanics as a basis for modern theory. Variational principles. Lagrange's equations. Hamiltonian formulation. Canonical transformations. Classical perturbation theory. Nonlinear systems. Special relativity. Permission of the department graduate advisor required prior to enrollment. Corequisite: PHYS 6130.

PHYS 6130. Computational Physics I. 1 Credit.

Taken in conjunction with PHYS 6110 and PHYS 6120.

PHYS 6210. Electrodynamics and Classical Field Theory. 4 Credits.

Principles of electro- and magneto-statics. Classical field theory. Maxwell's equations, least-action and symmetry principles. Time-varying fields and plane-wave propagation. Radiating systems and scattering of radiation, including multipole fields. Dynamics of relativistic particles and radiation from moving charges. Electrodynamics in media: relation between microscopic parameters and macroscopic observables. Permission of the department graduate advisor required prior to enrollment. Corequisite: PHYS 6230.

PHYS 6220. Quantum Mechanics I. 4 Credits.

General aspects of quantum mechanics with emphasis upon the developmental principles involved. Operators, representations, transformation theory. Schroedinger and Heisenberg pictures, angular momentum, perturbation and scattering theory. Introduction to relativistic quantum field theory, first-order electromagnetic processes. Many-body theory. Prerequisite: Consent of a departmental graduate advisor. Corequisite to PHYS 6220: PHYS 6230; to PHYS 6320: PHYS 6330.

PHYS 6230. Computational Physics II. 1 Credit.**PHYS 6310. Statistical Mechanics. 4 Credits.**

Classical and quantum statistics. Gibbs paradox, microscopic origins of entropy and other thermodynamic variables, fluctuations, ensemble theory, partition functions, distribution functions, density matrices. Applications include the harmonic oscillator, magnetic systems, ideal Fermi-Dirac and Bose-Einstein systems, blackbody radiation, phonons. Renormalization group, phase transitions and critical phenomena. Permission of the department graduate advisor required prior to enrollment. Corequisite: PHYS 6330.

PHYS 6320. Quantum Mechanics II. 4 Credits.**PHYS 6330. Computational Physics III. 1 Credit.****PHYS 6510. Communications in Physics. 3 Credits.**

Student presentations on advanced topics in physics. Permission of the department graduate advisor required prior to enrollment.

PHYS 6590. Seminar. 1 Credit.

Lectures on current topics in physics. Permission of the department graduate advisor required prior to enrollment. May be repeated for credit.

PHYS 6599. Advanced Study. 3 Credits.

For students who have completed three semesters of course work in the core graduate physics curriculum. Problem sets aimed at development of a deeper and more advanced understanding of physics.

PHYS 6610. Nuclear and Particle Physics I. 3 Credits.

Theory and experiment of the standard model of elementary particle physics of strong and electro-weak interactions. Emergence of nuclear interactions and pion physics. Effective field theory, non-perturbative methods, lattice simulations, nuclear models, nuclear reactions. Path integral, gauge fields, S-matrix theory, dispersion relations, renormalization program. Prerequisite: PHYS 6320 and permission of the graduate advisor.

PHYS 6620. Biophysics I. 3 Credits.

Topics include molecular biophysics, modern simulation methodologies and experimental methodologies for probing biological systems.

PHYS 6630. Astrophysics I. 3 Credits.

Astrophysical examination of stellar evolution, including properties of stellar matter, equations of state, nucleosynthesis, red giants, supernovae, white dwarfs, close binary stellar systems, gamma-ray bursts. Overview of observational techniques, including photometry; IR, UV, X-ray observation, gamma-ray frequencies; astrophysical data analysis; evidence for stellar and cosmological models. Permission of the department graduate advisor required prior to enrollment.

PHYS 6710. Nuclear and Particle Physics II. 3 Credits.

Theory and experiment of the standard model of elementary particle physics of strong and electro-weak interactions. Emergence of nuclear interactions and pion physics. Effective field theory, non-perturbative methods, lattice simulations, nuclear models, nuclear reactions. Path integral, gauge fields, S-matrix theory, dispersion relations, renormalization program. (Academic year) Prerequisite: PHYS 6320.

PHYS 6720. Biophysics II. 3 Credits.

Topics include theoretical and computational methods for genes, proteins, and bionetworks; models of biological complexity; applications of non-equilibrium statistical mechanics and combinatorial optimization. This course may be taken repeatedly for credit to a maximum of 15 credits. Prerequisite: PHYS 6310.

PHYS 6730. Astrophysics II. 3 Credits.**PHYS 6810. Hot Topics in Big Data Analytics. 3 Credits.**

This course will enhance students' big-data analysis and statistical skills, and is aimed at upper-level undergraduate and graduate students from the physical, biological and social sciences. In addition to overviewing standard tools using R, it will expose students to current thinking about real data, analysis and modeling in our 'non-normal' world where distributions are fat-tailed rather than approximately normal, and where processes are bursty rather than approximately Poisson. Its cross-disciplinary approach will also help address the likely challenge facing next-generation researchers and employees, to 'understand' real-world data not only through statistical tests, but also by building generative simulations (e.g. in C) that reproduce the statistical stylized facts of real-world data sets. Other topics to be discussed include networks, machine-learning, as well as web-scraping of data – e.g. from social media sources. Prerequisites: MATH 2184, MATH 2233, PHYS 1021 and PHYS 1022. Credit cannot be earned for this course and DATS 6450.

PHYS 6998. Thesis Research. 3 Credits.**PHYS 6999. Thesis Research. 3 Credits.****PHYS 8110. Selected Topics in Theoretical Nuclear Physics. 3 Credits.**

May be repeated once for credit with permission of the graduate advisor. Prerequisites: Permission of the department graduate advisor.

PHYS 8120. Selected Topics in Experimental Nuclear Physics. 3 Credits.

May be repeated once for credit with permission of the graduate advisor. Prerequisites: Permission of the department graduate advisor.

PHYS 8130. Selected Topics in Theoretical Biophysics. 3 Credits.

May be repeated once for credit with permission of the graduate advisor. Prerequisites: Permission of the department graduate advisor.

PHYS 8140. Selected Topics in Experimental Biophysics. 3 Credits.

May be repeated once for credit with permission of the graduate advisor. Prerequisites: Permission of the department graduate advisor.

PHYS 8150. Selected Topics in Astrophysics. 3 Credits.

May be repeated once for credit with permission of the graduate advisor. Prerequisites: Permission of the department graduate advisor.

PHYS 8998. Advanced Reading and Research. 1-4 Credits.

May be repeated once for credit. Restricted to doctoral candidates preparing for the general examination.

PHYS 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

PHYSIOLOGY (PHYL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PHYL 1099. Variable Topics. 1-36 Credits.**PHYL 2111. Physiology for Health Sciences Students. 4 Credits.**

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PHYL 5099. Variable Topics. 1-99 Credits.**PHYL 6201. Physiology. 6 Credits.**

Required for medical students, open to graduate students. Cellular, organ system, and applied human physiology. Prerequisite for graduate students: Anat 201 or Phyl 191, or equivalent; Bioc 221 or Phyl 205, or consent of department chair. Concurrent regis.

PHYL 6205. Regulatory Cell Biology. 2 Credits.**PHYL 6211. Physiology for Health Sciences Students. 3 Credits.**

Functional processes, including cellular, muscular, cardiovascular, renal, pulmonary, gastrointestinal, endocrine, and nervous systems.

PHYL 6253. Physiology: Fluid Balance and Hydrogen Ion Regulation. 2 Credits.

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PHYL 6269. Topics in Neuro- and Psychophysiology. 2 Credits.

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PHYL 6282. Experimental Physiology. 1-12 Credits.**PHYL 6290. Extramural Physiology Elective. 1-12 Credits.****PHYL 6291. Extramural Physiology Elective. 1-12 Credits.****PHYL 6295. Research. 1-12 Credits.**

By special arrangement with individual staff members. Approximately four hours per week in the laboratory for each credit. May be repeated for credit.

PHYL 6298. Comprehensive Physiology. 5 Credits.**PHYL 6502. Biomed Sci/Clin Corr inDisease. 1-12 Credits.****PHYL 8800. Summer Remedial: Physiology. 8 Credits.**

POLITICAL MANAGEMENT (PMGT)

Explanation of Course Numbers

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- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PMGT 1000. Dean's Seminar. 3 Credits.

PMGT 4101. Electoral and Legislative Processes. 3,4 Credits.

PMGT 4107. Practicum in Political Management. 3,4 Credits.

PMGT 4187. Professional Internship. 3-4 Credits.

PMGT 4192. Tutorial in American Electoral and Political Movements. 3-4 Credits.

PMGT 5099. Variable Topics. 1-99 Credits.

PMGT 6401. Fundamentals of Political Management. 3 Credits.

Main concepts, arenas, developments, roles, and practices in the field of political management. Assess rhetorical situations, write strategy memos, create and critique campaign messages, and engage citizens, professional colleagues and decision-makers. Taken in first semester of program. (Professors M. Cornfield and TBD.).

PMGT 6402. Applied Political Communications. 3 Credits.

Models and methods by which professionals plan, produce, and adjust strategic communication messages in democratic politics. Use a variety of communication forms and media, such as, fact sheets, blog posts, video releases, and public addresses, under typical constraints of time, money, information, reputation, talent, audience attentiveness, and institutional procedure. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credits.

PMGT 6403. Political Data and Analytics. 3 Credits.

Introduction to the uses of quantitative data and statistics in politics. Learn to evaluate research designs, statistical associations, causal reasoning, methods for hypothesis testing, multivariate regression analyses, and data analytics. Consume and critique data and statistics for strategic purposes. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credits.

PMGT 6404. Principled Political Leadership. 3 Credits.

Theory and practice of ethically grounded political leadership. Consideration of the recurrent dilemmas, philosophical principles, management techniques, codes of conduct, and professional norms in the political management field. Application through self-assessment exercises, case study analysis, and individual and group simulations. Students to enroll by their sixth course in the program. Core requirement. Must be completed before a student reaches 18 credits.

PMGT 6410. Grassroots Engagement. 3 Credits.

Strategies and techniques to build advocacy support among and across general civic populations. Identification of potential supporters through database targeting and individual outreach. Motivation and training of interested supporters for grassroots action in campaigns, at public forums, and before decision-makers. Coalition and protest options; analytics of ongoing efforts. (Professors E. Greffe, S. Gagen).

PMGT 6412. Issues Management. 3 Credits.

Track, influence, and alter politically significant issue-related discourses and policy developments. Legislative, executive, and judicial venues and processes for policymaking; state referendum, initiative, and recall ballot opportunities; organizational structures, including digital procedures, for issue management. (Professors M. Edwards, E. Greffe).

PMGT 6414. Lobbying. 3 Credits.

Survey of and training for lobbying in the U.S. federal system. Students design a detailed lobbying plan for implementation and practice a variety of influence techniques, including those associated with digital media and communications technologies. Legal compliance, organizational and public accountability, professional standards and practices. (Professor J. Hobson).

PMGT 6416. International Lobbying. 3 Credits.

Survey of international lobbying practices, analysis of strategic models and best practices in a variety of different countries and political systems (e.g., EU, China, Brazil, and Turkey). Trends and innovations in lobbying techniques and communications technologies. Investigation and application of appropriate research to improve practice. (Professor TBD by AGE program) (Same as PSAD 6240).

PMGT 6418. Budget Politics. 3 Credits.

Politics of the budget process, including formal and informal mechanisms of appropriating U.S. federal funds. Lobbying strategies and tactics employed by private and public organizations seeking to influence budgetary agenda-setting in the White House; decision-making in Congress; and funding negotiations within and between executive agencies. (Professor M. Edwards).

PMGT 6420. Corporate Public Affairs. 3 Credits.

Exploration of major functional areas in corporate public affairs with a focus on the political and policy dynamics operating in the United States and other democracies. Development and deployment of appropriate strategies, research, and tactics for corporations managing the complexities related to a global economy and shifting political alliances.

PMGT 6422. State and Intergovernmental Politics. 3 Credits.

Examination of the electoral pressures on state and local legislators. Methods and techniques for advocacy in various state capitals. The governing responsibilities of constitutionally-delegated to states and the ever-changing historical relationship between states and the federal government. (Professors C. Shank).

PMGT 6424. Comparative Political Management Environments. 3 Credits.

The operating rules, customs, and processes by which laws are enacted and regulations written in countries around the world; governance systems and the realm of influencers; systems within which legislators, administrators, bureaucracies, and stakeholder's work. Restricted to graduate students. Credit cannot be earned for this course and PSAD 6260.

PMGT 6428. Cultural Aspects of Global Engagement. 3 Credits.

Understanding multicultural communities and diverse institutions, customs, and practices; effective and ethical public engagement on behalf of global organizations; communicating issues and commitments to diverse audiences and the general market; engagement strategies and techniques. Restricted to graduate Students. Same As: PSAD 6250.

PMGT 6430. Campaign Strategy. 3 Credits.

Orientation to the basic systems and technologies that must be created and managed to produce electoral victory. The campaign plan and campaign budget as the foundation for management of campaigns. Focus on development of a campaign plan. (Professor M. Meissner).

PMGT 6432. Managing Campaigns. 3 Credits.

Understanding the role of a campaign manager in staffing and running a campaign, while executing the campaign plan. Candidate handling, fundraising, website and technology, geographic and demographic targeting, field organization, canvassing, get-out-the-vote, press operations, budget control, and liaison with the party and interest groups. (Professors TBD) Prerequisites: PMGT 6430.

PMGT 6434. Running for Office. 3 Credits.

Electoral politics from the perspective of the candidate, strategic and personal factors involved in the decision to run and the consequences of victory or defeat. (Professor R. Fauchaux).

PMGT 6436. National Campaign Dynamics. 3 Credits.

Examination of the historical and systematic patterns in national elections. Differences between presidential and midterm elections; House and Senate contests; party nomination races and general elections; primaries and caucuses; Democratic and Republican party delegate selection rules; causes for "wave" elections; effect of the economy on election outcomes; and standard vice presidential selection models. The political and partisan structural conditions that exist before any of the candidates or the campaigns get involved.

PMGT 6438. State and Local Campaigns. 3 Credits.

Application of campaign strategy and management principles to electoral races at the state and local levels. Staffing, budgeting, and strategic challenges for what are typically lower-visibility contests that involve state and local candidates. Coordinated campaigns and the impact of the national party's reputation on these down-ballot races. (Professor TBD).

PMGT 6440. Targeting and Voter Contact. 3 Credits.

How to find voters for electoral and advocacy campaigns and tailor communications to them. Database analytics, list management, questionnaire design, target weighting, predictive modeling. Review of randomized and natural experiments in light of theoretic principles and findings from public opinion research. Skill development in use of spreadsheets and basic statistical packages. Lab fee. (Professors B. Russell, A. Strauss) Prerequisites: PMGT 6403.

PMGT 6442. Campaigns Around the World. 3 Credits.

Comparative examination of national-level campaigns in democratic countries outside of the United States. Strategies, techniques, and practices used in multi-party and/or parliamentary systems. Professional conduct, consulting rules and norms.

PMGT 6450. Rules, Laws, and Strategy. 3 Credits.

U.S. federal and state laws and regulations governing recognition of political parties and political organizations, campaign finance, political broadcasting and cablecasting, lobbying registration. Ballot access and voter registration. Ethical and strategic considerations (opportunities and constraints; benefits and drawbacks) related to rule construction. (Professor M. Braden).

PMGT 6452. Digital Strategy. 3 Credits.

Development of an integrated digital strategy for use in advocacy and electoral campaigns. Introduction to the theoretical concepts, distinctive technologies, applied skills, and managerial challenges associated with digital campaigning. Search engine optimization, GPS, online payment systems, customizing back- and front-end systems to meet strategic goals and budget parameters, working with IT vendors and distance volunteers, legal and cultural considerations in US and other regimes, site rollout and scaling, security and privacy. (Professor TBD).

PMGT 6454. Fundraising and Budgeting. 3 Credits.

Raising and spending money in political campaigns, referendum contests, issue advocacy, and lobbying efforts. Budgeting process, standard controls to check expenditures, accounting procedures, and general strategies for use in effective fundraising. (Professor N. Bocskor).

PMGT 6456. Speechcraft. 3 Credits.

Analysis and techniques used in speechwriting and presentations for public officials and candidates. Managing the political optics and understanding a speech's visual context and non-verbal communication capabilities (Rose Garden, Oval Office, campaign stump speech, ceremonial occasion, congressional testimony). Modulating speaker style, tone, and pacing, and staging the speech for effect. (Professors D. McGroarty, R. Lehrman).

PMGT 6458. Crisis Management. 3 Credits.

Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions. (Professor M. Edwards).

PMGT 6460. Audience Research. 3 Credits.

Processes by which citizens acquire political information and make decisions in politics. Survey research uses in electoral campaigns and issue advocacy. Designing and drawing samples, constructing and pretesting questionnaires, modes of interviewing, financial implications, practical problems in selecting and monitoring polling organizations, and interpretation of data. Focus groups and small-sample interviews; relationship between qualitative and quantitative research; reliability and validity. (Professors R. Johnson, D. Cantor, B. Tringali, M. Ward) Prerequisites: PMGT 6403.

PMGT 6462. Opposition Research. 3 Credits.

Practices and techniques associated with investigative opposition research. Public document and website searches, candidate tracking, and methods for information dissemination. Changes in practice as a result of technological innovations and a changing media environment. Professional responsibilities and ethics expected from opposition researchers.

PMGT 6464. Influencing the Media. 3 Credits.

Organization, practices, and norms of the major media; media coverage of public officials, political campaigns, legislative battles, interest groups, and issues of public policy. Formulation of strategies for getting favorable news coverage for the issue or candidate and for ending a media crisis. (Professor L. Ellenbogen).

PMGT 6466. Political Advertising. 3 Credits.

Strategies and techniques for using the various media (print, radio, television, cable, Internet) in political and advocacy campaigns, with emphasis on the use of television. Impact and uses of paid advertising; development of campaign messages; production, timing, and placement of television advertising; explanation of media markets. Students design print ads and brochures and produce a 30-second television spot. (Professor P. Fenn).

PMGT 6468. Digital Advertising and Action. 3 Credits.

Strategies and techniques for developing and leveraging digital advertising for mobilization. Manage an effective online ad campaign from initial concept to creation and from targeting to measuring the results. Prepare, design, and launch a variety of online ad types, including search, social, display, and video. Analyze success or failure based on analytics and benchmarking. Prerequisite: PMGT 6452.

PMGT 6470. Digital Content Creation. 3 Credits.

Developing and creating effective digital content that promotes campaign narratives and furthers strategic messages. Construct portfolios of original and aggregated digital media content. Skill development in infographics, video, GPS, photo collage, page and site architecture, and texts from 140 characters to blog posts and file attachments. Versioning for different communities, functionalities, and channels including mobile applications. Prerequisite: PMGT 6452.

PMGT 6472. Maximizing Social Media. 3 Credits.

Creating and integrating owned digital platforms and social media assets for political persuasion and action. Cultivation of online political communities, moderating and curating outside-generated content, integration and alignment with campaign message; event, reputation and crisis management. Review of constraints and potentials intrinsic to specific social media sites (e.g. Facebook, Google, LinkedIn, Twitter). Prerequisite: PMGT 6452.

PMGT 6474. Stereotypes and Political Strategy. 3 Credits.

Accounting for psychological constructs, social stereotypes, media framing, and the impression formation process in developing a political strategy. Review of empirical research; investigation of effective techniques or postures for overcoming biases; self-assessment of perceptual assumptions.

PMGT 6476. Political Consulting. 3 Credits.

Management principles, technical procedures, and legal requirements for starting and running a political consulting business. Effective practices for gaining a positive reputation, sustaining profitability across the variable political environment, and engaging on the international front. Start-up funding, mergers and acquisitions, exit strategies. (Professors G. Nordlinger, L. Purpuro, M. Meissner).

PMGT 6478. Strategic Government Consulting. 3 Credits.

How government agencies are organized and funded, how they support national strategies set by the president and Congress, and how expert consultants work with government leaders to operate and organize agencies to adapt to changing requirements and administrations.

PMGT 6480. Washington Residency. 3 Credits.

Capstone experience equivalent to PMGT 6495 for students in the online political management program. Exposure to and interaction with political consultants, advocacy specialists, elected officials, and applied researchers in Washington, DC. Integration of program curriculum toward an understanding of the federal political ecosystem and development of a robust political network. Restricted to PMGT online students in their last or penultimate term, or students with permission of the instructor.

PMGT 6482. Applied Research Project. 3 Credits.

A research option for students in the online Political Management program. Development of a campaign-relevant research report and related communications on behalf of a mock political client. The report describes the status quo of a political situation, analyze the factors and actors sustaining that status quo, identify what and who is potentially moveable in the direction the client seeks to go, and outline practical first steps a campaign can take in that direction. Restricted to PMGT online students in their last or penultimate term in the program.

PMGT 6490. Special Topics. 3 Credits.

Topic to be announced in the Schedule of Classes.

PMGT 6495. Political Power and Practice. 3 Credits.

Capstone seminar that develops and integrates knowledge of political strategies, tactics, and situational considerations, and applies that knowledge to advanced political problems. Topics include: gaining and wielding power, the complexity associated with making democracy work, conflict resolution, negotiation and bargaining skills, grappling with the consequences of winning and losing. Students to enroll during their last or penultimate term. (Professor L. Brown).

PMGT 6496. Independent Study. 3 Credits.

Independent research with a Political Management faculty member. Registration must be approved in advance by the supervising faculty member and the director of the political management program.

PMGT 6497. Graduate Internship. 0 Credits.

Experience at an organization focused on applied politics. Restricted to students in the MPS in political management program.

PMGT 6498. Thesis I. 3 Credits.

Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credits with a 3.3 GPA.

PMGT 6499. Thesis II. 3 Credits.

Master's degree candidates must apply to the program committee for thesis approval and have completed 24 credits with a 3.3 GPA. Prerequisite: PMGT 6498.

PMGT 6501. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis. Topics include political and policy decision making, actors, and process.

PMGT 6502. ConfrontManag&AllianceBldg. 3 Credits.**PMGT 6503. Communication Strategy. 3 Credits.**

Formulation of political communications strategies. Elements necessary to create, introduce, and maintain an effective political profile in issue advocacy campaigns, candidate elections, and legislative advocacy campaigns. Application of principles of research, advertising, and marketing to the political landscape.

PMGT 6504. Political Management and Strategic Governance. 3 Credits.**PMGT 6505. Politica de bases. 3 Credits.**

Use of microtargeting and database-layering technology to identify potential advocates. Motivational techniques to mobilize volunteers for political campaigns, lobbying efforts, and community advocacy. Techniques used by grassroots organizers to help corporations, unions, civic and nonprofit organizations, and special interest groups achieve strategic goals.

PMGT 6506. Practicum. 3 Credits.**PMGT 6507. Democracia y elecciones en LA. 3 Credits.**

This course focuses on the recent history of Latin America, underscoring the struggle to establish and consolidate democracy and the preeminence of elections as the legitimate process to select and replace authorities at the national, regional and local levels. The course provides the student with concepts to understand the different types of democratic settings that exist in the region, that is the coexistence of fairly established and solid democracies, with low intensity democracies, and semi-authoritarian regimes, all of which utilize electoral processes to select public authorities. The main message of this course is that campaign designers need to understand and take a strategic advantage of the political context and the rules governing the political competition in order to obtain the most effective results.

PMGT 6508. Estrategia de campana LA. 3 Credits.

Organization of political campaigns. Strategic decisionmaking. Formulation of political communications strategies. Aspects necessary to introduce and maintain an effective political profile in the electoral campaigns in Latin America, including the specialized forms of communication which political professionals use to win support for their candidates. This course is taught entirely in Spanish.

PMGT 6509. Las encuestas-America Latina. 3 Credits.

The use of survey research in campaigns. Quantitative and qualitative survey research for political management in Latin America. The proper use of polls; methodology and survey design; reviewing poll results; drawing conclusions and recommendations from polls; and the practical problems of administering and interpreting survey data of public opinion in Latin America. PMGT 6509 is taught entirely in Spanish.

PMGT 6510. Organizacion y ejecucion-LA. 3 Credits.

Organizational choices facing campaign management teams in Latin America as they attempt to combine the resources and activities of a modern campaign into a winning effort.

PMGT 6511. Propoganda politica, La campan. 3 Credits.

The strategies, techniques, design and impact of paid political communications directed toward target audiences in Latin America, focusing upon the role of political advertising in a campaign, including radio, direct mail, print and internet, but with specific emphasis on television commercials.

PMGT 6512. Los medios, la politica-LA. 3 Credits.

The role of the media in the politics of Latin America. Who the media are, how they make their decisions, and how they influence outcomes in campaigns and other political situations. Strategic planning in dealing with the media as well as the particular dynamics that surround electronic, print, and the new media. Effective practices of media engagement. This course is taught entirely in Spanish.

PMGT 6513. Comunicacion Politica,Gobernon. 3 Credits.

The course builds upon the Practicum course of the Certificate in Governance and integrates the two processes of politics: campaigning and governing. PMGT 6513 is taught entirely in Spanish.

PMGT 6514. Manejo de Crisis. 3 Credits.

Manejo de Crisis. Management of crisis situations and defining moments in electoral, legislative, and public policy campaigns. Exploration of the causes and consequences of political scandals. Professional responsibilities and ethical considerations of crisis management and rapid response decisions.

POLITICAL PSYCHOLOGY (PPSY)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PPSY 5099. Variable Topics. 1-99 Credits.**PPSY 6101. Fundamentals of Political Psychology. 3 Credits.**

A review of the interdisciplinary field of political psychology; examination of psychological influences on political behavior at the level of the individual and small group; the psychology of leader-follower relationships; crisis decision making.

PPSY 6102. Political Psychology Research Methods. 3 Credits.

Major research methods of political psychology, using classic articles in the field. Both quantitative methods, such as survey research and content analysis, and qualitative methods, such as personality profiling and comparative case studies, are considered. Prerequisite: PPSY 6101.

PPSY 6103. Political Violence and Terrorism. 3 Credits.

The origins and the sociopolitical and behavioral dynamics of political violence and terrorism. Major types of terrorism are differentiated. Implications for antiterrorist policy. The psychology of hostages.

PPSY 6104. Independent Study and Research. 1-3 Credits.

Supervised research in a special topic in political psychology. Preparation of major research paper. Prerequisites: PPSY 6101 and PPSY 6102.

POLITICAL SCIENCE (PSC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PSC 1001. Introduction to Comparative Politics. 3 Credits.

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

PSC 1001W. Introduction to Comparative Politics. 3 Credits.

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 1002. Introduction to American Politics and Government. 3 Credits.

Structure, powers, and processes of the American political system and the impact on public policy.

PSC 1002W. Introduction to American Politics and Government. 3 Credits.

Structure, powers, and processes of the American political system and the impact on public policy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 1003. Introduction to International Politics. 3 Credits.

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues. Credit cannot be earned for this course and IAFF 1005.

PSC 1003W. Introduction to International Politics. 3 Credits.

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues. Credit cannot be earned for this course and IAFF 1005.

PSC 1011. Introduction to Politics I. 6 Credits.

Role of personal and social values in politics. Problems in the Western (especially American) tradition of political science. Admission by special selection process.

PSC 1012W. Introduction to Politics II. 6 Credits.

Continuation of PSC 1011. Role of personal and social values in politics. Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 1099. Variable Topics. 1-36 Credits.**PSC 2000. Sophomore Colloquium. 3 Credits.**

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester; see department for more details. Permission of the instructor required prior to enrollment.

PSC 2099. Variable Topics. 1-12 Credits.

Use denotes upper-level transfer credit in political science.

PSC 2101. Scope and Methods of Political Science. 3 Credits.

Nature of political inquiry, approaches to the study of politics and government, empirical methods of research.

PSC 2102. Visualizing and Modeling Politics. 3 Credits.

The class builds on PSC 2101, Scope and Methods of Political Science, with emphasis on working with data to examine political questions. Prerequisites: PSC 2101 or STAT 1051 or STAT 1053 or STAT 1111.

PSC 2105. Major Issues of Western Political Thought I. 3 Credits.

Foundations of Western political thought—Plato to Aquinas.

PSC 2106. Major Issues of Western Political Thought II. 3 Credits.

History of political thought from the sixteenth through the late nineteenth century, as set forth in the works of representative thinkers.

PSC 2106W. Major Issues of Western Political Thought II. 3 Credits.

History of political thought from the sixteenth through the late nineteenth century, as set forth in the works of representative thinkers. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 2107. Twentieth-Century Political Thought. 3 Credits.

Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

PSC 2108. Freedom and Equality. 3 Credits.

Case analysis of major ideas related to freedom and equality in the Western political tradition.

PSC 2110. American Political Thought. 3 Credits.

Political thought in the U.S. from colonial times to the present as seen through major representative writings.

PSC 2120W. Freedom in American Thought and Popular Culture. 3 Credits.

An inquiry into definitions of freedom through examination of American political thought and popular culture. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement (Same as AMST 2120W).

PSC 2211. State and Urban Politics. 3 Credits.

Comparative analysis of context, institutions, processes, and policies of state and urban political systems. Prerequisite: PSC 1002.

PSC 2212. State and Urban Policy Problems. 3 Credits.

Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings. Prerequisite: PSC 1002.

PSC 2213. Judicial Politics. 3 Credits.

An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions. Prerequisite: PSC 1002.

PSC 2214. U.S. Constitutional Law and Politics I. 3 Credits.

Separation of powers, federal-state relationships, economic regulation. Prerequisites: PSC 1002.

PSC 2215. U.S. Constitutional Law and Politics II. 3 Credits.

Political and civil rights. Prerequisites: PSC 1002.

PSC 2216. The American Presidency. 3 Credits.

Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office. Prerequisite: PSC 1002.

PSC 2217. Executive Branch Politics. 3 Credits.

Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Prerequisite: PSC 1002. Same as PPPA 2117.

PSC 2218. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive-legislative relations and interest-group activities. Prerequisite: PSC 1002.

PSC 2218W. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive-legislative relations and interest-group activities. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1002.

PSC 2219. Political Parties and Interest Groups. 3 Credits.

The emergence and evolution of political parties in the United States; role of parties as a linkage between mass preferences and government policies; organization, nominations, voting, and activities in legislative and executive branches. Prerequisite: PSC 1002.

PSC 2220. Public Opinion. 3 Credits.

How public opinion is measured, how it is shaped, and its consequences for policymaking. Prerequisite: PSC 1002.

PSC 2221. African American Politics. 3 Credits.

The evolution, nature, and role of African Americans within the U.S. political system. How the African American experience has shaped American politics (specifically public opinion, political behavior, political institutions, and salient public policy debates) and how black Americans have come to understand their position within the American political system. Prerequisites: PSC 1002.

PSC 2222. Science, Technology, and Politics. 3 Credits.

Multiple impacts of scientific and technological developments on the political systems. Discussion of public policies for support, use, and control of science and technology. Prerequisite: PSC 1002.

PSC 2223. Campaigns and Elections. 3 Credits.

Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process. Prerequisite: PSC 1002.

PSC 2224. Issues in Domestic Public Policy. 3 Credits.

Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health. Prerequisite: PSC 1002.

PSC 2225. Women and Politics. 3 Credits.

An examination of the role and impact of women in politics, including women's interests and access to the political system; specific public policy issues with a particular focus on the role of women. Prerequisite: PSC 1002.

PSC 2228. Media, Politics, and Government. 3 Credits.

The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows, and the changing ways that voters receive information. Instructor permission required. Same As: SMPA 3428.

PSC 2229. Media and Politics. 3 Credits.

The impact of the media on American politics, including the nature of coverage of political issues and campaigns, dynamics of selecting and presenting news stories, and consequences of media messages for public opinion and action. Prerequisite: PSC 1002.

PSC 2230. Law and Justice: The View from Hollywood. 3 Credits.

Analysis of films that focus on justice, the law, and the legal system. Consideration of what they tell us about political and legal culture and what messages they may have for contemporary legal issues. Focus on the relationship between law and justice, the practice of law, and the role of courts and trials in a political system. Prerequisites: PSC 1002.

PSC 2240. Poverty, Welfare, and Work. 3 Credits.

The elements and politics of America's welfare state. Social welfare policies and how they relate to work and poverty. Prerequisites: PSC 1002.

PSC 2330. Comparative Politics of Western Europe. 3 Credits.

Comparative political analysis with primary focus on the principal states of Western Europe. Prerequisite: PSC 1001.

PSC 2331. Comparative Politics of Central and Eastern Europe. 3 Credits.

Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states of the former Soviet Union. Prerequisite: PSC 1001.

PSC 2332. European Integration. 3 Credits.

The history of the European Union, its accomplishments as an international actor, and the vibrant debates over its future. Prerequisite: PSC 1001.

PSC 2334. Global Perspectives on Democracy. 3 Credits.

International experiences with the historical evolution and current nature of democratic political systems. Prerequisite: PSC 1001.

PSC 2336. State-Society Relations in the Developing World. 3 Credits.

Historically informed exploration of enduring issues of concern in state-society relations, with an empirical focus on selected countries and regions of the developing world. Prerequisite: PSC 1001.

PSC 2337. Development Politics. 3 Credits.

An examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions? Prerequisite: PSC 1001.

PSC 2338. Nationalism. 3 Credits.

Causes and the effects of nationalism, covering cases from around the world. Prerequisite: PSC 1001.

PSC 2339. Comparative Political Economy. 3 Credits.

The interaction of politics and economy from a comparative perspective. Prerequisite: PSC 1001.

PSC 2366. Russian Politics. 3 Credits.

An examination of political institutions, processes, and issues of Russian politics. Prerequisite: PSC 1001.

PSC 2367. Human Rights. 3 Credits.

Human rights theory, the various movements for human, religious, civil, political, and other rights. Prerequisite: PSC 1001.

PSC 2367W. Human Rights. 3 Credits.

Human rights theory, the various movements for human, religious, civil, political, and other rights. Writing intensive. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1001. Credit cannot be earned for this course and CLAS 2105W, CLAS 3901W, HIST 3820W.

PSC 2368. Politics in the Two Koreas. 3 Credits.

An examination of political institutions, processes, and issues in South Korea and North Korea as well as in inter-Korean relations and major-power involvement in peninsular affairs. Prerequisites: PSC-1001 or PSC-001 or PSC-1001W or PSC-001W or ((PSC-1011 or PSC-011) and (PSC-1012 or PSC-012 or PSC-012W or PSC-1012W)).

PSC 2369. Comparative Politics of South Asia. 3 Credits.

A comparative examination of colonialism, economic development, and identity politics in South Asia. Prerequisite: PSC 1001.

PSC 2370. Comparative Politics of China and Northeast Asia. 3 Credits.

Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts. Prerequisite: PSC 1001.

PSC 2371. Politics and Foreign Policy of China. 3 Credits.

An examination of political institutions, processes, history, and issues of Chinese politics and foreign policy. Prerequisites: IAFF 1005 or PSC 1001 or PSC 1001W or PSC 1003.

PSC 2373. Comparative Politics of Southeast Asia. 3 Credits.

Political forces, processes, and outcomes, using empirical examples from Southeast Asia. Prerequisite: PSC 1001.

PSC 2374. Politics and Foreign Policy of Japan. 3 Credits.

An examination of political institutions, processes, and issues of Japanese politics and foreign policy. Prerequisite: PSC 1001.

PSC 2377. Comparative Politics of the Middle East. 3 Credits.

Politics of the eastern Arab states, Turkey, Iran, and Israel. Prerequisite: PSC 1001.

PSC 2377W. Comparative Politics of the Middle East. 3 Credits.

Politics of the eastern Arab states, Turkey, Iran, and Israel. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1001.

PSC 2379. Politics and Foreign Policy of Israel. 3 Credits.

Examination of the institutions, processes, and issues of Israeli politics and foreign policy. Prerequisites: IAFF 1005 or PSC 1001 or PSC 1001W or PSC 1003.

PSC 2381. Comparative Politics of Sub-Saharan Africa. 3 Credits.

Comparative analysis of political systems in selected countries of Sub-Saharan Africa. Prerequisite: PSC 1001.

PSC 2383. Comparative Politics of Latin America. 3 Credits.

Exploration of the democratic advances in Latin America in recent decades as well as the continuing severe social, economic, and political challenges to democracy. Prerequisite: PSC 1001.

PSC 2439. International Political Economy. 3 Credits.

Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations. Prerequisite: PSC 1003.

PSC 2440. Theories of International Politics. 3 Credits.

Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions. Prerequisite: PSC 1003.

PSC 2442. International Organizations. 3 Credits.

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Prerequisite: PSC 1003.

PSC 2442W. International Organizations. 3 Credits.

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003.

PSC 2444. Public International Law. 3 Credits.

Survey of essential principles and concepts of public international law through case analysis and with reference to political factors. Prerequisite: PSC 1003.

PSC 2446. U.S. Foreign Policy. 3 Credits.

Constitutional, political, and international factors that determine the formulation, execution, and substance of U.S. foreign policy. Prerequisite: PSC 1003.

PSC 2446W. U.S. Foreign Policy. 3 Credits.

Constitutional, political, and international factors that determine the formulation, execution, and substance of U.S. foreign policy. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSC 1003 or IAFF 1005. Same As: PSC 2446.

PSC 2447. American Presidents at War. 3 Credits.

How American presidents have thought about and conducted wars using an analytical and historical approach. Prerequisites: PSC 1003 or IAFF 1005.

PSC 2449. International Security Politics. 3 Credits.

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Prerequisite: PSC 1003.

PSC 2449W. International Security Politics. 3 Credits.

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003.

PSC 2451. Theory of War. 3 Credits.

The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency/counterinsurgency, and nuclear war. Prerequisites: PSC 1003. Same As: PSC 2451W.

PSC 2451W. Theory of War. 3 Credits.

The nature, purposes, and conduct of war. Strategy and its relationship to politics. Major strategic variants for continental warfare, maritime conflict, strategic bombing, insurgency and counterinsurgency, and nuclear war. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003. Same As: PSC 2451.

PSC 2453. U.S. Foreign Policy Perspectives. 3 Credits.

Examination of alternative historical and contemporary perspectives on U.S. foreign policy. Prerequisite: PSC 1003.

PSC 2454. Humanitarianism. 3 Credits.

Norms, principles, and institutions designed to alleviate suffering and improve the welfare of vulnerable populations. Prerequisite: PSC 1003.

PSC 2455. Global Governance. 3 Credits.

The creation, revision, and enforcement of the rules that are intended to govern the world. Prerequisite: PSC 1003.

PSC 2461. European-Atlantic Relations. 3 Credits.

International politics of the North Atlantic area, the European Union, and U.S.-European relations. Prerequisite: PSC 1003.

PSC 2468. Post-Soviet Foreign Policy. 3 Credits.

External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union). Prerequisite: PSC 1003.

PSC 2475. International Relations of East Asia. 3 Credits.

Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region. Prerequisite: PSC 1003.

PSC 2476. The Arab-Israeli Conflict. 3 Credits.

History and current state of the Arab-Israeli Conflict; the Jewish and Arab nationalism movements; Palestine under the British Mandate and after the establishment of the State of Israel; the peace process and its collapse; and recent political developments. Prerequisite: PSC 1003.

PSC 2476W. The Arab-Israeli Conflict. 3 Credits.

The history and current state of the Arab-Israeli conflict; the Jewish and Arab nationalism movements; Palestine under the British Mandate and after the establishment of the State of Israel; the peace process and its collapse; and recent political developments. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSC 1003.

PSC 2478. International Relations of the Middle East. 3 Credits.

Analysis of the regional and international relations of the Middle East. Prerequisite: PSC 1003.

PSC 2482. African International Politics. 3 Credits.

Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Prerequisite: PSC 1003. Recommended background: Prior completion of PSC 2381.

PSC 2484. International Relations of Latin America. 3 Credits.

Analyzes the trajectory of Latin America's role in the world, with particular focus on conflict and cooperation between Latin America and the United States. Prerequisite: PSC 1003.

PSC 2987. Internship: Political Science. 1-3 Credits.

Study of political behavior and institutions through internship experience. Open to departmental majors only. Admission requires departmental approval and junior standing.

PSC 2990. Selected Topics. 3 Credits.

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PSC 2990W. Selected Topics. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PSC 2991. Special Topics in Political Thought. 3 Credits.

PSC 2992. Special Topics in American Politics and Government. 3 Credits.

Prerequisite: PSC 1002.

PSC 2993. Special Topics in Comparative Politics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Prerequisite: PSC 1001.

PSC 2994. Special Topics in International Relations. 3 Credits.

Prerequisite: PSC 1003.

PSC 2994W. Special Topics in International Relations. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSC 1003.

PSC 3099. Variable Topics. 1-12 Credits.

PSC 3192W. Proseminar: Political Science. 3 Credits.

Examination of selected problems in political science. May be repeated once for credit. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to juniors and seniors in the political science program.

PSC 3500. Advanced Topics in Political Science. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for details. Students must have completed four PSC courses at the 2000 level in addition to the prerequisite courses prior to enrollment. Prerequisites: PSC 1001, PSC 1002 and PSC 1003; and PSC 2101 or PSC 2102.

PSC 4991. Independent Study. 1-3 Credits.

Permission of the undergraduate program advisor and the faculty member who will direct the study required prior to enrollment. Restricted to seniors in the political science program. Prerequisite: 15 credits of upper-division political science courses.

PSC 5099. Variable Topics. 1-99 Credits.

PSC 6103. Approaches to Public Policy Analysis. 3 Credits.

Primarily for master's students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 6113. The Constitution: History and Ideas. 3 Credits.

With a focus on the history and ideas that influenced James Madison, consideration of ideas that formed the common heritage of all the framers of the Constitution. The separate traditions of liberty that were fused together in the Constitution. Early changes in American society that placed one of those traditions at the center of America's self-understanding.

PSC 6114. Theories of Judicial Review. 3 Credits.

How and why the U.S. Supreme Court interprets the Constitution. The theory behind the practice of judicial review. Consideration of such questions as whether the Constitution intended judicial review and how the two wings of today's Court justify their own position on judicial review.

PSC 6187. Selected Topics in Political Theory. 3 Credits.

In-depth study of significant issues in political theory. Topics vary by semester. Consult the Schedule of Classes for more details. For advanced students.

PSC 6330. Comparative Government and Politics. 3 Credits.

Examination of basic approaches to comparative politics. Restricted to students in the Elliott School.

PSC 6333. Comparative Politics of Russia and Eurasia. 3 Credits.

Comparative analysis of politics in the post-Soviet region. Theoretical and methodological approaches to understanding important issues, frequently including democracy/autocracy, ethnic conflict, political economy, center-periphery relations, and state building.

PSC 6336. The Political Economy of China, India, and Beyond. 3 Credits.

Comparative analysis of how development problems have been defined from both political and economic perspectives and the solutions proposed by outsiders and insiders. Emphasis on the rise, demise, and recovery of development orthodoxies.

PSC 6338. U.S. Foreign Economic Policy. 3 Credits.

Exploration of ideas and issues involved in U.S. foreign economic policy, including relationship of economic and security issues, interdependence, protectionism, role of the dollar, industrial policy, and the debt crisis.

PSC 6345. Comparative Foreign Policy. 3 Credits.

The relationship of international actors with one another and with their external environment analyzed in a comparative framework. Focus on nation-states as well as non-state actors, such as international organizations. Differences and similarities in policies on economics, diplomacy, security, and global issues.

PSC 6346. The Politics of U.S. Foreign Policy. 3 Credits.

Patterns and problems in contemporary U.S. foreign policy. Special attention given to the domestic political factors shaping foreign policy.

PSC 6347. U.S. Foreign Policy Traditions. 3 Credits.

Contemporary debate about the substance of American foreign policy through the lens of alternative theoretical approaches to the study of international relations. Classical realist (national interest), neorealist (balance of power), neoliberal (international interdependence and institutions), and constructivist (national identity) interpretations are compared.

PSC 6348. Politics of U.S. National Security Policy. 3 Credits.

Examines competing theoretical approaches to the study of national security policy and tests these on a variety of substantive issue areas in the United States. (May include such topics as nuclear non-proliferation, responses to regional conflicts, definition of new security goals, etc.).

PSC 6349. International Security Politics. 3 Credits.

Overview of the major theoretical debates in international security. How different theoretical approaches inform policy decisions and options.

PSC 6350. Foreign Policy Analysis–Selected Topics. 3 Credits.

Analysis of U.S. foreign policy toward selected world regions.

PSC 6351. Civil-Military Relations. 3 Credits.

Substantive and theoretical issues and debates in the study of civil-military relations.

PSC 6360. Western European Politics. 3 Credits.

Examination of the principal characteristics of the British, French, German, and Italian political systems, comparing their institutional and behavioral adaptations to the problems of advanced industrial democracies.

PSC 6361. Politics of European Integration. 3 Credits.

The origins, institutions, and politics of West European integration, with emphasis on theories of regional integration and the development of the European Union.

PSC 6362. Nation-Building in the Balkans. 3 Credits.

The various nation-building policies Balkan nation-states have pursued toward different non-core groups over the nineteenth and twentieth centuries.

PSC 6364. Comparative Governments and Politics of Central And Eastern Europe. 3 Credits.

Comparative analysis of domestic political processes and policies in Central and Eastern Europe.

PSC 6366. Government and Politics of Russia. 3 Credits.

The politics and development of the Russian state.

PSC 6367. Post-Soviet Politics. 3 Credits.

How the study of former Soviet countries contributes to major debates in comparative politics. Focus includes regimes, political economy, revolutions, ethnic politics, nationalism.

PSC 6368. Japanese Politics and Foreign Policy. 3 Credits.

Japan's path to modernity and the impact its pattern of development has had on the nation's democratization, political economy, and political institutions in the post-1945 period.

PSC 6370. Politics of China I. 3 Credits.

Readings and discussion of the political dynamics and policy process in contemporary China.

PSC 6371. Politics of China II. 3 Credits.

Research seminar on selected topics in Chinese politics, using official and other primary sources. Prerequisites: PSC 6370 or permission of the instructor.

PSC 6372. Foreign Policy of China. 3 Credits.

Readings and research on the main approaches to analyzing China's foreign policy and foreign relations.

PSC 6373. Political Economy of Industrializing Asia. 3 Credits.

Comparative analysis of the relationship between economic interests and politics in East and Southeast Asia. Emphasis on industrializing economies and their integration into global trade and investment networks.

PSC 6374. Korean Politics. 3 Credits.

An examination of Korean politics from the perspectives of four major research areas: authoritarian regime and economic growth; democratic transition and consolidation; the Asian financial crisis and its consequences; and the two Koreas and international relations.

PSC 6377. Comparative Politics of the Middle East. 3 Credits.

Readings and research on selected problems of the governments and politics of the Middle East.

PSC 6379. Government and Politics of Africa. 3 Credits.

Major theories and themes of African politics considering the context shaping political and economic reforms, formal and informal institutions, and prospects for political reform.

PSC 6383. Comparative Politics of Latin America. 3 Credits.

Exploration of the democratic advances in Latin America in recent decades as well as the continuing severe social, economic, and political challenges to democracy.

PSC 6388. Topics in Comparative Politics. 3 Credits.

PSC 6390. Politics and Culture. 3 Credits.

Study of the intersection of culture and politics.

PSC 6439. International Political Economy. 3 Credits.

Research seminar exploring alternative theoretical approaches to the study of international political economy and their application to the explanation and interpretation of historical and contemporary events in world political and economic affairs. Primarily for Elliott School degree candidates.

PSC 6440. Theory in International Relations. 3 Credits.

Theories of international relations. Restricted to students in the Elliott School.

PSC 6442. Politics and Practice of International Institutions. 3 Credits.

The politics of international institutions in the areas of collective security, peace keeping, trade, money, development, environment, human rights.

PSC 6444. Politics of International Law. 3 Credits.

The political sources and consequences of international law and norms.

PSC 6456. Origins of Major Wars and Terrorism. 3 Credits.

An examination of the origins of major wars, including terrorism, from the eighteenth to the twentieth centuries from the theoretical perspectives of realism, liberalism, and constructivism/identity.

PSC 6457. Arms Control and Disarmament. 3 Credits.

Major issues and trends in the postwar development of U.S. arms control and disarmament policy.

PSC 6465. The International Politics of Central and Eastern Europe. 3 Credits.

Major historical, political, social, and regional factors that have shaped the interwar, World War II, and postwar evolution of Eastern Europe; emphasis on foreign relations with outside powers and on regional East-West contacts.

PSC 6467. Asian Security. 3 Credits.

An examination of the major issues in Asian Security using various theoretical perspectives involving a mix of political science and policy analysis.

PSC 6475. International Politics of East Asia. 3 Credits.

Foreign policies and international behavior of the regional states (especially China, Japan, and Vietnam) and the extraregional powers (especially the U.S. and Russia).

PSC 6476. The Arab-Israeli Conflict. 3 Credits.

Readings and research on the origins, evolution, and issues of the Arab-Israeli conflict.

PSC 6478. International Relations of the Middle East. 3 Credits.

Readings and research on the regional and international relations of the Middle East.

PSC 6484. International Relations of Latin America. 3 Credits.

The trajectory of Latin America's role in the world, with a particular focus on conflict and cooperation between Latin America and the United States.

PSC 6489. Topics in International Relations. 3 Credits.**PSC 6987. Legal Internship. 3 Credits.**

Study of the interior workings of legal institutions and related organizations through an approved internship with a court, law firm, legal advocacy group, public defender's office, or legal think tank. A research paper is required.

PSC 6996. Reading. 3 Credits.

Written permission of the instructor required prior to enrollment. Restricted to graduate degree candidates.

PSC 6997. Research. 3 Credits.

Written permission of the instructor required prior to enrollment. Restricted to graduate students in the political science program.

PSC 6998. Thesis Research. 3 Credits.**PSC 6999. Thesis Research. 3 Credits.****PSC 8101. Introduction to Empirical Political Analysis. 3 Credits.**

Statistical foundations of empirical political analysis and computer applications. Basic probability theory, exploratory and descriptive data analysis, statistical inference, and introduction to linear regression.

PSC 8102. Empirical Political Analysis. 3 Credits.

Techniques of social science data analysis. Model building, estimation, and interpretation. Linear models and extensions. Introduction to discrete choice models. Prerequisite: PSC 8101 or permission of the instructor.

PSC 8103. Approaches to Policy Analysis. 3 Credits.

Primarily for doctoral students. Empirical and normative foundations of systematic policy analysis: concepts, theories, models, issues, strengths, limitations, and uses and misuses in the policy process.

PSC 8104. Qualitative Research Methods. 3 Credits.

Theoretical, practical, and ethical aspects of conducting qualitative research.

PSC 8105. Readings in Political Theory. 3 Credits.

Selected major works, both ancient and modern, that illuminate basic problems and questions of political theory.

PSC 8106. Topics in Political Theory. 3 Credits.

Advanced readings and group discussions. Analysis and interpretation of selected concepts and schools of thought.

PSC 8107. Modern Political Thought and Ideologies. 3 Credits.

Analysis of some main currents in modern political thought and ideologies.

PSC 8108. Craft of Political Inquiry. 3 Credits.

Logic of inquiry in political science: theories of knowledge, inference, and research methods.

PSC 8109. Dissertation Development Workshop. 3 Credits.

Design and development of dissertation research proposal for political science PhD Students.

PSC 8120. Nonlinear Models. 3 Credits.

Introduction to maximum likelihood estimation interpretation of non-linear statistical models. Statistical inference, appropriate use, and presentation and interpretation of results.

PSC 8121. Causal Inference. 3 Credits.

Tools used in the social sciences to infer causation, including classical experiments, natural experiments, instrumental variables, regression discontinuity, and panel designs. Restricted to students in the PhD in political science program. Prerequisite: PSC 8101.

PSC 8122. Logitudinal Analysis. 3 Credits.

Examination of two classes of statistical models for longitudinal data—(1) models for time-series, cross-sectional and panel data and (2) modeling event history (i.e., duration, survival, hazard).

PSC 8124. Multilevel Modeling. 3 Credits.

Statistical issues and models for multilevel (hierarchical) data structures, including the variance components, random intercept, and random coefficient models. Handling cross-level interactions.

PSC 8128. Surveys and Experiments. 3 Credits.

Design and analysis of sample surveys and experiments, including lab, survey, and field experiments. Restricted to students in the PhD in political science program. Prerequisite: PSC 8101.

PSC 8130. Game Theory I. 3 Credits.

Introduction to the core elements of game theory and how it has been utilized in political science. Applications of formal models to political phenomena and the major insights that have come from this work. Restricted to graduate students in the political science program.

PSC 8131. Game Theory II. 3 Credits.

Builds on the introductory material in Game Theory I to focus on examples of formal work in political science. Students expand their knowledge of advanced games and learn the principles behind exemplary published research. Restricted to graduate students in the political science program.

PSC 8132. Network Analysis. 3 Credits.

Sociological and psychological foundations of network theory; network measurement and inferential tools; applications of these tools and concepts to political science. Restricted to graduate students in the political science program.

PSC 8185. Topics in Empirical and Formal Political Analysis. 3 Credits.

Selected topics in quantitative political methodology and formal political theory with varying emphasis on maximum likelihood estimation, nonlinear models, causal inference, formal theories, and mathematical/computational tools for the social sciences. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PSC 8187. Selected Topics in Political Theory. 3 Credits.

In-depth coverage of significant issues in political theory, including such topics as justice, toleration, and political community. For advanced students.

PSC 8210. American Political Process. 3 Credits.

A survey of American political institutions, processes, and behavior.

PSC 8211. Urban Politics. 3 Credits.

Comparative analysis of the context, institutions, processes, and policies of urban political systems.

PSC 8212. Urban Policy Problems. 3 Credits.

Analysis of public policy issues confronting urban governments; emphasis on the theoretical roots and empirical impact of past and present programs in such areas as housing, education, poverty, and crime.

PSC 8213. Judicial Politics. 3 Credits.

Introduction to the literature of judicial process and behavior studies; specific focus on selected topics. Emphasis on the major subfields of law, courts, and judicial process.

PSC 8215. Law, Politics, and Society. 3 Credits.

Role of the judiciary in policy formulation; emphasis on the U.S. Supreme Court and civil liberties issues.

PSC 8216. American Presidency. 3 Credits.

Personalized and institutionalized aspects of the presidency, with particular emphasis on the politics of contemporary policymaking.

PSC 8217. Executive Branch Politics. 3 Credits.

Structure and operation of governmental bureaucracy with particular emphasis on the politics of formulating and implementing public policy.

PSC 8218. Legislative Politics. 3 Credits.

Theory, structure, and process of the U.S. Congress, with emphasis on member-constituency relations, individual and collective decision making, party and committee activities, executive-legislative relations, and interest-group activities.

PSC 8219. Political Parties and Elections. 3 Credits.

Nature and functions of American political parties: organizational status, nominating and electoral politics, and role in governing.

PSC 8220. Public Opinion and Political Psychology. 3 Credits.

Sources and dynamics of public opinion and political socialization.

PSC 8221. Interest-Group Politics. 3 Credits.

Theory, structure, and activities of interest groups in American politics.

PSC 8226. Politics and Organizations. 3 Credits.

Theoretical approaches to understanding organizational behavior and change; applications to specific political problems in U.S., international, and comparative politics.

PSC 8229. Politics and Public Policy. 3 Credits.

Examination of political processes that influence policy formulation, policy implementation, and the uses of policy analysis.

PSC 8286. Selected Topics in American Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in American politics, including such topics as political behavior, electoral politics, and race and politics. For advanced students. (Offered as the demand warrants).

PSC 8331. Advanced Theories of Comparative Politics. 3 Credits.

Major concepts, methods, and theoretical debates in comparative politics, including cultural, rational, and institutional approaches.

PSC 8333. Political Violence. 3 Credits.

Theoretical and methodological approaches to studying violence, such as civil wars, ethnic riots, suicide bombings, and genocide, and the impact of violence on societies and people. Restricted to graduate students in the political science program.

PSC 8334. Democracy and Democratization in Comparative Perspective. 3 Credits.

Theoretical approaches to processes of democratization. Evaluation of cultural, economic, institutional, and international-actor approaches. Case analysis of recently transitioned or transitioning nations. Primarily for PhD students in political science.

PSC 8337. Theories of Political Development. 3 Credits.

Examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions?.

PSC 8338. Nationalism and Nation-Building. 3 Credits.

Nationalism, ethnic conflict, and nation-building; the effects of nationalism on political identities, state formation, patterns of political violence, definitions of citizenship, migration policies, and voting behavior.

PSC 8340. Authoritarianism and Democratization. 3 Credits.

The political science scholarship on authoritarian regimes, including their institutional features, strategies for survival, and prospects for change.

PSC 8341. Theories of Ethnic Politics. 3 Credits.

Focus on cutting-edge interdisciplinary theories of ethnicity's role in politics. Ethnicity's relationship to democracy, economy, psychology, conflict, and solutions. Cases worldwide.

PSC 8388. Selected Topics in Comparative Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in comparative politics, including such topics as democratization, the politics of development, the role of the state in advanced industrial societies, gender and ethnicity, and the politics of nationalism. (Offered as the demand warrants).

PSC 8441. Advanced Theories of International Politics. 3 Credits.

Perspectives examined range from realism to critical theory and focus upon a variety of explanatory variables.

PSC 8450. Topics in International Relations. 3 Credits.

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PSC 8452. Theories of International Security. 3 Credits.

Focus on conflict in different systems and scenarios and on causes and consequences of different strategies. The role of ethics in international security.

PSC 8453. Advanced Theories of Political Economy. 3 Credits.

Major theories of political economy, from classical perspectives on problems of international cooperation to modern treatments of trade, finance, investment, and regulation.

PSC 8454. Domestic Politics and International Relations. 3 Credits.

Theoretical and empirical approaches to exploring the relationship between domestic politics and international relations. Restricted to PhD students in the political science program and MA students with permission of the instructor.

PSC 8460. Military Intervention. 3 Credits.

Theoretical and empirical approaches to the study of military interventions. The challenges of designing political science research on a complex and policy-relevant topic like military intervention.

PSC 8461. Military Effectiveness. 3 Credits.

Theories of military effectiveness in conventional wars. Case studies of several conflicts and brief exploration of effectiveness in unconventional wars.

PSC 8462. Civil War. 3 Credits.

Theories of causes, conduct, and termination of civil wars. Consideration of violence against civilians, rebel recruitment, counterinsurgency, and civil war outcomes.

PSC 8489. Selected Topics in International Politics. 3 Credits.

In-depth coverage of significant theoretical and empirical issues in international politics, including such topics as comparative foreign policy, ethics and norms in international politics, the politics of military intervention, and theories of security in a post-Cold War environment. For advanced students. (Offered as the demand warrants).

PSC 8997. Advanced Reading. 1-3 Credits.

Advanced reading course. Restricted to doctoral candidates preparing for the general examination.

PSC 8998. Advanced Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

PSC 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

PORTUGUESE (PORT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PORT 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PORT 1001. Basic Portuguese I. 4 Credits.

Handling the immediate context of daily experience in spoken and written Portuguese: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.

PORT 1002. Basic Portuguese II. 4 Credits.

Speaking and writing in Portuguese about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: PORT 1001 . Laboratory fee.

PORT 1003. Intermediate Portuguese I. 3 Credits.

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing). Prerequisite: PORT 1002 . Laboratory fee.

PORT 1004. Intermediate Portuguese II. 3 Credits.

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: PORT 1003 . Laboratory fee.

PORT 1012. Intensive Basic Portuguese. 8 Credits.

Equivalent to PORT 1001 and PORT 1002. Laboratory fee.

PORT 1013. Portuguese for Heritage Speakers. 3 Credits.

Prepares heritage speakers of Portuguese for advanced study in the language beyond the third-year level, including content courses in literature and area studies. Restricted to students who grew up in a Portuguese-speaking environment but have language deficiencies. Prerequisites: Placement examination.

PORT 1099. Variable Topics. 1-36 Credits.**PORT 2005. Composition and Conversation. 3 Credits.**

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: PORT 1004. Laboratory fee.

PORT 2006. Applied Portuguese Grammar. 3 Credits.

Intensive study of Portuguese grammatical construction in oral and written form, including consideration of relationships across the history of the language and its grammar, linguistics, and dialectology. Prerequisite: PORT 2005.

PORT 2010. Accelerated Portuguese for Spanish Speakers I. 3 Credits.

First in a two-course sequence. Designed for speakers of Spanish who wish to develop competence in spoken and written Portuguese at an accelerated pace. Prerequisites: SPAN 1014 or SPAN 1034.

PORT 2011. Accelerated Portuguese for Spanish Speakers II. 3 Credits.

Second in a two-course sequence. Designed for speakers of Spanish who wish to develop competence in spoken and written Portuguese at an accelerated pace. Prerequisite: PORT 2010.

PORT 3100. The Lusophone Atlantic World. 3 Credits.

A wide-ranging cross-cultural examination of the Portuguese-speaking Atlantic world, which includes extensive areas of the Americas and West Africa. How Lusophone Atlantic populations relate to those of other areas, such as Mozambique and former Portuguese India, where Portuguese-based Creoles are or were spoken. Prerequisites: PORT 2006 or permission of the instructor.

PORT 3101. Culture and Civilization of the Sephardim. 3 Credits.

Focus on the cultural and religious background of the Jews of Spain and Portugal both before and since their expulsion/forced conversion in the late fifteenth century. Narrative and documentary histories from Sephardic cultures in the Iberian Peninsula and in the Diaspora are discussed. Prerequisites: PORT 2006 or permission of the instructor.

PORT 3600. Topics in Lusophone Literature and Culture. 3 Credits.

May be repeated for credit provided the topic differs. Prerequisites: PORT 2006 or permission of the instructor.

PORT 4800. Independent Study. 1-3 Credits.**PORT 5099. Variable Topics. 1-99 Credits.**

PROFESSIONAL PSYCHOLOGY (PSYD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSYD 5099. Variable Topics. 1-99 Credits.**PSYD 6201. Multi-disciplinary LGBT Health. 2-3 Credits.**

An intersectional approach to examining LGBT health and well-being through exploring mechanisms by which social mistreatment of LGBT people affects health behaviors and outcomes; how health care setting affect LGBT health at population and individual levels and how providers can improve in this domain; and specific illnesses and medical processes that concern members of these groups.

PSYD 6202. LGBT Mental Health. 2-3 Credits.

Topics in LGBT psychological and identity development; mental health issues specific to LGBT communities; how LGBT identity can shape experiences of mental health services; effective approaches to LGBT mental health care; and mental health promotion in LGBT communities. Issues of the intersection between LGBT identity, other minority identities, and demographic variables.

PSYD 6203. LGBT Health Policy. 2-3 Credits.

LGBT health policy with a focus on skill-building in policy analysis, effective communication, and advocacy to explore ways in which advocates can shape experiences of the health system and related professional settings to better meet the LGBT community's needs.

PSYD 6210. LGBT Health Capstone Research. 0 Credits.

Students enrolling in PSYD 6211 in the spring semester of any academic year must enroll in this course in the immediately preceding summer session and fall semester. No academic credit is given for this course. Restricted to students in the graduate certificate in LGBT health policy and practice program.

PSYD 6211. LGBT Health Capstone. 3 Credits.

Students work with faculty mentors to conceive of, design, and develop an implementation and evaluation plan for a project, innovation, or work product in their place of employment, other sponsoring organization, or community setting with the purpose of advancing the health of LGBT persons in a real world context. Students work in consultation with mentors in summer and spring residency periods with distance and in-the-field completion of the project throughout the program year. The prerequisite courses may be taken as co-requisites. Restricted to students in the graduate certificate in LGBT health policy and practice program. Prerequisites: PSYD 6201, PSYD 6202 and PSYD 6203.

PSYD 6221. Topics in LGBT Health. 1-3 Credits.

Contemporary, trans-affirmative perspectives on the health, mental health, and policy needs of transgender persons and their communities. Topics vary by semester. May be repeated for credit provided topic differs. See program for details. Restricted to students in the graduate certificate in LGBT health policy and practice program or with the permission of the instructor.

PSYD 8201. Psychological Assessment. 3 Credits.

Cognitive and projective testing, focusing on core batteries used in intellectual and personality assessment. Laboratory fee.

PSYD 8202. Psychological Assessment. 3 Credits.

Continuation of PSYD 8201. Cognitive and projective testing, focusing on core batteries used in intellectual and personality assessment. Laboratory fee.

PSYD 8203. Practicum in Clinical Psychology. 3 Credits.

A continuing practicum, repeated in each semester and summer of the program's three years. In year one, focused on psychological assessment; in upper years, on psychological intervention related to the student's choice of area.

PSYD 8204. Biological Bases of Clinical Psychology. 3 Credits.

The structure and function of the nervous system and its application to understanding psychopathology. Development of the nervous system in interaction with learning and experience as a central basis of human growth and disability.

PSYD 8205. Psychodynamic Psychopathology. 3 Credits.

The developmental psychodynamic basis for understanding psychopathology, with comparisons to relevant biological and social explanatory factors.

PSYD 8206. Cognitive Bases of Clinical Psychology. 3 Credits.

The theoretical and experimental basis of learning, memory, and cognition. Cognitive growth, maturation, and learning. Cognitive processes in relation to the understanding of psychopathology.

PSYD 8207. Group and Organizational Dynamics. 3 Credits.

Social aspects of adaptive and maladaptive dynamic patterns; group structure and the individual; shared unconscious ideas in wish and defense; small, large, and intergroup (community) dynamics and intervention.

PSYD 8209. Statistics and Research Design. 3 Credits.

The role of measurement, design, and statistics in clinical psychological research; basic descriptive and inferential statistics; analysis of variance and multivariate designs; case study designs; clinical field research.

PSYD 8210. Professional Issues. 3 Credits.

The legal and ethical issues in the conduct of professional psychology, including confidentiality, ethical competence, privilege, expert testimony, malpractice, and the insanity defense. Business and ethical issues concerning private practice, licensing, certification, forensics, and insurance reimbursement.

PSYD 8220. Psychodynamic Psychotherapy I. 3 Credits.

Clinical theories, research, techniques, therapeutic action, and ethics. Ego supportive psychotherapy; psychodynamic formulations; object relational and self-psychological perspectives.

PSYD 8221. Psychodynamic Psychotherapy II. 3 Credits.

Continuation of PSYD 8220. Clinical theories, research, techniques, therapeutic action, and ethics. Exploratory psychotherapy; process and outcome; issues of race, class, ethnicity, gender, and sexuality.

PSYD 8222. Behavioral-Cognitive Therapies. 3 Credits.

Theoretical and clinical approaches to understanding and modifying behavior, affect, and thought from behavioral and cognitive perspectives. History and development of these perspectives; current work on psychotherapy integration across varying therapeutic approaches.

PSYD 8225. Theories of Mind. 3 Credits.

Consideration of several major contemporary schools of psychodynamic mental functioning, including ego psychology, self psychology, object relations theory, and relational perspectives. Formulation skills are built throughout the semester.

PSYD 8226. Ego Psychology/Object Relations Theory. 3 Credits.

Consideration of several major contemporary schools of psychodynamic mental functioning—ego psychology, self psychology, object relations theory, and relational perspectives.

PSYD 8227. History and Systems of Clinical Psychology. 3 Credits.

A review of the historical development of clinical psychology—its roots in mainstream psychology and psychiatry and its modern technical and theoretical systems.

PSYD 8231. Short-Term Psychotherapy. 3 Credits.

A study of brief psychodynamically oriented psychotherapy interventions. Focus on clinical vignettes.

PSYD 8240. Group Psychotherapy. 3 Credits.

Theory and technique in group psychotherapy; history of group therapy and group analysis; current controversies in the field.

PSYD 8244. Cultural Factors-Psychopath/Th. 3 Credits.**PSYD 8246. Community Intervention. 3 Credits.**

Consultation theory and practice related to social service, health, educational, and other not-for-profit organizations. Managing change and action plans.

PSYD 8250. Neuropsychological Assessment. 3 Credits.

Theory and practice of neuropsychological assessment. History and development of the field. Major batteries, individualized approaches, and specialized tests.

PSYD 8251. Advanced Psychodynamic Assessment. 3 Credits.

Recent trends in projective testing; Lerner and Lerner, Schafer, Allison and Blatt, Kwawer, Sugarman, Exner.

PSYD 8252. Child and Adolescent Assessment. 3 Credits.

Case seminar with clinical presentations, focused on the core clinical battery. Problems of differential diagnosis between neuropsychological hypotheses and conflict-based hypotheses.

PSYD 8255. Forensic Assessment. 3 Credits.

Overview of the professional standards and ethics guidelines for forensic evaluations. The psychological assessment of criminal cases, the role of the psychologist in expert testimony, and concepts and principles of law encountered in the forensic evaluation process. The role of theory and research in the criminal evaluation process.

PSYD 8256. Forensic Clinical Psychology. 3 Credits.

Overview of the intersection of American legal and mental health systems; legal and psychological concepts of competence, insanity and dangerousness to self and others; the role of the expert witness and ethics of the mental health professional in legal settings. Restricted to doctoral students in the psychology or professional psychology programs.

PSYD 8260. Child Development. 3 Credits.

Cognitive and emotional factors in the development of normal and abnormal personality dynamics in children and adolescents: experiential and maturational aspects, learning disabilities, the development of conflict and compromise formations; the relevance of child development to adult psychodynamics and psychotherapy.

PSYD 8261. Life Span Development. 3 Credits.

Survey of the study of human development. Major theories of human development, programs of developmental research, and perspectives on specific populations across the life span. Applications to clinical practice and issues pertaining to diversity.

PSYD 8262. Child and Adolescent Psychotherapy. 3 Credits.

Case seminar on child and adolescent treatment. Biological and psychological treatments; intensive vs. short term; conceptualizations of play therapy; differences from adult techniques.

PSYD 8264. Child and Adolescent Psychopathology. 3 Credits.

Theory and research on child and adolescent psychopathology. The development of diagnostic categories and their relevance to psychodynamic viewpoints.

PSYD 8265. Family Therapy. 3 Credits.

Survey of classical and modern theories of family structure and therapy. History and development of the field. Major schools and current controversies.

PSYD 8266. Clinical Intervention in Schools. 3 Credits.

Theory and practice of clinical psychological interventions in schools. Testing, observation, consultation.

PSYD 8267. Advanced Child Psychotherapy. 3 Credits.

Technical approaches to selected clinical problems and populations. Trauma, physical and sexual abuse, problems in learning and attention, gender identity disorder, behavior problems, adoption, and divorce. Coordination of developmental and therapeutic processes, and collateral work with parents.

PSYD 8270. Current Topics in Clinical Psychology. 12 Credits.

May be repeated for credit provided the topic differs.

PSYD 8271. Independent Study. 1-12 Credits.

PSYD 8273. Major Area Paper. 1 Credit.

Major Area Paper Research. May be repeated for credit. Restricted to graduate students in the professional psychology program.

PSYD 8280. Issues in Gender Development. 3 Credits.

Studies of similarities and differences in male and female gender development and sexual object choice. Recent theoretical and clinical contributions. Readings in Freud, Fast, Mayer, Stoller, Tyson and Tyson, Kleeman, Chassaguet-Smirgel, Kaplan, and Friedman.

PSYD 8281. Substance Use and Addiction. 3 Credits.

Examination of substance use disorder and behavioral addictions, such as gambling and pornography, viewed through the lens of relational psychoanalytic, attachment, and other theoretical orientations; therapeutic approaches with this population. Restricted to doctoral students in the psychology and professional psychology programs.

PSYD 8290. Clinical Procedures. 0 Credits.

PSYD 8291. Clinical Procedures. 0 Credits.

Practical application of clinical skills in the program clinic supervised by licensed clinical psychologists. Restricted to graduate students in the professional psychology program.

PROFESSIONAL STUDIES ADVOCACY IN THE GLOBAL ENVIRONMENT (PSAD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSAD 5099. Variable Topics. 1-99 Credits.

PSAD 6200. Global Perspective Residencies. 3,6 Credits.

Residencies focused on understanding how successful approaches to advocacy vary around the world.

PSAD 6225. Fundamentals of Global Political Management. 3 Credits.

The theory, practice, and development of global political management. The impact on governance in regions and in nation states, including campaign strategy, issues development to impact election outcomes, impacting public opinion in regions and countries, beginning elements of building coalitions, and the global development of political management as a field and as a profession. The role of political managers in nation states and their insights from practical experience. Multinational corporations, NGOs, international governing bodies, and global activism.

PSAD 6240. Global Advocacy: Strategies, Tools, and Tactics. 3 Credits.

The current state of global advocacy and analysis of strategic models. Consideration of which advocacy tools are best used for specific tasks and how they can be applied around the globe. Specific advocacy tools and techniques that maximize success in regions and countries. Students choose either PSAD 6240 or PSAD 6270, depending on their chosen program emphasis; credit cannot be earned for both courses. Credit cannot be earned for this course and PSAD 6270.

PSAD 6250. Cultural Aspects of Global Engagement. 3 Credits.

Focus on understanding multicultural communities and diverse institutions, customs, and practices. The course is developed to prepare students for effective and ethical public engagement on behalf of global organizations, communicating issues and commitments to diverse audiences and the general market. From a base of cultural understanding, students consider effective engagement strategies and techniques. Global case studies with multicultural viewpoints.

PSAD 6260. Comparative Political Management Environments. 3 Credits.

The operating rules, customs, and processes by which laws are enacted and regulations written in countries around the globe. The multitude of governance systems and the realm of influencers around the globe. The varied systems within which legislators, administrators, bureaucracies, and stakeholder's work. Students are expected to master the rules and procedures of at least one government, understand basic negotiation, and draw comparisons between nations or regions.

PSAD 6270. International Public Relations and Global Advocacy. 3 Credits.

How global public relations strategies are developed and implemented to support advocacy efforts. Case studies of successes and failures. Consideration of communications theories that enable insight into challenges arising from differences in language, culture, politics, and economics worldwide. Students develop, implement, and assess a comprehensive global public relations strategy that includes social media technologies. Students choose either PSAD 6240 or PSAD 6270, depending upon their chosen program emphasis; credit cannot be earned for both courses. Credit cannot be earned for this course and PSAD 6240.

PROFESSIONAL STUDIES CYBERSECURITY STRATEGY AND INFORMATION MANAGEMENT (PSCS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSCS 2101. Writing and Communication in a Technical Field. 4 Credits.

The fundamentals of reading and writing with a clear sense of purpose and audience. How academic writing in virtually any subject area and on virtually any topic represents a formal engagement with larger scholarly debates. The writing process, including prewriting, drafting, and revision as well as basic research methods. Making clear oral presentations. (Same as PSIS 2101).

PSCS 2102. Fundamentals of Information Technology and Computing. 4 Credits.

Basic concepts of programming including elementary data types (numeric types, strings, lists, and files), control flow, functions, objects, loops, and methods are covered. Designing, maintaining, and implementing programs in a modern programming language. (Same as PSIS 2105).

PSCS 2301. Cyber Investigation. 4 Credits.

The investigative framework and tools needed for the investigation of cyber crime. Crimes that involve computer technology; procedural and tactical issues associated with the prosecution of cyber crime.

PSCS 2302. Digital Forensics. 4 Credits.

An introduction to digital forensic science and the systematic process of acquiring, authenticating, and analyzing digital evidence. Forensic methods and laboratories; tools, techniques, and methods used to perform computer forensics and investigation; and emerging technologies. Theoretical and practical experience using forensic equipment and software.

PSCS 2303. Compliance and Risk Management. 4 Credits.

Data protection from a risk management perspective. Data retention; security and protection technologies; technology requirements for compliance, governance, and data security; the importance of e-discovery for civil litigation; the impact of third-party services in conjunction with data protection; and data processing facets, such as the role of tiering and server and storage virtualization.

PSCS 2304. Incident Response. 4 Credits.

Principles and techniques for detecting and responding to current and emerging computer security threats. Data breaches, advanced malware, and targeted attacks. Law and policy related to incident response.

PSCS 2305. Practicum: Incident Response Techniques. 2 Credits.

Students integrate and apply acquired knowledge and technical skills in computer laboratory settings with a focus on cyber investigation and incident response techniques.

PSCS 3100. Principles of Cybersecurity. 4 Credits.

Basic principles and concepts in information security and information assurance; technical, operational, and organizational issues of securing information systems.

PSCS 3103. Ethics, Law, and Policy. 4 Credits.

Overview of ethical, legal and policy issues related to the impact of modern technology on society; ethical theories and decision making, professional responsibility and codes of ethics, copyright and intellectual property, information accountability, freedom of information and privacy, the Internet and considerations associated with information sharing and social networking.

PSCS 3107. IP Security and VPN Technology. 4 Credits.

Risks associated with an organization's network being connected to the public Internet; defensive technologies, types of encryption, enterprise firewalls, intrusion detection/prevention, and access control technologies; active threat agents and exploitation techniques used to compromise the digital infrastructure.

PSCS 3109. Network Security. 4 Credits.

Security aspects of networks and network technology; intrusion detection, virtual private networks (VPN), and firewalls; types of security threats, security policy design and management; and security technologies, products, and solutions.

PSCS 3111. Information Technology Security System Audits. 4 Credits.

Theory, methodology, and procedures related to IT system audits; proper audit procedures for discovering system vulnerabilities; documenting findings according to the standards of compliance based auditing.

PSCS 3113. Topics in IT Security Defense Countermeasures. 4 Credits.

Theory, methodology, and practical experience relating to IT defense countermeasures; system vulnerabilities and how adversaries can exploit them. Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

PSCS 3117. Project Management in Information Technology. 4 Credits.

Concepts and basic functions of the project management body of knowledge, including scope, quality, time, cost, risk, procurement, human resource, and communication management and integration of these functions into a project management system; roles and responsibilities of various project staff.

PSCS 4102. Intrusion Detection and Vulnerability Management. 4 Credits.

The use of intrusion detection systems (IDS) as part of an organization's overall security mechanisms; implementation and testing of IDS security plans, security monitoring, intrusion detection, alarm management, analysis of events and trends, and vulnerability management.

PSCS 4103. Securing Operating Systems. 4 Credits.

The security techniques and technologies integrated into Microsoft operating systems, which are a frequent target of attacks; primary threats and protection mechanisms developed by Microsoft and others; tools used to defend against known risks and vulnerabilities; client and server operating systems, OS hardening, application security, and Active Directory.

PSCS 4104. Securing Network Devices. 4 Credits.

Key network components and devices that need to be secured in order to protect networks from attack; practical and theoretical perspectives on network protection technologies; weaknesses and vulnerabilities; mitigation strategies; viruses, worms and other threats.

PSCS 4105. Cyber Defense Techniques Practicum. 2 Credits.

Working with cybersecurity experts and other qualified computer laboratory personnel, students integrate, apply, and strengthen acquired knowledge and technical skills in laboratory settings.

PSCS 4110. Data Communication and Networking Technologies. 4 Credits.

Overview of the networking technologies deployed by modern enterprises. Hardware and software used to transfer information from source to destination, including switches, routers, firewalls, Ethernet, and the TCP/IP protocols suite. (Same as PSIS 4141).

PSCS 4190. Capstone Project. 4 Credits.

Students use the knowledge and skills acquired throughout the program to conduct significant, independent research or work on a real-life project relevant to their interest in the security field. (Same as PSIS 4190).

PSCS 4201. Cyber Threats and Exploitations Analysis. 4 Credits.

This course will focus on identifying, managing and mitigating cyber threats that an organization could face at any given time. Current and emerging cyber threats will be discussed and examples from real cyber attacks will be analyzed. Students will use various threat modeling tools and cyber intelligence techniques to simulate real counter-threat designs.

PSCS 4202. Cyber Attack Tools and Techniques. 4 Credits.

Linux-based introduction to traditional and contemporary attack tools and technologies used by threat actors. Constructing an effective computer network defense.

PSCS 4203. Analysis of the Intelligence Cycle. 4 Credits.

The intelligence cycle and sources. Target modeling and organizational analysis; quantitative and predictive techniques. The role of intelligence collectors, consumers, and analysts in developing a conceptual model of the intelligence target.

PSCS 4204. Computer Network Attack and Exploitation. 4 Credits.

Cyber attacks orchestrated by computer networks to distract, deny, degrade, or destroy other computer networks or information within large computer systems. Developing standardized attack scenarios to be used against specific targets and providing operational planning to conduct network attacks.

PSCS 4205. Practicum: Cyber Attack Techniques. 2 Credits.

Students integrate and apply acquired knowledge and technical skills in computer laboratory settings. Various cyber attack tools and techniques, including penetration testing and ethical hacking.

PSCS 6244. Information Systems Protection. 3 Credits.

Major areas of information security, including risk management, cybercrime, cyber conflict, and the technologies involved in both cyber attacks and information systems protection; root causes of insecurity in information systems and the processes involved in creating, implementing, and maintaining an information security program. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6245. Cybersecurity Law and Policy. 3 Credits.

Law and policy perspectives on the federal government's response to cyber threats; legal concepts relating to investigation and enforcement activities; application of traditional laws of armed conflict in cyberspace; and national security concerns. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6246. Cyber Intelligence and Strategic Analysis. 3 Credits.

National and international cyber strategies, law, and policy as they relate to cyber intelligence efforts with a review of current cyber threats to national security; identification of strategic, operational, and tactical cyber intelligence efforts, the cyber threat landscape, and intelligence-led policing relative to cyber enforcement and investigation. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6247. Cyber Defense Strategy. 3 Credits.

The fundamentals of cyber defense strategy; understanding the organization's threatscape and building a threat matrix to prioritize and monetize cyber security defense needs; creating a sound cyber defense strategy through efficient use of known security management practices and establishing a management program to implement the defense strategy. Restricted to students in the MPS in CSIM program or with the permission of the instructor. Prerequisite: None.

PSCS 6248. Introduction to Cyber Conflict. 3 Credits.

The emerging concept of cyber conflict, its history over the last 25 years, and its integration into government and military strategies; technical, tactical, and strategic use of information technology between state and non-state actors; cyber conflict as an evolving phenomenon. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6255. Information Management for Justice and Public Safety Professionals. 3 Credits.

Application of information management techniques to justice and public safety fields; governance structure, emerging modes of communication within and outside organizations, and processes that enable managers to make timely decisions. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6256. Application of Technology to Data Analytics. 3 Credits.

Strategic application of technology to data analysis; introduction to leading edge software, including predictive and spatial analytics; principles of data visualization and application of analytics and visualization to solving justice and public safety problems; data collection, analysis, and production of usable information output. Restricted to students in the MPS in cybersecurity strategy and information management program.

PSCS 6257. Enterprise Architecture and Standards. 3 Credits.

Current and emerging trends in enterprise architecture domains; technology environments, including software, hardware, networks, applications, data, communications, and other relevant architecture disciplines; service-oriented architecture and similar innovations; conventions, principles, and practices for creating enterprise architectures; contemporary standards-based architectures for system development; industry guidelines and standards. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6258. Information Sharing and Safeguarding. 3 Credits.

Key principles of privacy and safeguarding of information; how information is shared among government agencies, outside the federal government, and between the government and the private sector. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6259. Strategic Information Technology Investment and Performance Management. 3 Credits.

The effective use of information technology within organizations; integration of IT in business processes, performance measurement, cost benefits analysis, and program evaluation; cross-disciplinary and comprehensive with examples from federal, justice and public safety, and industry organizations. Restricted to students in the MPS in CSIM program or with the permission of the instructor.

PSCS 6260. Methods of Analysis in Security. 3 Credits.

Methods and problems of data collection in security fields with a focus on cybersecurity related issues and readings; analytical design, instrument utilization, sampling, and measurement; data analysis techniques. Restricted to students in the MPS in CSIM program.

PSCS 6270. Capstone Project. 3 Credits.

Designed to help participants refine their conception of leadership in and knowledge of the cybersecurity field. Students must have completed the MPS in CSIM program curriculum before enrolling in this course. Restricted to students in the MPS in CSIM program.

PROFESSIONAL STUDIES HEALTH CARE CORPORATE COMPLIANCE (PSHC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSHC 5099. Variable Topics. 1-99 Credits.

PSHC 6201. Introduction to Health Care Corporate Compliance. 3 Credits.

PSHC 6202. Compliance with Laws and Regulations I. 3 Credits.

Issues of governance and corporate responsibility, anti-kickback and antitrust law, Civil False Claims Act, emergency medical treatment, and enforcement initiatives.

PSHC 6203. Case Studies in Health Care Corporate Compliance. 3 Credits.

Case study approach to investigation and analysis of compliance issues. Application of principles and diagnostic and remediation skills to real-world situations. Prerequisite: PSHC 6202.

PSHC 6204. Compliance with Laws and Regulations II. 3 Credits.

Issues of governance and corporate responsibility, HIPPA compliance and enforcement, federal tax law, Stark law, Sherman Act, Clayton Act, antitrust enforcement policy in health care. Corequisite: PSHC 6206. Prerequisites: PSHC 6201 and PSHC 6202.

PSHC 6206. Case Studies in Health Care Corporate Compliance. 3 Credits.

Case study approach to investigation and analysis of compliance issues. Application of principles and diagnostic and remediation skills to real-world situations. Corequisite: PSHC 6204. Prerequisites: PSHC 6201 and PSHC 6202.

PROFESSIONAL STUDIES HOMELAND SECURITY (PSHS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSHS 3150. Transnational Threats and Security. 4 Credits.

Understanding global threats to U.S. national security interests and potential responses. How criminal groups, terror organizations, and gangs operate on a global scale. Questions long-held legal norms such as the rule of law and sovereignty. Restricted to student in the BPS in homeland security program. Prerequisites: N/A.

PSHS 3151. Combating Domestic Terrorism. 4 Credits.

Provides an in-depth look at methods used to conduct attacks within U.S. borders. Topics include lone wolf, directed and coordinated attacks. Restricted to students in the BPS in homeland security program.

PSHS 3152. Cyber Terrorism. 4 Credits.

Analysis of tactics used effectively by cyber terrorists via the internet and social media platforms to spread propaganda and radicalize and recruit individuals to fight for their causes. Restricted to student in the BPS in homeland security program.

PSHS 3160. Crisis and Emergency Planning. 4 Credits.

Presents an all-hazards approach to crisis and emergency planning. Starting with the strategic assessment of common man-made and natural hazards, students examine planning strategies in the urban environment, the incident command system (ICS), and industry standards for response and recovery operations. Restricted to students in the BPS in homeland security program.

PSHS 3161. Intelligence Data Analysis. 4 Credits.

The intelligence cycle and explains many of the issues relating to the use of criminal intelligence for the purpose of securing the homeland. Restricted to students the BPS in homeland security program.

PSHS 3162. Crime Scene Investigation. 4 Credits.

Basic considerations, guidelines, and procedures that help investigating police officers avoid oversight, ensure thoroughness of the search, and comply with legal and scientific principles in the identification, collection, and transportation of physical evidence. Restricted to students in the BPS in homeland security program.

PSHS 3170. Infrastructure Protection. 4 Credits.

Specific security measures that may be used to protect critical infrastructure, public facilities, public gatherings, and open spaces. Restricted to students in the BPS in homeland security program.

PSHS 3171. Introduction to Forensic Science. 4 Credits.

Forensics and its role in criminal investigations. Physical evidence collection and preservation techniques; how different disciplines intersect with crime investigations; and courtroom procedures related to the legal use of scientific evidence. Restricted to students in the BPS in homeland security program.

PSHS 3172. Computer Crime Investigation. 4 Credits.

Introduction to the investigation of computer-based crimes and its importance to the law enforcement community on a transnational level. Review of the history of computer crime, associated terminology, and the types of crimes committed in cyberspace. Restricted to students in the BPS in homeland security and BPS in police and security studies programs.

PSHS 4180. Security Threat Assessments. 4 Credits.

Identification of security vulnerabilities of specific critical infrastructure. Identifying international, domestic, and cyber threats, analyzing intelligence data, and applying this information to a security threat assessment. Restricted to students in the BPS in homeland security program.

PSHS 4181. Incident Management. 4 Credits.

Introduction to basic concepts in management of critical incidents; its historical birth in wildland firefighting and its rebirth and reformation in the aftermath of 9/11 in Homeland Security Presidential Directive #5 (HSPD-5). Successes and failures in incident management and their implications in shaping future processes and procedures. Restricted to students in the BPS in homeland security and BPS in police and security studies programs.

PSHS 4182. Emergency Public Health Issues. 4 Credits.

Comprehensive introduction to public health emergency preparedness and response, including bioterrorism threats and events. Recognizing, responding to, and managing natural and unnatural public health emergencies. Restricted to students in the BPS in homeland security program.

PSHS 4190. Capstone Project. 4 Credits.

Application of the knowledge, skills, and abilities acquired in the BPS in homeland security program. Conduct case study involving a high-profile criminal case, perform independent analysis of the case, and prepare a written report and presentation. Restricted to student in the BPS in homeland security and BPS in police and security studies programs.

PSHS 4191. Ethical Dilemmas in Policing. 4 Credits.

Issues related to use of force, misconduct, and corruption. The historical foundation of ethics and moral philosophy. Restricted to students in the BPS in homeland security and BPS police and security studies programs.

PSHS 4192. Media, Public Relations, and Crisis Communication. 4 Credits.

Best practices for interacting with the media and other key stakeholders, spokesperson techniques for communicating during a crisis situation, and strategic messaging. Restricted to students in the BPS in homeland security program.

PSHS 6240. Political Violence and Terrorism. 3 Credits.

The evolution of terrorism and politically motivated violence; causes and origins in regional, national, and international terrorist and insurgent groups and so-called terrorist states; trends in terrorist modus operandi, including asymmetric attacks; formulating effective counterterrorist strategies. Restricted to students in the MPS in homeland security program.

PSHS 6241. Globalization of Threats and International Security. 3 Credits.

The intersection of globalization and national and international security; how globalization may create new threats while amplifying existing threats; the relationship of specific forms of globalized threat to globalization; responses of states and non-state actors to such threats; the role of international organizations. Restricted to students in the MPS in homeland security program.

PSHS 6242. Security and Civil Liberties. 3 Credits.

Examination of U.S. government activities designed to protect the security of American citizens while balancing those interests against citizens' civil liberties; limitations placed on government activities by the First and Fourth Amendments of the Constitution; complexities associated with the characterization of criminals and terrorists. Restricted to students in the MPS in homeland security program.

PSHS 6243. Intelligence and Strategic Analysis. 3 Credits.

The structure and components of the national intelligence community and law enforcement communities; international intelligence comparison; analysis of intelligence policies and strategies at the international, national, and regional levels. Restricted to students in the MPS in homeland security program.

PSHS 6244. Information Systems Protection. 3 Credits.

Exploration of the major areas of information security including risk management, cybercrime, cyberconflict, and the technologies involved in both cyberattacks and information systems protection; creating, implementing, and maintaining an information security program; root causes of insecurity in information systems.

PSHS 6250. Strategic Planning and Budgeting. 3 Credits.

The adaptation of strategic planning and performance measures beyond budgeting by government agencies dealing with long-term security issues; integrative approach to strategic planning and management, focusing on the implementation, evaluation, and oversight of strategy and policy; development of budgets, accountability plans, and risk management to ensure compliance with stated goals; analytical tools and techniques that inform organizational strategies and actions. Restricted to students in the MPS in homeland security program.

PSHS 6251. Inter-Agency Cooperation. 3 Credits.

In-depth study of interagency cooperation issues relevant to the U.S. Department of Homeland Security's organizational structure; cooperative initiatives through mutual assistance agreements and regional, national, and international structures; technology interoperability, legal, and interorganizational challenges. Restricted to students in the MPS in homeland security program.

PSHS 6252. Emergency Management and Crisis Communication. 3 Credits.

The role of crisis communications in the overall management of emergency operations; critical communications tasks, functions, and operations of the emergency operations center, incident command, and associated emergency personnel; strategies and tactics to enhance and promote effective crisis communications among government emergency managers. Restricted to students in the MPS in homeland security program.

PSHS 6253. Managing the Politics of Leadership. 3 Credits.

The role of power and influence in organizations; complexity and challenges of developing political strategies and mobilizing the political support and resources needed to implement objectives. Restricted to students in the MPS in homeland security program.

PSHS 6254. Strategic Change Management. 3 Credits.

The challenges, techniques, burdens, and successes associated with initiating and implementing major change within organizations; the process of organizational change from multiple theoretical perspectives. Restricted to students in the MPS in homeland security program.

PSHS 6260. Methods of Analysis in Security. 3 Credits.

Methods and problems of data collection in security fields; analytical design, instrument utilization, sampling, and measurement; data analysis techniques. Restricted to students in the MPS in homeland security program.

PSHS 6270. Capstone Project. 3 Credits.

Students refine their conception of leadership and knowledge of the homeland security field. Participants experience leadership in action and enhance independent learning while working in both small and large group dynamics. Restricted to students enrolled in the PSHS cohort. Prerequisites: All the curriculum in the PSHS must be completed before registering for this course.

PROFESSIONAL STUDIES INTEGRATED INFORMATION, SCIENCE, AND TECHNOLOGY (PSIS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSIS 2101. Writing and Communication in the IT Field I. 4 Credits.

Fundamentals of reading and writing with a clear sense of purpose and audience; how academic writing represents a formal engagement with larger scholarly debates; the writing process, including prewriting, drafting, and revision as well as basic research methods; making clear oral presentations.

PSIS 2102. Writing and Communication in the IT Field II. 4 Credits.

Continuation of PSIS 2101. The research and composition process; subject-specific citation style and research methodologies; and sustaining a cohesive argument over the course of an extended scholarly paper.

PSIS 2103. Statistical Sciences and Data Analysis I. 4 Credits.

Basic methods of descriptive statistics. Topics include displaying and describing data, the normal distribution, measure of center, simple linear regression, and probability theory.

PSIS 2104. Statistical Sciences and Data Analysis II. 4 Credits.

Advanced topics in statistics, including confidence intervals, hypothesis testing, inference, correlation, and multiple regression.

PSIS 2105. Programming and Computing Foundations I. 4 Credits.

Introduction to computer programming using Python. Elementary data types, control flow, assignments, functions, loops, conditionals, and methods.

PSIS 2106. Programming and Computing Foundations II. 4 Credits.

Advanced topics in computing using Python; object-oriented programming, class construction, working with APIs, text files, and databases.

PSIS 3122. Ethics in Science and Technology. 4 Credits.

Overview of contemporary ethical debates in the realm of science and information technology with a philosophically-informed logical framework for engaging with these debates.

PSIS 3123. Legislative Affairs and Governmental Procedures. 4 Credits.**PSIS 4131. Molecular Biology for Biotechnology. 4 Credits.****PSIS 4132. Phys Principles of Biotech. 4 Credits.****PSIS 4133. Bioinformatics. 4 Credits.****PSIS 4134. Biophysics in Life Sciences. 4 Credits.****PSIS 4135. Computational Modeling. 4 Credits.****PSIS 4136. Introduction to Biomedical Instrumentation. 4 Credits.****PSIS 4137. Alternative Energy Sources. 4 Credits.****PSIS 4138. Introduction to Health Information Technology. 4 Credits.**

Current and emerging health care information technologies, the policies involved in the delivery of health care and health IT, and the people and the processes that support the delivery of health care. Restricted to students in the BPS in integrated information science and technology program.

PSIS 4141. Computer and Telecommunication Networks. 4 Credits.**PSIS 4142. Relational Databases and Their Design. 4 Credits.**

PSIS 4143. Systems Integration. 4 Credits.

PSIS 4144. Information and Network Security. 4 Credits.

PSIS 4145. Software Systems Development Processes. 4 Credits.

PSIS 4151. Entrepreneurship and Communication Technology. 4 Credits.

PSIS 4152. Entrepreneurship and Technology Venture Creation. 4 Credits.

PSIS 4160. Introduction to Data Science. 4 Credits.

Techniques used to understand, process, represent, and interpret large sets of data; fundamental concepts and abstractions used in data analysis; practical techniques employed by data scientists on a daily basis. Restricted to program majors. Prerequisites: PSIS 2103 and PSIS 2105.

PSIS 4161. Data Visualization. 4 Credits.

Data visualization fundamentals; theoretical and practical concepts related to creating visually appealing graphics using data; current and emerging software and web development tools. Restricted to students in the BPS in IIST program. Prerequisite: PSIS 2105.

PSIS 4162. Data Mining and Web Analytics. 4 Credits.

Data mining techniques for structured and unstructured data; pattern discovery, text mining and natural language processing, cluster and sentiment analysis, and web scraping and analytics. Restricted to Major only. Prerequisites: PSIS 2105 and PSIS 2106.

PSIS 4190. Capstone Project and Senior Thesis. 4 Credits.

PSIS 4191. Capstone Project and Senior Thesis I. 2 Credits.

The capstone project allows either the conduct of significant independent research or the design and implementation of a real-world project. Either choice is a means for students to use the knowledge and skills they have acquired throughout the program. For most students, the capstone project can showcase their skills via a comprehensive written report or a portfolio that can be presented to future employers.

PSIS 4192. Capstone Project and Senior Thesis II. 2 Credits.

PSIS 4195. Undergraduate Research. 1-4 Credits.

PSIS 4199. Special Topics. 2-4 Credits.

PSIS 5099. Variable Topics. 1-99 Credits.

PROFESSIONAL STUDIES LANDSCAPE DESIGN (PSLD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLD 5099. Variable Topics. 1-99 Credits.

PSLD 6100. Landscape Graphics. 1 Credit.

PSLD 6201. Introduction to Design. 2 Credits.

PSLD 6202. Site Analysis. 2 Credits.

PSLD 6203. Site Engineering. 2 Credits.

PSLD 6204. Construction Methods and Materials. 2 Credits.

PSLD 6205. Digital Representation for Landscape Design. 2 Credits.

PSLD 6212. History of Landscape Design. 2 Credits.

PSLD 6213. Contemporary Themes in the Landscape. 1 Credit.

Current thinking and trends in shaping the landscape.

PSLD 6221. Landscape Plants for Fall. 2 Credits.

PSLD 6223. Landscape Plants for Spring. 2 Credits.

PSLD 6225. Landscape Plants for Summer. 2 Credits.

PSLD 6229. Herbaceous Plants. 1 Credit.

PSLD 6231. Site Design Studio. 4 Credits.

The interaction of the design concept and the various factors and circumstances that dictate or moderate that particular concept in the garden design process. The process that transforms abstract design principles, ordering principles, and spatial organizations previously learned into a specific garden design. Graphics demonstrations and exercises to further develop visual and graphic communication skills.

PSLD 6236. Planting Design Studio. 4 Credits.

PSLD 6240. Comprehensive Project. 2 Credits.

PSLD 6260. Introduction to Sustainable Design. 2 Credits.

PSLD 6261. Ecology of the Built Environment. 2 Credits.

PSLD 6262. Tools for Sustainable Design. 3 Credits.

PSLD 6264. Native Plants I. 2 Credits.

Identification and use of native plant species that are sustainable due to their evolution as part of its local ecosystem.

PSLD 6265. Native Plants II. 1 Credit.

Continuation of PSLD 6264. Identification and use of native plant species that are sustainable due to their evolution as part of its local ecosystem.

PSLD 6266. Ecological Restoration. 1 Credit.**PSLD 6268. Sustainable Design Methods. 2 Credits.****PSLD 6269. Sustenance and the Landscape. 2 Credits.****PSLD 6270. Sustainable Design Charrette. 3 Credits.**

PROFESSIONAL STUDIES LAW FIRM MANAGEMENT (PSLM)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLM 5099. Variable Topics. 1-99 Credits.**PSLM 6201. Theories, Principles, and Practices of Law Firm Management. 6 Credits.****PSLM 6202. Applying Strategic and Business Planning. 3 Credits.**

Team projects using a simulated law firm case study, including practice group and office profitability analysis, market assessments, creation of strategic plans, and merger analyses. Prerequisite: PSLM 6201.

PSLM 6203. Practical Applications of Law Firm Management. 3 Credits.

Presentation of strategic plans, analyses, and recommendations developed in PSLM 6202 before a panel of faculty, managing partners, and law firm professionals. Prerequisite: PSLM 6202.

PSLM 6204. Principles of Leadership. 6 Credits.

An intensive course focused on theories and principles of leadership within firms, including leading organizational change. Prerequisite: PSLM 6203.

PSLM 6205. Application of Leadership Frameworks. 3 Credits.

Concepts and frameworks that highlight leadership roles in firms. Prerequisite: PSLM 6204.

PSLM 6206. Strategic Leadership for Sustainability and Change. 3 Credits.

Integration of the content of PSLM 6204 and PSLM 6205 through a focus on strategic leadership. Prerequisite: PSLM 6205.

PSLM 6207. Process Improvement in Law Firms. 3 Credits.

Development of charters for major projects in law firms, applying skills pertaining to managing change and conflict. Prerequisite: PSLM 6206.

PSLM 6208. Legal Technology and Knowledge Management. 3 Credits.

Key elements of knowledge management, including development of a knowledge management strategy. Prerequisite: PSLM 6207.

PROFESSIONAL STUDIES MOLECULAR BIOLOGY (PSMB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
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PSMB 4152. Entrepreneurship and Technology Venture Creation. 4 Credits.**PSMB 5099. Variable Topics. 1-99 Credits.****PSMB 6101. Introduction to Bioinformatics. 3 Credits.**

The basic principles of bioinformatics, including genome sequencing, models, and evolution; computational approaches for analyzing biological data. Prerequisites: BISC 1115 and 1125. Recommended background: 4 credits of general biology.

PSMB 6102. Scripting. 3 Credits.

Introduction to basic concepts of scripting in bioinformatics, such as alignments, searches, and data manipulation for biological data. Recommended background: .

PSMB 6103. Genomics. 3 Credits.

Introduction to genes and genomes. Computational and statistical approaches for analyzing genomic and metagenomic data, including genome sequencing and annotation; gene expression; transcriptome, proteomics, and functional genomics; and basic concepts in genetic variation and single nucleotide polymorphisms.

PSMB 6104. Research Orientation. 1-2 Credits.

Introduction to basic approaches to research and professional conduct as a graduate student; curriculum vitae development; scientific writing; human subjects training; biomedical lab safety training; introduction to library resources and literature searches; introduction to writing scientific papers, abstracts, grant applications; and presenting scientific research.

PSMB 6105. Seminar in Computational Biology. 1-2 Credits.

Practical experience in searching current literature, reviewing topics, and interacting in a scientific forum with other students, postdoctoral scholars, visiting faculty, and faculty.

PSMB 6251. A Primer on Computations. 1 Credit.

PSMB 6252. Biomolecular Modeling. 3 Credits.

Principles and practice of molecular simulation; principles of structural biology; principal experimental and computational techniques used to investigate the structure, dynamics, and function of biological systems; practical skills needed to perform and interpret molecular dynamics simulations of biological macromolecules.

PSMB 6253. Principles of Biomedical Instrumentation. 3 Credits.

PSMB 6261. Introduction to Quantitative Biotechnology. 3 Credits.

The study of biology from a physics perspective; quantitative biology; modeling and predicting an organism's reaction to the environment to enable new technologies for disease detection, prevention, and cure; application of mathematical and physical models to the understanding of cellular biology.

PSMB 6262. Bionanotechnology. 3 Credits.

Application of ideas from nanotechnology to solving biological and chemical problems and refining new methods and tools for health and medicine; overlapping, multidisciplinary activities at the intersection of photonics, chemistry, biology, biophysics, nano-medicine, and engineering. Laboratory experiments apply the fundamentals of nanotechnology to DNA and protein sensing. Laboratory fee.

PSMB 6263. Management of Biotechnology Innovation. 3 Credits.

New scientific and technical products, processes, and services related to biotechnology; scientific discovery, emerging technologies, and birth of the biotechnology industry; management concepts and practices to enhance corporate innovation; corporate venture divisions and new management approaches.

PSMB 6264. Entrepreneurship and Technology Venture Creation. 3 Credits.

The process of innovation-entrepreneurship used to launch and build new ventures, with emphasis on technology ventures; organizing for innovation, raising venture capital, wealth creation, managing the small technology-based venture, marketing information technology products and services.

PSMB 6265. Commercialization of Bioscience and Biotechnology. 2 Credits.

PSMB 6266. Capstone Project. 3 Credits.

Issues and standards for ethical conduct of research; career paths in biotechnology; career development tools; scientific written and oral communication, including developing proposals for research funding. Students are required to visit GW's Center for Career Services and to attend select seminars and colloquia.

PROFESSIONAL STUDIES PARALEGAL STUDIES (PSLX)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSLX 3210. Introduction to the U.S. Legal System. 4 Credits.

Introduction to the U.S. legal system. Foundations of law, issue spotting and legal writing, the Federal Rules of Civil Procedure, rules of court, ethics and professionalism, and the unauthorized practice of law.

PSLX 5099. Variable Topics. 1-99 Credits.

PSLX 6210. American Jurisprudence. 3 Credits.

An introduction to the foundations, theories, history, and applications of the American legal system; local, state, and federal courts and sources of law; and ethics and professionalism issues of especial importance to paralegals.

PSLX 6211. Legal Research and Writing. 3 Credits.

Fundamentals of legal research using print and online tools.

PSLX 6212. Litigation. 3 Credits.

Legal technology and the rules of court, procedure, and evidence; technical and substantive skills necessary for effective litigation support.

PSLX 6213. Corporations and Contracts Law. 3 Credits.

PSLX 6214. Administrative Law. 3 Credits.

An introduction to administrative and regulatory law; history and development of administrative law; agency, due process, agency actions, administrative investigation and hearings, and judicial review.

PSLX 6215. Government Contracts Law. 3 Credits.

The law of procuring, forming, and executing government contracts, including drafting and litigation; competition requirements, contract changes, and contract terminations; researching and drafting documents common to a government contracts practice.

PSLX 6223. Contracts. 3 Credits.

Contract elements, their attendant legal ramifications, and the processes necessary to make such determinations. Development of legal reasoning skills in evaluating issues arising from contract law.

PSLX 6224. Advanced Legal Writing. 3 Credits.

Advanced legal writing techniques and drafting for legal practice. Legal writing in plain English; strategies for effective writing; emphasis on legal memoranda, legal correspondence, and preparing and drafting legal pleadings and documents for court. Refines and advances skills in written legal analysis and legal citation.

PSLX 6225. Business Entities. 3 Credits.

Overview of business organizations, including partnerships, limited liability companies, and corporations. Key concepts applicable to business organizations, including regulation, business formation, document preparation. Application of legal analysis within the context of business entities and other topics applicable to paralegals in all disciplines.

PSLX 6226. International Law. 3 Credits.

Introduction and survey of international law, including international trade law and litigation. Rules and principles governing relations among sovereign states, international organizations, and sources of international law. Analysis of the rules and customs for handling international trade. International courts and tribunals; overview of the treaties, customary principles, and institutional structures governing international human rights law.

PSLX 6227. Intellectual Property Law. 3 Credits.

Introduction to the legal structure of an intellectual property practice. Trademarks, copyrights, and patents and the supporting practice concomitant to each element. Analysis of the processes, supporting documentation, laws, and rules regarding patent prosecution and litigation. This course complements and builds upon the legal issues and analysis introduced in the courses on contracts, business entities, and litigation.

PSLX 6228. California Law and Practice. 3 Credits.

Overview of the state of California's government and court structures, rules of court, litigation support procedures and technology, and professional ethics. May be used to satisfy the California paralegal continuing legal education requirement.

PSLX 6294. Independent Research in Legal Studies. 2 Credits.

Guided, independent research to demonstrate the higher level of competency in research, analysis, writing, and oral presentation. Restricted to students in the MPS in paralegal studies programs.

PSLX 6298. Paralegal Practicum. 3 Credits.

Students work in legal environments while completing their studies, taking active roles to obtain, manage, and maximize the value of their positions. Restricted to students in the MPS in paralegal studies program.

PROFESSIONAL STUDIES PUBLIC LEADERSHIP (PSPL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPL 5099. Variable Topics. 1-99 Credits.**PSPL 6201. Mastering Multi-Sector Leadership. 3 Credits.**

There are a number of topics and areas where the interests of business, government, and the non-profit sectors overlap. Often, these areas of overlap highlight challenges and opportunities that cannot be fully addressed by one sector alone. Yet, the performance of each sector depends to some degree on the successful resolution of these issues. It is a situation that requires leaders who are able to engage and mobilize people and organizations across sectors. The purpose of this course is to introduce you to the multi-sector landscape and to provide you with an interdisciplinary framework you can use to effectively mobilize individuals and organizations across sectors. Using case studies and simulations the course will explore the core challenges and opportunities facing multi-sector leaders in business, government, and in the non-profit sector. The course will stress the need for you to look outside of your immediate organizational environment and to take a broader view on the identities, incentives, and social roles that influence attitudes and behavior across sectors. Restricted to Limited to PSPL students.

PSPL 6202. Policy Issues and Analysis. 3 Credits.

This course is intended to prepare leaders to effectively conduct and lead policy analysis efforts, and to be a more informed consumer of policy findings and recommendations prepared by others. As such, it will focus on the process of developing policy recommendations, and approaches and tools useful in implementing and evaluating public policy. A variety of approaches will be used to strengthen students' understanding of the foundational concepts of policy analysis, the analysis process, and the techniques and tools required to effectively implement that process. This will include readings, lecturettes, case studies, whole class/small group discussions, examination of current policy issues in the news, reflections on personal experience, and application of the policy analysis process to real world issues. There will also be exploration of some the critical competencies that today's leaders need to effectively contribute to the policy analysis process (e.g. critical thinking, executive perspective, team leadership/influence). Particular emphasis will be placed on understanding how these concepts apply in organizational situations.

PSPL 6203. Leading in a Digital Environment. 3 Credits.

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PSPL 6204. Politics of Organizational Leadership. 3 Credits.

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PSPL 6205. Intergovernmental Relations. 3 Credits.**PSPL 6206. Public-Private Partnerships and Contract Management. 3 Credits.**

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PSPL 6211. Results-Based Performance Management Systems. 3 Credits.

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PSPL 6212. Managing Multisector Workforce. 3 Credits.**PSPL 6213. Performance-Based Financial Management. 3 Credits.**

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PSPL 6221. Organizational Process Improvement Methodologies. 3 Credits.

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PSPL 6222. Organizational Process Analysis. 3 Credits.

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PSPL 6223. Organizational Process Design. 3 Credits.

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PSPL 6224. Process Improvement Research Project. 3 Credits.

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PSPL 6301. Fundamentals of Organization Performance Improvement. 6 Credits.

In-depth instruction on the Lean Six Sigma approach to organization performance improvement and appropriate uses of a variety of its analytical methods and tools. Students are required to complete a Lean Six Sigma application project and pass all examinations with a score of 80% or better. Students completing all requirements earn a Green Belt Certificate for proficiency in Lean Six Sigma methods and applications. Recommended background: Currently working in an organization. Credit cannot be earned for this course and PSPL 6222, PSPL 6223.

PSPL 6302. Leading Organization Performance Improvement Initiatives. 3 Credits.

Approaches for designing organization performance improvement initiatives and criteria for selecting the most effective approach for the intended initiative. Organization dynamics and change processes considered toward crafting a strategy for leading the changes required by the initiative. Methods and tools for planning and managing each phase of the change initiative. Application of concepts and skills to the design and development of Lean Six Sigma Black Belt projects that are implemented in subsequent courses. Recommended background: currently working in an organization.

PSPL 6303. Advanced Methods for Organization Performance Improvement. 3 Credits.

Advanced methods for data gathering, analysis, problem definition, and conducting and documenting performance improvement experiments. Change management strategies, experimental process design and tests, use of pilots and "sandboxes," and user-centered design principles. Black Belt-level change initiatives, performance improvement design criteria, and change management and organization engagement strategies. Students are required to begin leading an initiative and implementing changes resulting in documented benefits as well as passing all examinations with a score of 80% or better. Prerequisite: PSPL 6301. Recommended background: Currently working in an organization.

PSPL 6304. Advanced Applications in Organization Performance Improvement. 3 Credits.

Students learn tools for pulsing the organization to test the effectiveness of their approaches and assess the degree of support from key leaders. Students are encouraged to adopt an evolutionary design perspective and modify their solutions continuously based on feedback and results achieved--documented benefits in cost savings, process speed increases, enhanced customer satisfaction, and revenue enhancements. All examinations must be passed with a score of 80% or better. Students present their final project reports and receive feedback from faculty and a team of peers. Those who complete all requirements with a grade of B or above will earn a Black Belt Certificate demonstrating proficiency in using advanced Lean Six Sigma methods and processes to lead organization performance improvement initiatives. Prerequisites: PSPL 6301 and PSPL 6303. Recommended background: Currently working in an organization.

PROFESSIONAL STUDIES PUBLIC RELATIONS (PSPR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSPR 5099. Variable Topics. 1-99 Credits.

PSPR 6201. Strategic Public Relations: Principles and Practice. 3 Credits.

Basic rules and strategies in public relations. Major trends, major firms, and types of business and expertise. Digital media and integrated media communications.

PSPR 6202. Advanced Writing for Public Relations Professionals. 3 Credits.

The essentials of effective public relations and public affairs writing, emphasizing strategic thinking and compositional precision as the source of their efficacy and power.

PSPR 6203. Research Methods for Public Relations and Public Affairs Managers. 3 Credits.

PSPR 6204. Media Relations in a Digital World. 3 Credits.

Media relations from the perspective of public relations and public affairs; the state of contemporary media, both on- and offline, and its impact on commerce, politics, and the social contract; key factors influencing reportorial and editorial coverage of business, government, and nonprofit interests.

PSPR 6205. Fundamentals of Business and Management for Public Relations and Public Affairs. 3 Credits.

PSPR 6206. Ethical Standards in Public Relations and Public Affairs. 3 Credits.

PSPR 6207. Sustainability Communications Methods and Practices. 3 Credits.

PSPR 6208. Integrated Marketing Communications. 3 Credits.

The evolution of integrated marketing communications as a means by which for-profit and nonprofit enterprises extend the reach and influence of public relations and public affairs; traditional and non-traditional communications approaches and technologies. Recommended background: degree candidacy in the MPS in the Field of Strategic Public Relations program and/or graduate status in the School of Business or School of Media and Public Affairs.

PSPR 6210. Special Topics in Public Relations. 3 Credits.

PSPR 6211. Strategy and Practice for Nonprofit and Association Communications. 3 Credits.

This course is designed to help communicators currently working # or hoping to work # in trade associations and nonprofit organizations become more effective in the planning and execution of their programs. By its very nature, this course will be practical and reality#based, with guest speakers drawn from many organizations and communications backgrounds. In the context of this class, effective communications means understanding the goals, environments, structures, constraints, opportunities and challenges facing associations and nonprofit organizations, and developing and implementing communication plans to achieve those goals. Effective also means working within the limitations communicators often face, such as (but by no means limited to): dwindling budgets, divided membership, fragmented boards and hesitant leadership, the decline of traditional news media, the rise of blogs, the surge of social media and more. In short, "effective" means being strategic, proactive, and smart. But while these attributes are necessary, they are not sufficient. Effective communicators must understand the roles communications play - internal as well as external - for their organizations. They must know the organization's stakeholders and understand their "care and feeding." In short, they must understand their institutional roles - and the expectations of their internal and external stakeholders and audiences. Restricted to students in the MPS strategic public relations degree program; permission of the program director may be substituted. Prerequisites: PSPR 6201, PSPR 6202, PSPR 6203, PSPR 6204, PSPR 6205 and PSPR 6206.

PSPR 6221. Consumer Behavior. 3 Credits.

PSPR 6222. Multicultural Marketing. 3 Credits.

PSPR 6223. Public Opinion and Political Socialization. 3 Credits.

The process by which people become engaged in public debates and politics; how they acquire and maintain attitudes, biases, and beliefs, and the decisions they make as a result. Discussion centers on the forces that influence public opinion and political socialization, including the power of the press and its impact on our major institutions. Prerequisites: PSPR 6201 and PSPR 6202.

PSPR 6224. Global Public Relations and Public Affairs: Strategy and Practice. 3 Credits.

How global public relations strategies are developed and implemented to support advocacy efforts; communications theories that enable insight into challenges arising from differences in language, culture, politics, and economics worldwide Credit cannot be earned for this course and PSAD 6270.

PSPR 6225. Nonprofit and Association Communications Strategies. 3 Credits.

How communicators working in trade associations, nonprofit organizations, and labor unions become more effective in the planning and execution of their programs to achieve organizational goals.

PSPR 6226. Digital Communication Platforms and Strategies. 3 Credits.

Theories and approach to digital communications and review of major digital platforms used by companies, government agencies, nonprofits and associations to accomplish strategic communications goals and objectives.

PSPR 6227. Applied Digital Communications for Public Relations and Public Affairs Professionals. 3 Credits.

In-depth and holistic study of digital communications using case studies and collaborative exercises; how to blend creative writing with graphics production, social media management with audience segmentation, and digital advertising channels with analytics.

PSPR 6230. Crisis and Issues Management. 3 Credits.

The intersection of communications and policy disciplines, including environmental scanning, public policy analysis, public policy advocacy, strategic communications, media relations, grassroots mobilization, coalition management and corporate reputation management. How these issues work together to further the broad strategic goals of organizations.

PROFESSIONAL STUDIES PUBLISHING (PSPB)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses

- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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PSPB 5099. Variable Topics. 1-99 Credits.

PSPB 6126. Children's Publishing and Media. 2 Credits.

Explores the children's media industry with a focus on book publishing. Overview of children's and YA print, digital, audio, and video segments. Reviews business opportunities, market analysis, trends, demographics, acquisition, and outreach.

PSPB 6201. Book and Journal Publishing. 3 Credits.

Fundamental aspects of the publishing industry, including business models, acquisitions, production, marketing, and sales for both books and journals. Challenges to the industry and strategic decisions formed and communicated by publishers.

PSPB 6203. Business of Publishing. 2 Credits.

Business operations in the publishing industry and how various business practices impact the publishing ecosystem. Book acquisitions, contracts, business plans, and distribution strategies.

PSPB 6205. Copyright Law in Print and Cyberspace. 3 Credits.

Foundations of copyright law for print and electronic media. History and development of copyright law and key concepts such as exclusive rights, fair use, remedies for infringement, and the overall challenges in application of the law to all media.

PSPB 6207. Marketing Strategies. 2 Credits.

Marketing and promotional strategies for print and digital book and journal publishing products. Decisions marketing departments must make to help increase the impact of publishing products.

PSPB 6213. Book Design. 2 Credits.

The role of design in the publishing process. How components of book design, such as typography, imagery, page layout, cover design, printing, and production, are affected by and affect content, tone, function, and intended audience.

PSPB 6214. Professional Editor. 3 Credits.

The editorial function and importance of editorial judgment as personified in the acquisitions, developmental, substantive, and copy editor roles. Freelance editing, editorial management, challenges facing the professional editor, and potential editorial career trajectories. Prerequisite: PSPB 6201.

PSPB 6215. Editing Special Projects. 1 Credit.

Practical experience editing special projects, which may include journals, open educational resources, monographs, and books. Restricted to students in the online MPS in the field of publishing program. Recommended background: prior completion of PSPB 6214.

PSPB 6221. Publishing Management, Organization, and Strategy. 2 Credits.

Publishing management, strategic planning, how publishers add value, and organizational change. How ethics, diversity, and social responsibility inform organizations. Issues that drive the strategic planning process, such as staff involvement, team building, and resource allocation.

PSPB 6222. Accounting and Finance for Publishers. 2 Credits.

Accounting and financial reporting for a publishing organization's operating results, with an emphasis on evaluating what these results mean in terms of financial success, new business ventures, and sustainability.

PSPB 6223. Global Publishing. 2 Credits.

Overview of the publishing industry around the world. National publishing industries and strategies for entering those markets. Global English language publishing. Acquisition, sales, and production strategies. Translation rights and global strategies. Recommended background: prior completion of PSPB 6203.

PSPB 6224. Budgeting, Fulfillment, and Distribution. 2 Credits.

PSPB 6232. Production Management. 3 Credits.

Publishing production and product life cycles. Students develop products, plan and specify requirements, select vendors, and learn about integrating digital products into print production processes.

PSPB 6251. Fundamentals of Electronic Publishing. 2 Credits.

Digital technologies and trends that have transformed the publishing industry in recent decades, including standards, business models, and technologies and approaches used in electronic publishing.

PSPB 6253. Electronic Publishing Practice. 2 Credits.

Pragmatic, economic, and ethical aspects of electronic publishing for responsible decision making. Prerequisite: PSPB 6251.

PSPB 6255. Electronic Publishing: Infrastructure and Architecture. 3 Credits.

Emerging content technologies, including software and hardware components of a typical publishing system, the enabling standards, and an introduction to publishing systems architecture. Prerequisite: PSPB 6251.

PSPB 6256. E-Publishing Technologies And Standards. 2 Credits.

Overview of current and emerging content technologies, software and hardware components of a typical publishing system, enabling standards, and publishing systems architecture. Restricted to students in the MPS in publishing program. Prerequisite: PSPB 6251.

PSPB 6257. Designing for E-Publishing Success. 2 Credits.

Principles of digital design, usability testing, search engine optimization, iterative design, and multiple presentational models. Information architecture, usability, and design. Prerequisite: PSPB 6251.

PSPB 6258. User-Centric Design for Print and Electronic Publications. 2 Credits.

PSPB 6259. E-Publishing Tools. 2 Credits.

Employs tools to produce both book and magazine page layouts, while delving into style sheets, master pages, importing different file types, and rendering on different platforms. Considers print-ready projects and ways to use multimedia. Prerequisite: PSPB 6251.

PSPB 6261. Editorial Content, Rights, and Permissions. 2 Credits.

Meaning and monetization of rights in the publishing world. What editors need to know to negotiate terms for rights that they wish to acquire. The effects of emerging electronic and digital marketplace on permissions and rights.

PSPB 6262. Editing for Books, Journals, and Electronic Products. 2 Credits.

Facets of editing related to books and journals and electronic editions and derivatives of both publication types, and born-digital information products.

PSPB 6265. Managing Editorial Staff. 2 Credits.

Roles and responsibilities, workflows, best practices, policies, and procedures within editorial offices and how these roles may vary from office to office. Tools and strategies for effectively managing an editorial department in scientific, technical, and medical (STM) journal publishing.

PSPB 6271. Sales Management, Strategy, and Positioning. 2 Credits.

Essentials of sales strategy and marketing for books, magazines, and e-content products.

PSPB 6272. Book Publicity and Promotion. 2 Credits.

Overview of strategies, objectives, and tactics for promoting and publicizing new books, monographs, and other publishing products, using examples from trade, academic, and electronic publishing.

PSPB 6273. Managing the Marketing Portfolio. 2 Credits.

PSPB 6280. Applied Ethics in Publishing. 1 Credit.

Students work with publishers, advocacy groups, or community groups on a project that applies ethical theories to real-world publishing situations.

PSPB 6281. Ethics in Publishing. 1 Credit.

Ethical issues in publishing, including censorship, intellectual property rights, plagiarism, open access, business practices, and environmentally-responsible publishing. Issues of diversity, inclusion, and accessibility. Restricted to second-year students in the MPS in publishing program.

PSPB 6298. Digital Publishing Special Projects. 2 Credits.
Students address a real-world problem using publishing theory and application and consideration of workflows, product life cycle, schedules, deliverables, and dissemination. Prerequisites: PSPB 6251; and PSPB 6256, or PSPB 6257, or PSPB 6259.

PROFESSIONAL STUDIES SECURITY AND SAFETY LEADERSHIP (PSSL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSSL 5099. Variable Topics. 1-99 Credits.

PSSL 6240. Political Violence and Terrorism. 3 Credits.

PSSL 6241. Globalization of Threats and International Security. 3 Credits.

PSSL 6242. Security and Civil Liberties. 3 Credits.

PSSL 6243. Intelligence and Strategic Analysis. 3 Credits.

PSSL 6244. Information Systems Protection. 3 Credits.

PSSL 6245. Cyber Security Law and Policy. 3 Credits.

PSSL 6246. Cyber Intelligence and Strategic Analysis. 3 Credits.

PSSL 6247. Cyber Defense Strategies. 3 Credits.

PSSL 6248. Introduction to Cyber Conflict. 3 Credits.

PSSL 6250. Strategic Planning and Budgeting. 3 Credits.

PSSL 6251. Inter-Agency Cooperation. 3 Credits.

PSSL 6252. Emergency Management and Crisis Communication. 3 Credits.

PSSL 6253. Managing the Politics of Leadership. 3 Credits.

PSSL 6254. Strategic Change Leadership. 3 Credits.

PSSL 6255. Information Management for Justice and Public Safety. 3 Credits.

PSSL 6256. Applied Technology to Data Analytics. 3 Credits.

PSSL 6257. Enterprise Architecture and Standards. 3 Credits.

PSSL 6258. Information Sharing and Safeguarding. 3 Credits.

PSSL 6259. Strategic IT Investment and Performance Management. 3 Credits.

PSSL 6260. Methods of Analysis in Security. 3 Credits.

PSSL 6270. Capstone Project. 3 Credits.

Development of a research project integrating theoretical and analytic perspectives applied to improving organizational effectiveness in public safety agencies.

PSSL 6401. National and International Security Threats. 6 Credits.

The evolution of terrorism and politically motivated violence. Shifts in the operational tactics of guerrilla, terrorist, and insurgent groups and rogue states. Approaches to the formulation of counter-terrorist strategies. The conduct of national and international threat assessment. The various international legal and strategic options available to public safety agencies. Credit cannot be earned for this course and PSSL 6240, PSSL 6241.

PSSL 6443. Intelligence and Information Systems. 6 Credits.

This course explores the principles of the structure and components of both the national intelligence community and law enforcement communities. It focuses on the analysis of intelligence policies and strategies at the international, national, and regional levels. This course will provide a general understanding of information security, recognize the different challenges, and acquire an awareness of the different cyber threats that today's organizations are exposed to. Credit cannot be earned for this course and PSSL 6243, PSSL 6244.

PSSL 6448. Introduction to Cyber Conflict, Cyber Intelligence, and Strategic Analysis. 6 Credits.

An exploration of cyber conflict, its history, and how it is being integrated into government and military strategies. The evolution of cyber intelligence and models for its collection and analysis. Technical, tactical, and strategic use of information technology between states and non-state actors; national and international cyber strategies, law, and policy as they relate to cyber intelligence efforts; advanced persistent threats; cyber threats to national security; strategic, operational, and tactical cyber intelligence efforts and countermeasures; and cyber weapons, actors, and methods of delivery. The current state and the future of cyber conflict as an evolving phenomenon. Restricted to students in the MPS in strategic cyber operations and management program.

PSSL 6450. Strategic IT Investment and Methods of Analysis. 6 Credits.

The effective use of information technology (IT) within public safety organizations. Integration of IT into business processes. Performance measurement, cost benefits analysis, and program evaluation. Methods and problems related to data collection in security fields, with emphasis on analytical design, instrument usage, sampling, and measurement. Credit cannot be earned for this course and PSSL 6259, PSSL 6260.

PSSL 6452. Strategic Planning and Emergency Response. 6 Credits.

The adaptation of strategic planning and performance measures beyond budgeting for the requirements of government agencies that deal with long-term security issues. Basic principles of emergency planning, including development of an across-the-board response plan involving all levels of government and the private sector, Strategies for ensuring that communication channels are open and secure during a crisis situation. Credit cannot be earned for this course and PSSL 6250, PSSL 6252.

PSSL 6453. Leadership and Change Management. 6 Credits.

An in-depth look at the role of power and influence in organizations. Case studies demonstrate the necessity of mobilizing the political support and resources needed to implement objectives. The challenges, techniques, burdens and successes associated with initiating and implementing organizational change from multiple theoretical vantages. Credit cannot be earned for this course and PSSL 6253, PSSL 6254.

PSSL 6455. Information Management and Data Analytics. 6 Credits.

Application of information management techniques to justice and public safety fields: governance structure, emerging modes of communication within and outside organization, processes that enable managers to make decisions. Strategic application of technology to data analysis. Introduction to cutting edge software including predictive and spatial analytics. Principles of data visualization. Application of analytics and visualization in solving justice and public safety problems. Credit cannot be earned for this course and PSSL 6255, PSSL 6256.

PSSL 6457. Enterprise Architecture and Information Sharing and Safeguarding. 6 Credits.

Overview of technology environments including software, hardware, networks, applications, data, communications, and other relevant architecture disciplines with a focus on service-oriented architecture and similar innovations applicable to the subject fields. Principles of privacy and safeguarding data in government owned or operated databases related to justice, public safety and homeland security. Credit cannot be earned for this course and PSSL 6257, PSSL 6258.

PROFESSIONAL STUDIES URBAN SUSTAINABILITY (PSUS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PSUS 5099. Variable Topics. 1-99 Credits.

PSUS 6201. Principles of Sustainable Urban and Regional Planning. 3 Credits.

The environmental, social, and economic elements of sustainability. Present and future challenges, including environmental management, energy policy, financial crises, global warming, inequality, public education, third and first world slums, the success and failure of nations, urban agriculture, urban economics, and more. The implications of sustainable development and conducting research based on evidenced-based policy. Students focus on the work of researchers outside of the planning field as they write a series of research essays containing reviews of relevant scientific literature.

PSUS 6202. Urban and Environmental Economics. 3 Credits.

The application of neoclassical economics to problems faced by practitioners of the field of sustainable urban and regional planning. Key economic concepts including supply and demand, consumption and production, markets and market failure, and measurement of environmental and other non-market commodities. An economist's perspective on the principals and methods for understanding urban and environmental challenges and solutions, urban growth, environmental quality, public policy, and other issues fundamental to contemporary development.

PSUS 6203. Research Methods: Geospatial and Econometric Analysis. 3 Credits.

Developing proficiency in geographic information systems (GIS) and econometric analysis; building and analyzing spatial datasets using ArcGIS and Stata statistical software.

PSUS 6204. Land Use Law. 3 Credits.

Understanding the legal context of land use planning as it applies to contemporary issues. The role of land use law in shaping the urban context and its implications for policy and practice.

PSUS 6210. Transportation Planning in City Systems. 3 Credits.

Transportation planning with long-run goals in mind, including reducing greenhouse gas emissions. The role of planning at local and regional scales within the broader framework of transportation engineering.

PSUS 6211. Regional Development and Agricultural Economics. 3 Credits.

The economics of land use patterns and development processes in the United States and elsewhere in the world. Introduction to the field of agricultural economics and examination of food deserts and other food-related problems relevant to the field of sustainable urban planning.

PSUS 6212. Sustainable Communities I: Housing and Design. 3 Credits.

Community development with a focus on policy and the various sectors of interest that affect contemporary urbanization. How policies, planning techniques, and implementation strategies form the core work of planning practitioners. Topics include water supply, food deserts, public health, and urban resilience. Pathways to more sustainable communities are explored through the policy arenas in which key decisions are made; key sectors that make up the fabric of communities; and special topics that have emerged as critical challenges for sustainable community development.

PSUS 6213. Advanced Research Methods Individual Mentoring. 3 Credits.

Builds on research skills learned in PSUS 6203. Students in the sustainable urban planning program work one-on-one with a faculty member of their choice on a project of joint design. Prerequisite: PSUS 6203.

PSUS 6214. Food and Cities. 3 Credits.

Examines agricultural systems, food production, consumption, and trade, and their links to urbanization, city growth, and public health, through lenses of history, technology, economic theory, geography, and public policy. The course explores the roles that food plays in the lives of urban inhabitants, and in shaping the urban landscape, and the role of cities in determining the geography, sustainability, and business of agriculture.

PSUS 6215. Urban Health Impact Assessment. 3 Credits.

Examines the relationship between the allied fields of urban planning and public health. Addresses the link between the built environment and various health outcomes and the value added incorporating health concerns into the planning and design processes.

PSUS 6216. Megacities in a Globalized World. 3 Credits.

Research-oriented course in which students identify, analyze, and recommend ways of addressing land use change and economic development within one of the world's megacities.

PSUS 6218. Urban Growth and Affordable Housing. 3 Credits.

Real estate economics, with an emphasis on urban growth and affordable housing; the process and outcome of economic development and the relationship between economic development and sustainable urban planning.

PSUS 6220. Planning Resilient and Low-Carbon Cities. 3 Credits.

International perspectives on urban planning, taking into consideration increased global temperatures resulting from greenhouse gas emissions-induced climate change. The course is taught with reference to the findings of the Intergovernmental Panel on Climate Change (IPCC) and considers how urbanization around the world must adapt to the reality of global warming and its consequences.

PSUS 6221. The Scientific Basis of Climate Change. 3 Credits.

The science underlying climate change policy and decision making. Earth systems, climate change projections, the need for mitigation, and impact assessment. Designed for non-scientists.

PSUS 6222. Climate Change Economics. 3 Credits.

Energy use in built environments with an emphasis on fundamental drivers of energy demand, strategies to promote energy efficiency, and essential features of energy supply; the relationship between energy demand and supply in development.; how advances in construction technology can help counter greenhouse gas emissions.

PSUS 6223. Sustainable Communities II: Tools for Assessment and Transformation. 3 Credits.

Builds on PSUS 6212 by further detailing the theory and tools relevant to the assessment and transformation of neighborhood and communities. Geospatial analysis explore the fundamental drivers of urban form, advanced transportation systems, theories of change, and various impact assessment tools used to inform policy implementation.

PSUS 6224. Sustainable Energy for Cities and the Environment. 3 Credits.

Resource management and renewable energy technologies. Vulnerabilities of existing urban structures, particularly the energy grid. Implications of and solutions to energy-related problems likely to arise in present and future cities.

PSUS 6228. Open Space and Public Facilities Planning. 3 Credits.

Relevant skills applicable to urban park planning. Students learn site assessment and analysis tools and produce a professional quality project.

PSUS 6230. Sustainable Community Design Studio. 3 Credits.

Students gain practical experience by applying research skills and creativity to analyze and resolve a real-world urban issue.

PSUS 6231. Practicum:ClimateChangeMgt&Pol. 3 Credits.

PSUS 6233. Capstone in Sustainable Urban Planning. 3 Credits.

The SUP Capstone is a self-paced project specific to individual students, conducted under the supervision of a faculty member/s of the student's choice. The capstone is a significant piece of research that ties the student's broader experience in the Sustainable Urban Planning Program together – and brings their cumulative learning to bear on a research question / topic / project of their choice and definition. The capstone is intended to be a piece of exemplary work that the student can use to help them get to the "next level." That is, the capstone is a project that demonstrates the students capabilities and ability to work independently – it might be used, for example, as a sample of work in the job application process. Capstone projects may take the form of academic research papers; applied policy briefs; posters; executive training courses; and more. The capstone is no less (and no more) than a full semester's worth of intensive work on a particular project; it is NOT a thesis, as defined by the George Washington University. Ideally, the capstone project is of sufficient quality that it is worth of being presented at a meeting of the American Planning Association (local chapter or national meeting) or other relevant professional context.

PSUS 6235. Advanced Topics in Urban Sustainability. 3 Credits.

PSUS 6236. International Studio in Sustainable Urban Planning. 3 Credits.

International immersion designed to promote an international exchange of research and scholarship on sustainable urban development and provide instruction on operating in a foreign setting.

PSUS 6260. Introduction to Sustainable Design. 2 Credits.

PSUS 6261. Ecology of the Built Environment. 2 Credits.

PSUS 6262. Tools for Sustainable Design. 3 Credits.

PSUS 6266. Ecological Restoration. 1 Credit.

PSUS 6269. Sustenance and the Landscape. 2 Credits.

PSYCHOLOGY (PSYC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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PSYC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PSYC 1001. General Psychology. 3 Credits.

Fundamental principles underlying human behavior.

PSYC 1099. Variable Topics. 1-36 Credits.

PSYC 2011. Abnormal Psychology. 3 Credits.

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Prerequisite: PSYC 1001. Same As: PSYC 2011W.

PSYC 2011W. Abnormal Psychology. 3 Credits.

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PSYC 1001. Same As: PSYC 2011.

PSYC 2012. Social Psychology. 3 Credits.

Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. Prerequisite: PSYC 1001.

PSYC 2013. Developmental Psychology. 3 Credits.

Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. Prerequisite: PSYC 1001.

PSYC 2014. Cognitive Psychology. 3 Credits.

Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making. Prerequisite: PSYC 1001.

PSYC 2015. Biological Psychology. 3 Credits.

Introduction to the biological basis of behavior; review of data and empirical methods on the topics of neural structure and function, brain damage, neuroanatomy, genes, hormones, and their influence on behavior. Prerequisite: PSYC 1001.

PSYC 2099. Variable Topics. 1-12 Credits.

PSYC 2101. Research Methods in Psychology. 3 Credits.

Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). PSYC 1001 and STAT 1053 may be taken as a corequisite. Prerequisites: PSYC 1001 and STAT 1053.

PSYC 2199. Special Topics in Psychology. 3 Credits.

Special topics in psychology for students without advanced psychology background. Topics vary by semester. May be repeated once for credit provided the topic differs. See department for more details. Prerequisite: PSYC 1001. Credit cannot be earned for this course and PSYC 3199.

PSYC 2508. Humanistic Psychology. 3 Credits.

Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Formerly PSYC 3108) Prerequisites: PSYC 1001.

PSYC 2514. Adult Development and Aging. 3 Credits.

Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. (Formerly PSYC 3114) Prerequisites: PSYC 1001.

PSYC 2529. Theories of Personality. 3 Credits.

Survey of personality theories; emphasis on their application to problems of individuals. (Formerly PSYC 3129) Prerequisites: PSYC 1001.

PSYC 2531. Psychological Tests. 3 Credits.

Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. (Formerly PSYC 3131) Prerequisites: PSYC 1001.

PSYC 2533. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind; broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment. Prerequisite: PSYC 1001. Same As: SPHR 2133.

PSYC 2541. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisites: PSYC 1001; and SPHR 1071 or SPHR 2135. Credit cannot be earned for this course and SPHR 2131.

PSYC 2544. Industrial/Organizational Psychology. 3 Credits.

Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. Formerly PSYC 2144. Prerequisites: ORSC 1109 or PSYC 1001. (Same as ORSC 2544).

PSYC 2550. Psychology of Sex Differences. 3 Credits.

Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Formerly PSYC 3150) Prerequisites: PSYC 1001.

PSYC 2554. Psychology of Crime and Violence. 3 Credits.

Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Formerly PSYC 3154) Prerequisites: PSYC 1001.

PSYC 2556. Psychology of Attitudes and Public Opinion. 3 Credits.

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare. (Formerly PSYC 3156) Prerequisites: PSYC 1001.

PSYC 2570. Peer Education. 3 Credits.

This is a course designed to train George Washington University undergraduate students to be health peer educators. Students are trained in various topics related to mental health, physical health, and alcohol and/or other drugs, and gain the skills needed for outreach programming. Prerequisite: PSYC 1001.

PSYC 2571. Helping Skills. 3 Credits.

Training for undergraduate students preparing to be entry-level support professionals as a part of the GW Listens program or similar programs offering support to individuals who have mental and physical health issues. Prerequisite: PSYC 1001.

PSYC 2588. Attitudes Toward Death and Dying. 3 Credits.

Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Formerly PSYC 3188) Prerequisites: PSYC 1001.

PSYC 2596. History and Systems of Psychology. 3 Credits.

A survey and integration of the major viewpoints and concepts of psychology. Recommended for students planning graduate study. (Formerly PSYC 4196) Prerequisites: PSYC 1001.

PSYC 2945. Psychological Study of Spirituality. 3 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Formerly PSYC 3945. Prerequisite: PSYC 1001.

PSYC 3099. Variable Topics. 1-12 Credits.**PSYC 3112. Psychology of Adolescence. 3 Credits.**

Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to the solution of such problems. Prerequisite: PSYC 2101 and PSYC 2013.

PSYC 3115. Developmental Psychopathology. 3 Credits.

The origins of child psychopathology, including developmental perspectives and the potential contributions of child-, family-, and community-based characteristics to the emergence of psychopathology. The development of specific childhood disorders. Prerequisites: PSYC 2011 and PSYC 2101; or PSYC 2013.

PSYC 3116. Brain and Language. 3 Credits.

How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3118. Neuropsychology. 3 Credits.

Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3119. Cognitive Science in the District. 3 Credits.

Study of cognitive psychology abilities (e.g., memory, attention, perception, decision making) through primary research articles and class discussion; firsthand experiences in the practical application of cognitive psychology through field trips in the DC area. Prerequisites: PSYC 2014 or PSYC 2015.

PSYC 3120. Neuroscience of Consciousness. 3 Credits.

The phenomenon of human consciousness using the methods and concepts of neuroscience. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2014 or PSYC 2015. Recommended background: psychology or cognitive neuroscience major.

PSYC 3121. Memory and Cognition. 3 Credits.

An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of cognitive function from attention and pattern recognition to learning and memory. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3122. Cognitive Neuroscience. 3 Credits.

How the structure and functions of the brain are related to cognitive processes and their associated behaviors. The biological bases of behavior and mental activity. Research and case studies by cognitive psychologists, neuroscientists, psychiatrists, and linguists, focusing on how the brain affects pattern recognition, attention, short-term and long-term memory processes, and language. Prerequisite: PSYC 2101 AND PSYC 2014 OR PSYC 2015.

PSYC 3124. Visual Perception. 3 Credits.

An overview of human perception, ranging from the detection of simple stimuli to the identification of objects and events; perceptions of color, motion, and spatial layout; research methodology, biological foundations, and theoretical issues. Prerequisites: PSYC 1001, PSYC 2101, and PSYC 2014 or PSYC 2015.

PSYC 3125. Cross-Cultural Psychology. 3 Credits.

Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisites: PSYC 2101 and PSYC 2011 or PSYC 2012.

PSYC 3126. Multicultural Psychology. 3 Credits.

The influence of culture on major psychology concepts Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Prerequisite: PSYC 2101 and PSYC 2011 or PSYC 2012. Same As: PSYC 3126W.

PSYC 3126W. Multicultural Psychology. 3 Credits.

The influence of culture on major psychology concepts. Current theories and research on culture, with culture being broadly defined to include race, ethnicity, gender, sexual orientation, disability status, and socioeconomic status. Empirical methodologies in cultural psychology, and appreciation of cultural groups within the United States. Issues of culture in the interpretation of personal experiences and in application of cultural diversity issues to various settings. Culturally relevant styles of communication, values from different cultures, racial identity, power and privilege, and issues around health and mental health. Multiculturalism in the modern diverse society. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: PSYC 2011 or PSYC 2012; and PSYC 2101. Same As: PSYC 3126.

PSYC 3128. Health Psychology. 3 Credits.

Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. Prerequisite: PSYC 2101.

PSYC 3132. Social and Personality Development. 3 Credits.

Examination of personal, emotional, and social development from infancy to adolescence and influences on that development. Prerequisites: PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 3170. Clinical Psychology. 3 Credits.

An exploration of the history, functions, and concerns of the clinical psychologist. Assessment, treatment, community approaches, ethics. Prerequisite: PSYC 2011 and PSYC 2101.

PSYC 3172. Psychopathology and the Media. 3 Credits.

How abnormal behaviors and mental disorders are portrayed in film and the media, including analysis of the accuracy of these portrayals, focusing on symptomatology, etiology, and treatment of adult psychopathology. Prerequisites: PSYC 2011 and PSYC 2101.

PSYC 3173. Community Psychology. 3 Credits.

Origins and current practice of community psychology, and comparison of community psychological approaches with traditional clinical perspectives; the role of psychology in addressing social issues facing communities; methods for research and intervention targeting communities. Prerequisites: PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 3180. Seminar in Cognitive Science. 3 Credits.

Advanced seminar for undergraduate students focusing on recent developments in cognitive science. Topics vary and may include perception, attention, memory, representation, and cognitive control, as well as neural bases of cognitive processes. Prerequisites: PSYC 3118 or PSYC 3121 or PSYC 3122 or PSYC 3124 or PSYC 4106W or PSYC 4107W.

PSYC 3193. Seminar in Industrial/Organizational Psychology. 3 Credits.

Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. (Formerly PSYC 4193). Prerequisites: PSYC 1001 and PSYC 2544; or permission of the instructor.

PSYC 3198. Current Research Issues. 3 Credits.

Recent studies in psychology, including studies performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3199. Current Topics in Psychology. 3 Credits.

Topics vary. May be repeated once for credit provided the topic differs. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3591. Supervised Research Internship. 1-3 Credits.

Open to qualified students with permission of a supervising faculty member. Arrangements must be made with the faculty supervisor prior to registration; a list of participating faculty members and their research specialties is available from the department. May be repeated for credit; PSYC 3591 and PSYC 4591 combined may be taken for a total of 9 credits maximum. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 3592. Field Internship. 3 Credits.

Advanced psychology majors spend a minimum of six hours per week in a supervised internship in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. May be repeated for credit, but the repeat enrollment does not count toward the major. Restricted to psychology majors. Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 4106W. Research Lab in Sensation and Perception. 4 Credits.

Capstone course focused on the study of sensation and perception. Students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2014 or PSYC 2015.

PSYC 4107W. Research Lab in Cognitive Neuroscience. 4 Credits.

A capstone course focused on the study of cognitive neuroscience in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2014 or PSYC 2015.

PSYC 4201W. Research Lab in Clinical/Community Psychology. 4 Credits.

A capstone course focused on the study of clinical/community psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4202W. Research Lab in Applied Social Psychology. 4 Credits.

A capstone course focused on the study of topics in applied social psychology, such as discrimination and health, in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4203W. Research Lab in Developmental Psychology. 4 Credits.

A capstone course focused on the study of developmental psychology in which students examine previous research, design and carry out research projects, and write psychological research reports. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: PSYC 1001 and PSYC 2101; and PSYC 2011 or PSYC 2012 or PSYC 2013.

PSYC 4285. Foundations of Experimental Neuroscience. 3 Credits.

Current theories of cognitive neuroscience; the link between transduction of sensory input to behavior output, link between cortical circuits and complex cognition and behavior, and development of these circuits during embryonic, fetal, and early post-natal development. Prerequisites: BISC 2220 or BISC 2320 or PSYC 2015 or PSYC 3118 or PSYC 3122. (Same as NRSC 8285).

PSYC 4591. Independent Research. 1-3 Credits.

Open to qualified students by permission to pursue an independent research project with the supervision of a faculty member ; arrangements must be made with the sponsoring faculty member prior to registration. May be repeated for credit; PSYC 3591 and PSYC 4591 may be taken for a total of 9 credits maximum. (Formerly PSYC 4191) Restricted to . Prerequisites: PSYC 1001 and PSYC 2101.

PSYC 4997. Honors Seminar. 3 Credits.

Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisites: PSYC 1001 and PSYC 2101. (Formerly PSYC 4197).

PSYC 5099. Variable Topics. 1-99 Credits.

PSYC 6998. Thesis Research. 3 Credits.

PSYC 6999. Thesis Research. 3 Credits.

PSYC 8202. Psychological Research Methods and Procedures. 3 Credits.

Required in all graduate psychology programs. Includes philosophy of science, types of research design, and methods of data collection. Restricted to graduate students. Prerequisites: One laboratory course in psychology, and a course in statistics.

PSYC 8203. Experimental Foundations of Psychology: Learning, Memory, and Cognition. 3 Credits.

Current conceptions of learning, memory, and cognition; the research upon which these conceptions are based; applications to practical contexts. Restricted to graduate students.

PSYC 8204. Experimental Foundations of Psychology: Biological Basis of Behavior. 3 Credits.

Introduction to the structure and function of the nervous system. Topics include neural communication, sensory processes, memory, neuroendocrinology of sex differences and stress, psychiatric and neurodegenerative disorders. Restricted to graduate students.

PSYC 8207. Psychological Assessment I. 3 Credits.

Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory–diagnostic work at clinical facilities. Material fee. Restricted to students in the PhD in clinical psychology program.

PSYC 8208. Psychological Assessment II. 3 Credits.

Continuation of PSYC 8207. Theoretical and clinical aspects of assessment; includes interviewing, psychometric tests, and projective techniques. Two-hour laboratory–diagnostic work at clinical facilities. Material fee. Restricted to students in the clinical psychology program.

PSYC 8210. Developmental Theories and Issues. 3 Credits.

Orientation to the field of developmental psychology, with emphasis on traditional and contemporary theories, fundamental concepts and issues, and methodological approaches. Restricted to graduate students.

PSYC 8211. Community Psychology I. 3 Credits.

Survey of the history, theories, and values guiding community psychology; models of service delivery. Restricted to graduate students.

PSYC 8212. Community Psychology II. 3 Credits.

Continuation of PSYC 8211. Applications of the principles and theories of community psychology to interventions and research. Restricted to graduate students. Prerequisite: PSYC 8211.

PSYC 8218. Evidence-Based Interventions. 3 Credits.

Introduction to theory and technique of psychotherapeutic approaches of proven effectiveness. Restricted to graduate students.

PSYC 8219. Group Dynamics. 3 Credits.

PSYC 8220. Ethics and Professional Issues. 3 Credits.

The foundations of ethics and ethical decision making, with an emphasis on the APA Ethics Code. Ethical conflicts and issues in the areas of research and practice. Restricted to graduate students.

PSYC 8223. Seminar: Human Memory. 3 Credits.

Selected topics of current research interest in the area of human memory. Emphasis on encoding and retrieval processes, amnesia, and disorders of memory. Restricted to graduate students.

PSYC 8225. Behavioral Approaches to Child Assessment and Therapy. 3 Credits.

Child assessment and treatment from a behavioral viewpoint. The application of conditioning, reinforcement, and shaping principles with reference to specific disorders of childhood. Restricted to graduate students.

PSYC 8227. Seminar: Principles of Psychotherapy. 3 Credits.

For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8228. Seminar: Principles of Psychotherapy. 3 Credits.

Continuation of PSYC 8227. For graduate students in clinical psychology. Patient's needs and demands on the therapist. Case participation heavily relied upon. Prerequisite: PSYC 8218.

PSYC 8231. Development of Psychometric Instruments. 3 Credits.

Quantitative techniques and principles used in construction, standardization, and evaluation of personality and ability measures for research and practice; quantification of human judgment for measurement purposes. Restricted to graduate students. Prerequisites: course in tests and measurements and an elementary course in statistics.

PSYC 8236. Ethnic and Racial Diversity in Psychology. 3 Credits.

Basic theoretical models of research in ethnic, racial, and cultural diversity and new directions in the field. The impact of being an ethnic minority in the United States. Restricted to graduate students.

PSYC 8237. The Practice of General Psychology I. 3 Credits.

Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to students in the clinical psychology program.

PSYC 8238. The Practice of General Psychology II. 3 Credits.

Continuation of PSYC 8237. Application of psychological principles and findings to a wide spectrum of human problems. Professional issues facing the psychologist offering services. Participation in the development, implementation, and evaluation of applied psychological services and projects. Restricted to students in the clinical psychology program.

PSYC 8239. Lifespan Developmental Psychopathology I. 3 Credits.

Infancy, childhood, and adolescence. Restricted to graduate students.

PSYC 8240. Lifespan Developmental Psychopathology II. 3 Credits.

Continuation of PSYC 8239. Restricted to graduate students.

PSYC 8243. Seminar: Psychology of Leadership in Organizations. 3 Credits.

Theories and issues related to the emergence and effectiveness of leaders, with focus on leadership behaviors and processes in organizations. Restricted to graduate students.

PSYC 8244. Theories and Processes of Organizational Management. 3 Credits.

Basic functions and techniques of organizational management—design, control, direction, and decision making—examined from the viewpoint of behavioral science. Restricted to graduate students.

PSYC 8245. Seminar: Organizational Behavior. 3 Credits.

Analysis of organizational behavior; emphasis on motivation and productivity. Recent research on employee attitudes, primary group, supervisory leadership, formal and informal organization, job design. Restricted to graduate students.

PSYC 8246. Seminar: Personnel Evaluation Techniques. 3 Credits.

Techniques of personnel selection and performance evaluation. Employment tests, personal data, assessment interviews, performance ratings, and assessment centers. Federal guidelines in employee selection. Includes practicum. Restricted to graduate students.

PSYC 8248. Research Applications to Organizational Intervention and Change. 3 Credits.

Emphasis on development of models of organizational effectiveness; design of valid diagnostic instruments; implementation of research strategies; establishment of program evaluation criteria. Restricted to graduate students.

PSYC 8250. Seminar in Cognitive Neuroscience. 3 Credits.

Advanced topics in the fundamentals of cognitive neuroscience; attention, memory, scene processing, space perception, decision making, and social and affective functioning. Restricted to graduate students. Recommended background: a working knowledge of cognitive psychology concepts and core neuronal physiology.

PSYC 8251. Behavioral Neuroscience. 3 Credits.

The neural basis of behavior, with special focus on the psychobiological determinants of learning, memory, and cognition. Methodologies used for different levels of analysis with normal and brain-impaired subjects. Restricted to graduate students.

PSYC 8253. Social Cognition. 3 Credits.

Social psychology theories, conceptual approaches, and their applications. Social cognition, person perception, attribution, information processing, attraction, stereotyping. Restricted to graduate students.

PSYC 8254. Social Influence. 3 Credits.

Social psychology theories, conceptual approaches, and their applications. Analysis of intentional and unintentional social influence processes and their effects on behavior. Current research on conformity, social power, social exchange, and impression management. Restricted to graduate students.

PSYC 8255. Attitudes and Attitude Change. 3 Credits.

Current theory and research on attitudes and attitude change. Restricted to graduate students.

PSYC 8256. Introduction to Survey Research. 3 Credits.

Theory and practice of face-to-face telephone and mail surveys. Practical experience with all stages from the formulation of research questions and hypotheses to questionnaire design, sampling, pilot, testing, interviewing, coding, and data cleaning. Prerequisite: STAT 2105.

PSYC 8257. Current Topics in Social Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas within field of social psychology. Topic changes each semester. Restricted to graduate students.

PSYC 8258. Qualitative Research and Analysis. 3 Credits.

Qualitative research and analysis with a focus on theory, didactic material relevant to qualitative methodologies, and applied qualitative research design and analysis. Restricted to graduate students.

PSYC 8259. Psychology of Individual and Group Decision Making. 3 Credits.

Examination of processes in organizational decision making and group behavior. Topics include group and individual decision-making approaches, decision aids and support systems, performance and decision effectiveness, and risk analysis. Restricted to graduate students.

PSYC 8260. Psychology of Work Group Development. 3 Credits.

Examination of theory and research on groups as task performance systems. Approaches to team development as a means of improving work group effectiveness, including goal setting, role clarification, increasing interpersonal skills, and conflict resolution. Restricted to graduate students.

PSYC 8268. Seminar: Neuropsychology. 3 Credits.

Selected problems in research relating the brain and behavior. Independent topics each semester, such as sensory processing, brain development and behavior, clinical aspects of nervous system function. Restricted to graduate students.

PSYC 8275. Women and Health. 3 Credits.

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. Restricted to graduate students. (Same as WGSS 8275).

PSYC 8277. Health Psychology. 3 Credits.

Social psychological theories and research that relate to health and illness. Application of theories of social learning, attribution, attitude change, and social influence to topics such as health promotion and disease prevention, health compliance, and coping with illness and disability. Restricted to graduate students.

PSYC 8279. Special Topics in Health Psychology. 3 Credits.

May be repeated for credit provided the topic differs. Admission by permission of instructor. Restricted to graduate students.

PSYC 8280. Theories and Practice of Clinical Supervision. 0 Credits.

Theory and practice of clinical supervision through instruction and a supervision practicum in the clinical facilities. Restricted to clinical psychology graduate students.

PSYC 8283. First Year Seminar I: Motivational Interviewing. 0 Credits.

This course develops in clinical psychology doctoral students basic skills necessary for therapeutic effectiveness through motivational interviewing and familiarizes them with goals and values in their clinical training. Restricted to students in the clinical psychology program.

PSYC 8284. First Year Seminar II: Introduction to Therapy. 0 Credits.

Clinical psychology doctoral students gain basic familiarity with assessment and psychotherapy practices and understanding of the inner workings of the Meltzer Center clinic. Restricted to students in the clinical psychology program.

PSYC 8285. History and Systems of Psychology. 0 Credits.

Clinical psychology doctoral students engage in self-study of the history and systems of psychology. Restricted to students in the clinical psychology program.

PSYC 8286. Clinical Psychology Externship. 0 Credits.

Clinical psychology doctoral students participate in externship placements in clinical settings to develop their clinical skills and competencies. Restricted to students in the clinical psychology program.

PSYC 8287. Current Topics in Clinical Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to Graduate students only.

PSYC 8288. Current Topics in Industrial/Organizational Psychology. 3 Credits.

Advanced seminar with focus on major theoretical approaches, research, or problem areas. Topics vary. May be repeated for credit. Restricted to graduate students.

PSYC 8289. Seminar: Current Topics in Experimental Psychology. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Restricted to graduate students.

PSYC 8291. Theories of Organizational Behavior. 3 Credits.

Examination of current theoretical models and research. Restricted to graduate students.

PSYC 8295. Independent Research. 3 Credits.

Individual library or experimental research under supervision of staff member. Arrangements must be made with sponsoring faculty member prior to registration. May be repeated for credit. Restricted to Psychology graduate students only.

PSYC 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the major field examination.

PSYC 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to PhD students in the psychology program.

PUBLIC HEALTH (PUBH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PUBH 0920. Continuing Research - Master's. 1 Credit.

Continuing Research Credit- Master's Level.

PUBH 0940. Continuing Research - Doctoral. 1 Credit.

Continuing Research Credit- Doctoral.

PUBH 1010. First-Year Experience in Public Health. 1 Credit.

Designed to assist students in the transition to GW and the public health major by introducing skills and resources needed to succeed personally, academically, and professionally, particularly in a public health context.

PUBH 1099. Variable Topics. 1-36 Credits.

PUBH 1101. Introduction to Public Health and Health Services. 3 Credits.

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

PUBH 1102. History of Public Health. 3 Credits.

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

PUBH 1102W. History of Public Health. 3 Credits.

Social history of public health from the late nineteenth century to the present; historical context for contemporary public health problems. Includes a significant engagement in writing as a form critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: UW 1020.

PUBH 1299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 2110. Public Health Biology. 3 Credits.

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisites: BISC 1005; or BISC 1111.

PUBH 2112. Principles of Health Education and Health Promotion. 3 Credits.

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. PUBH 1101 may be taken as a corequisite. Prerequisite: PUBH 1101.

PUBH 2113. Impact of Culture upon Health. 3 Credits.

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

PUBH 2114. Environment, Health, and Development. 3 Credits.

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

PUBH 2115. Health, Human Rights, and Displaced Persons. 3 Credits.

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

PUBH 2116. Global Delivery of Health Systems. 3 Credits.

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

PUBH 2117. Service Learning in Public Health. 3 Credits.

A service-learning course that combines classroom instruction with practical learning. Students are responsible for securing an approved service site before the beginning of the semester; the instructor is available to assist with this placement.

PUBH 3115. Global Health and Human Rights. 3 Credits.

Concepts of health as a human right and the impact of ethical violations on the mental and physical health of individuals; the efforts of the international community in addressing health consequences of vulnerable populations.

PUBH 3116. Global Health Systems Performance. 3 Credits.

Introduction to the U.S. and international health systems, both public and private, and the WHO Health Systems Framework; how environmental, ethical, cultural, and political actions shape health systems in different parts of the world. Restricted to juniors and seniors.

PUBH 3130. Health Services Management and Economics. 3 Credits.

Basics of management theory, finance, and economics as applied to managing in the public health and health services field. Prerequisite: ECON 1011.

PUBH 3131. Epidemiology: Measuring Health and Disease. 3 Credits.

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisites: PUBH 1101 and STAT 1127.

PUBH 3132. Health and Environment. 3 Credits.

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases.

PUBH 3133. Global Health and Development. 3 Credits.

Political, social, and economic determinants of health; how health status is measured with an emphasis on low-income countries, the health of the poor, and inequity and inequality; burden of diseases that impact development and their basic epidemiological characteristics, including who they affect, when they occur, and where risk is greatest.

PUBH 3135W. Health Policy. 3 Credits.

An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: PUBH 1101.

PUBH 3136. Health Law. 3 Credits.

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

PUBH 3137. Global Public Health Nutrition. 3 Credits.

Consideration of hunger and other nutrition issues globally, including food insecurity, under/over nutrition, and micronutrient deficiencies. Application of UNICEF malnutrition framework to describe vulnerable groups, critique program strategies, and identify multisectorial strategies to reduce hunger and malnutrition. Prerequisite: PUBH 3133.

PUBH 3142. Introduction to Biostatistics for Public Health. 3 Credits.

Applying biostatistical principles to analyze studies in health services literature. Selecting statistical methods based on research questions, calculating basic statistics for estimation and inference, interpreting results of statistical analyses.

PUBH 3150. Sustainable Energy and Environmental Health. 3 Credits.

Sustainability issues from the perspective of environmental health. Technical, social, and health implications of specific energy sources. Energy conservation and efficiency in the context of population growth, food and water resources, and maintenance of a healthy environment for future generations.

PUBH 3151. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues.

PUBH 3151W. Current Issues in Bioethics. 3 Credits.

General and specific ethical questions and ethical decision making from both personal and organizational perspectives; right to health care, research with human subjects, reproductive technology, genetics, professional and student roles and responsibilities, and end-of-life issues. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

PUBH 3152. Qualitative Research Methods in Public Health. 3 Credits.

Introduction to characteristics and methods relevant to the design and conduct of qualitative research in public health investigations; data collection methods, coding, data analysis, and reporting results.

PUBH 3199. Topics in Public Health. 1-5 Credits.

Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 3201. Introduction to Bioinformatics. 3 Credits.

Introduction to bioinformatics, including biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structural bioinformatics; and programming concepts in Unix and Python including the Unix environment, the shell, scripting, databases, regular expressions, and pipeline development. Prerequisites: BISC 1112 or BISC 1116 and BISC 1126; and STAT 1127. Credit cannot be earned for this course and BISC 2584, CSCI 3571.

PUBH 3202. Introduction to Genomics. 3 Credits.

Principles of genomics; genome projects, including the human genome, molecular techniques, analytical approaches, computational tools for genome research, and genomic data generation and analysis. Prerequisites: BISC 1111; BISC 1112.

PUBH 3299. Undergraduate Public Health Study Abroad. 1-6 Credits.

May be repeated for credit when multiple courses with distinct subject matter are taken as part of a study abroad program.

PUBH 3995. Undergraduate Research. 1-3 Credits.

Students work under the mentorship of a faculty member to acquire knowledge and skills central to the design, conduct, and/or analysis of scientific research. Project proposal must be approved by the instructor and dean's office prior to enrollment. Credit cannot be earned for this course and EXNS 3995.

PUBH 4140W. Senior Seminar. 3 Credits.

Students develop a public health intervention incorporating various domains of the discipline of public health. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to public health majors in their senior year. Prerequisite: PUBH 3130.

PUBH 4141. Senior Seminar Community Needs Assessment. 3 Credits.

Culminating experience for students in undergraduate public health programs. Restricted to seniors in the BS in public health program and students in the minor in public health.

PUBH 4199. Independent Study. 3 Credits.

Outline of intended project must be approved prior to registration by instructor and dean's office. Restricted to public health majors.

PUBH 4201. Practical Computing. 3 Credits.

Basic concepts of computer programming in biomedical sciences and health informatics; foundations of R and Python languages; best programming practices in health applications. Prerequisites: BISC 1111 and BISC 1115; or BISC 1112 and BISC 1116.

PUBH 4202. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Prerequisite: PUBH 4201.

PUBH 6002. Biostatistical Applications for Public Health. 3 Credits.

Application of biostatistical principles to critical analysis of retrospective studies, prospective studies, and controlled clinical trials, as well as studies in the health services literature. Selection, basic calculations, and interpretation of statistical methods for detection of significant associations and differences.

PUBH 6003. Principles and Practices of Epidemiology. 3 Credits.

General principles, methods, and applications of epidemiology. Outbreak investigations, measures of disease frequency, standardization of disease rates, study design, measures of association, hypothesis testing, bias, effect modification, causal inference, disease screening, and surveillance. Case studies apply these concepts to a variety of infectious, acute, and chronic health conditions affecting the population.

PUBH 6007. Social and Behavioral Approaches to Public Health. 2 Credits.

Social and behavioral science theories, models, and concepts that can be applied to public health problems and interventions. The role of social and community factors, including race, ethnicity, and culture, in both the onset and solution of public health problems; the interrelationship between the social and behavioral sciences.

PUBH 6009. Fundamentals of Public Health Program Evaluation. 2 Credits.

Topics include designing program evaluation studies to produce and interpret evidence to improve public health; options for evaluation study design and evidence generation; and qualitative data collection and analysis methods. Prerequisites: PUBH 6007. Recommended background: Prior completion of PUBH 6002.

PUBH 6010. Independent Study. 1-6 Credits.

Designed to provide the student with an opportunity to gain or enhance public health knowledge and to explore an area of interest related to public health research or the delivery and/or administration of health services. Permission of the instructor or advisor required prior to enrollment.

PUBH 6011. Environmental and Biological Foundations of Public Health. 3 Credits.

The connection between population health and exposures to chemical, physical, and biological agents in the environment; interconnection between dimensions of environmental systems and all living things; biological sciences as they relate to environmental impacts.

PUBH 6012. Fundamentals of Health Policy. 2 Credits.

Comparative study of the structure, financing, and delivery of public health and health care in the United States and abroad; core elements of policy analysis are used to develop skills in analyzing a public health problem and presenting possible solutions both orally and in writing.

PUBH 6013. Master's Thesis. 3 Credits.

See Advisor.

PUBH 6014. Practicum. 1-3 Credits.

This course provides the opportunity for MPH students to apply the knowledge and skills acquired through their programs of study. A planned, supervised and evaluated practice experience that is relevant to the student's program is an essential component of a public health professional degree program. These opportunities can take place in a variety of agencies or organizations. Each program customizes Practicum requirements to meet students' needs. (Credit/No Credit) [For 45-credit MPH students who started Summer 06 or after.].

PUBH 6015. Culminating Experience. 1-3 Credits.

Students synthesize and integrate knowledge acquired in coursework and other learning experiences and apply theory and principles to a situation that approximates some aspect of professional practice. Program faculty evaluate student's mastery of the body of knowledge and ability to demonstrate proficiency in the required competencies. Requirements evaluated are adapted to the degree program.

PUBH 6016. Field/Laboratory Experience. 2 Credits.

The overall purpose of the field/laboratory experience requirement is to introduce students in the MS-PHMEID degree program to a supervised practical experience in a Public Health Laboratory or other qualifying public health entity from the perspective of the actual wet laboratory operations. Students that already have this laboratory experience are introduced to epidemiologic research, particularly surveillance, and its tie-in with laboratories either in the United States or in an international setting.

PUBH 6021. Essentials of Public Health Practice and Leadership I. 1 Credit.

The skills necessary for being an effective practitioner and leader; optimizing self-management and contributions in teams as public health professionals.

PUBH 6022. Essentials of Public Health Practice and Leadership II. 1 Credit.

The development of organizations and systems in public health; organizational management tools and collaborative, outcome-oriented advocacy techniques. PUBH 6021 may be taken as a corequisite. Prerequisite: PUBH 6021.

PUBH 6023. Interprofessional Education Experience. 0 Credits.

Completion of an interprofessional education experience (IPE) is required for all MPH students. Maximizes the student's capacity for collaboration with others to better address public health and health care challenges. A variety of options are available for students to complete this requirement before graduation. Restricted to MPH students. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011, PUBH 6012, and PUBH 6021.

PUBH 6050. Introduction to Health Services Delivery. 2 Credits.

Introduction to the systems that define and shape delivery of health services in the United States. Case studies and presentations on major issues develop an appreciation of dilemmas confronting policymakers, providers, and patients: balancing cost, quality and access. Access and disparity, health care professions, facilities, managed care organizations and government health care programs. Policy changes that have had major impact on American health care in the past century. Fall.

PUBH 6052. Practical Data Management and Analysis for Public Health. 2 Credits.

Practical aspects of dataset creation, data management, rudimentary statistical analysis, and tabular and graphical presentation of results. Creating codebooks, entering and cleaning data, deriving new variables from existing ones, choosing and implementing appropriate analytical techniques, graphing and tabulating results, and documenting and protecting work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6054. Community Engagement and Advocacy. 2 Credits.

Tools and strategies for public health practitioners to understand, respect, organize, and collaborate with community groups and organizations for promotion of healthy behaviors. Development of practical skills to harness available resources in a community to advocate for healthy living and positive health outcomes.

PUBH 6056. Public Health Leadership Seminar. 1 Credit.

Leadership lessons taken from the careers of a diverse group of executives and entrepreneurs from the corporate, government, nonprofit, and art sectors. Leadership theory and styles. Building networks; skills for effectively engaging with peers, potential employers, and business partners.

PUBH 6058. Researching Violence Against Women and Girls. 2 Credits.

The intersection of violence against women and girls (VAWG) and public health; the impact that violence has on the health of the survivor, her current and future children, and communities; methods and best practices for designing applied research on VAWG. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6007, PUBH 6011 and PUBH 6012.

PUBH 6060. MPH@GW Culminating Experience I. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Most students will have completed PUBH 6014 or PUBH 6022 and other MPH core coursework prior to enrollment. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6002, PUBH 6003, and PUBH 6007; and PUBH 6004 or PUBH 6011; and PUBH 6006 or PUBH 6012; and PUBH 6009 or PUBH 6437.

PUBH 6061. MPH@GW Culminating Experience II. 1 Credit.

Students integrate and apply the skills, knowledge, theories, principles, and methods of public health practice to a public health issue. Students may already have completed PUBH 6060 or it may be taken as a corequisite. Restricted to students in the MPH@GW program. Prerequisites: PUBH 6060.

PUBH 6080. Pathways to Public Health. 0 Credits.

Introduces the 12 foundational public health learning objectives to GWSPH students in non-MPH graduate programs. Must be completed before the last day of classes in the student's first semester of matriculation.

PUBH 6090. Practicum/Culminating Experience. 4 Credits.

Individually tailored. Culminating Experience for the MPH program. Permission of the advisor required prior to enrollment.

PUBH 6091. Special Project. 1-4 Credits.

Under faculty supervision, the student undertakes an original project that applies the skills and knowledge gained in the chosen track and/or concentration within the MPH program. Prerequisite: Permission of the instructor. NOTE that credits vary by program; please consult your program plan to register for the appropriate number of credits. [For 36-credit MPH students only].

PUBH 6099. Topics in Public Health. 3 Credits.

In-depth examination of a particular facet of public health. Topics vary by semester. See the Schedule of Classes for more details. May be repeated for credit provided the topic differs.

PUBH 6121. Environmental and Occupational Epidemiology. 3 Credits.

Demonstration and application of epidemiologic methods for the study of environmental and occupational health problems; epidemiologic exposure assessment methods and methods relevant to cohort, case-control, cross-sectional, and case cross-over studies; survey design and sources and evaluation of biases and confounding; emphasis on written and oral communication skills. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6122. Protecting Public Health and the Environment: Policies, Politics, and Programs. 3 Credits.

The legislative, regulatory, judicial, and political system in the United States developed to protect human health and the environment. National and global public and environmental health agencies, policy development, and current topics. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6123. Toxicology: Applications for Public Health Policy. 3 Credits.

Toxicology as both a scientific discipline and a source of information for public health policy with respect to the regulation of foods, pesticides, drugs (pharmaceuticals), environmental chemical pollutants, and other chemicals that may affect human and environmental health. How chemicals interact with biological systems to produce adverse effects. The ways in which toxicologic information is developed and applied to regulatory decision making and the use of toxicology in regulatory risk assessment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6124. Risk Management and Communication. 3 Credits.

Culminating course using problem-based learning methods to examine a variety of real-world environmental and occupational health issues in-depth. Students integrate cumulative knowledge across all required courses and demonstrate professional competencies. Prerequisites: PUBH 6121, PUBH 6123 and PUBH 6126.

PUBH 6126. Assessment and Control of Environmental Hazards. 3 Credits.

Introduces the anticipation, recognition, assessment, and control of hazards in the workplace and the ambient environment. It emphasizes an understanding of the characteristic features of specific hazards, which may be chemical, biological, or physical/ergonomic.

PUBH 6127. Introduction to Environmental Health Microbiology. 2 Credits.

Basics of public health microbiology as it relates to the environment, food, water, and bioterrorism. Examines from an environmental health perspective how the principles of microbiology are applied to current and emerging public health issues, whether from intentional or unintentional contamination of the environment. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6128. Global Environmental and Occupational Health. 2 Credits.

Examination of the global environmental and occupational health factors that contribute significantly to the global burden of disease, focusing primarily on low- and middle-income countries; principles from behavioral sciences, development economics, risk assessment, and epidemiology are included; potential solutions to environmental health problems, metrics used to measure impacts, and areas for future research. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6130. Sustainable Energy and the Environment. 2 Credits.

The sustainability of various energy strategies, including energy conservation, green building principles, renewable energy, and mitigation and adaption policies for climate change. Emphasis on the life cycle framework. Topics include natural resource depletion, water and energy consumption, and air, water, and solid waste pollutant emissions. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6131. Quantitative Methods in Environmental and Occupational Health. 3 Credits.

Application of biostatistical and epidemiologic concepts and methods to analysis of EOH data. Development and practice of skills needed for analyzing complex exposures and communicating environmental and occupational research findings. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6004 or PUBH 6011.

PUBH 6132. Water, Sanitation, and Hygiene (WASH) in Low-Income Countries. 2 Credits.

Introduction to working in both disaster and development settings in countries where contaminated water, inadequate sanitation, and poor hygiene (WASH) cause serious health problems. Students gain practical experience applying WASH methods in the field. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6133. Social Dimensions in Climate Change and Health. 3 Credits.

The drivers of climate change and outcomes with particular focus on health dimensions; obstacles, vulnerabilities, inequality, and adaptation as well as technical and social solutions.

PUBH 6135. Researching Climate Change and Human Health. 3 Credits.

Study of the effects of climate change on human health using evidence compiled by the National Climate Assessment (NCA); widespread impacts, ecological context, oceans of change, infrastructure, water resources, energy, land use, heat, and air quality. Recommended background: PUBH 6003 and PUBH 6004.

PUBH 6136. Introduction to Environmental and Occupational Epidemiology. 3 Credits.

Epidemiologic research designs; methods for the study of environmental and occupational health problems; exposure assessment methods; design aspects of cross-sectional, case-control, cohort, and case cross-over studies; sources and evaluation of biases and confounding; survey and questionnaire design. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6011.

PUBH 6137. Environmental and Occupational Health Culminating Experience I. 1 Credit.

The first in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health who have completed all core courses and at least 9 credits in program-specific courses. Prerequisites: PUBH 6002 and PUBH 6003; PUBH 6004 or PUBH 6011; PUBH 6006 or PUBH 6012; and PUBH 6007.

PUBH 6138. Environmental and Occupational Health Culminating Experience II. 1 Credit.

The second in a two-course sequence. The final, integrative learning experience for the MPH in environmental health science and policy or global environmental health. Students apply the skills and knowledge, theories, and principles learned in the MPH program to practical public health problems. Restricted to MPH students in the Department of Environmental and Occupational Health. Prerequisite: PUBH 6137.

PUBH 6140. Global Climate Change and Air Pollution. 2 Credits.

The state of the air in the Anthropocene epoch. Key concepts of atmospheric science, public health, and other societal impacts. Local and global policy frameworks. Prerequisites: PUBH 6004 or PUBH 6011.

PUBH 6144. Environmental Health Data Development and Modeling. 2 Credits.

Introduction to sources of environmental data, handling and cleaning of data, and using data in both statistical and environmental exposure models. Prerequisites: PUBH 6131 or PUBH 6853.

PUBH 6146. Microbiomes and Microbial Ecology in Public Health. 2 Credits.

Introduction to key concepts of environmental microbial ecology and the human microbiome. The roles of microbes in ecosystems' functions with a focus on climate change and the roles of microbes in human health and disease. Prerequisites: PUBH 6011.

PUBH 6199. Topics in Environmental and Occupational Health. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details.

PUBH 6233. Epidemiologic Principles and Practice of Disease Eradication. 2 Credits.

The role of epidemiology, surveillance, research, and information technology in the eradication of vaccine preventable and parasitic human diseases. Prerequisites: PUBH 6003.

PUBH 6234. Epidemiologic Methods in Neglected Tropical Disease Control. 1 Credit.

Introduction to neglected tropical disease epidemiology providing a broad overview of select tropical medicine and public health issues; focus on applications of epidemiologic methods to the study of public health consequences of NTDs. Prerequisites: PUBH 6003. Corequisites: PUBH 6011.

PUBH 6235. Epidemiology of Obesity. 1 Credit.

Introduction to the epidemiology of obesity; descriptive epidemiology, measurement, consequences, and determinants of obesity; adiposity and body composition; obesity interventions and policy. Prerequisites: PUBH 6003.

PUBH 6236. Systematic Review of Public Health Literature. 1 Credit.

The process of conducting systematic reviews of literature in order to translate research into public health practice recommendations. Recommended for MPH candidates planning to conduct a systematic review of the literature for their culminating experience. Prerequisites: PUBH 6002 or EXNS 6204; and PUBH 6003 or EXNS 6208.

PUBH 6237. Chronic Disease Epidemiology. 2 Credits.

Overview of the epidemiology (descriptive, analytic, and etiologic) of chronic diseases. Emphasis on epidemiologic methods and study design in relation to chronic disease, as well as public health approaches to disease control including surveillance, screening, and interventions. Prerequisites: EXNS 6204 or PUBH 6002; and EXNS 6208 or PUBH 6003.

PUBH 6238. Molecular Epidemiology. 1 Credit.

Concepts, principles, and use of molecular methods in epidemiologic and clinical research. Common molecular measures and their interaction with environmental factors. Development of a framework for interpreting, assessing, and incorporating molecular measures in their area of research. Prerequisites: PUBH 6003.

PUBH 6239. Epidemiology of Foodborne and Waterborne Diseases. 1 Credit.

Foodborne and waterborne toxicants; diseases linked to eating and drinking and their prevention. Topics include transmission of disease and disease processes; microbial toxins, mycotoxins, chemical toxins, bacterial infections (e.g., salmonellosis, shigellosis, vibrio, listeria), virus and parasitic infections; issues in food and water safety. Prerequisites: PUBH 6003.

PUBH 6240. Pediatric HIV/AIDS. 1 Credit.

Comprehensive overview of HIV infection in children, with emphasis on the global pediatric HIV epidemic. Biological, epidemiological, clinical, and psychosocial issues; public health programmatic approaches to prevention, care, and treatment. The national and global experience with scaling up prevention services in the global effort to virtually eliminate HIV/AIDS in children. Prerequisites: PUBH 6003. Recommended background: PUBH 6250 and PUBH 6253.

PUBH 6241. Nutritional Epidemiology. 2 Credits.

Methodological issues related to dietary assessment, nutrition surveillance, and the epidemiology of obesity. Current trends, including the health impacts of vitamin D and sodium. Interpretation of the scientific literature in the field. Examples drawn from the National Health and Nutrition Examination Survey. Prerequisites: PUBH 6003.

PUBH 6242. Clinical Epidemiology and Public Health: Reading the Research. 2 Credits.

Methods for reading epidemiology and public health research including case-control, cohort studies, randomized controlled trials, meta-analysis, testing and screening, prediction rules, decision and cost-effectiveness analysis. Prerequisites: PUBH 6003 or equivalent.

PUBH 6243. Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

An evidence-based problem solving applications course utilizing methods taught in PubH 6242 Clinical Epidemiology and Public Health: Reading the Research Prerequisites: PUBH 6003. Credit cannot be earned for this course and PUBH 8242.

PUBH 6244. Cancer Epidemiology. 2 Credits.

Epidemiology of specific cancers, with an emphasis on molecular and genetic epidemiology. Current research in the field. Prerequisites: PUBH 6003.

PUBH 6245. Infectious Disease Epidemiology. 2 Credits.

The role and conduct of laboratory and field investigations in the epidemiology of infectious diseases. Prerequisite: PUBH 6003.

PUBH 6247. Design of Health Studies. 3 Credits.

Epidemiologic concepts and methods applied to specific research questions especially new types of public health problems. Recognition and development of the most appropriate study design for a specific health issue. Ecologic, cross-sectional, case-control, cohort studies and clinical trials. Sampling, measurement, questionnaire design, causality and causal criteria. Development of a research proposal. Prerequisites: PUBH 6003. Corequisites: PUBH 6002.

PUBH 6248. Epidemiology of Aging. 2 Credits.

The demographics, theories, and physiology of aging; descriptive and associative epidemiology of several common age-related diseases and disorders; implications for public health. Prerequisites: PUBH 6003.

PUBH 6250. Epidemiology of HIV/AIDS. 2 Credits.

Methodological issues central to HIV/AIDS research. Biases peculiar to HIV/AIDS epidemiologic studies (both observational and experimental designs). The natural history of HIV, diagnosis, surveillance, vulnerable subpopulations, behavioral facets, and evaluation of epidemiologic studies with an emphasis on methodological considerations. Prerequisites: PUBH 6003. Recommended background: PUBH 6002.

PUBH 6252. Advanced Epidemiology Methods. 3 Credits.

Advanced quantitative epidemiologic methods, with a focus on basic data analytic techniques, identifying and evaluating bias and adjusting for confounding. Dose-response, trend analysis, and multiple linear and logistic regression models. PUBH 6249 may be taken as a corequisite. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6247 and PUBH 6249.

PUBH 6253. Issues in HIV Care and Treatment. 1 Credit.

This course provides an overview and in depth consideration of some of the major issues in treatment of HIV disease, including the assessment of efficacy and effectiveness, drug resistance, monitoring of drug toxicity, special populations, the interrelationship between treatment and prevention, and quality of care. The course has been designed with an interdisciplinary audience in mind. In discussions and assignments, students are able to emphasize their own area of interest and/or expertise (e.g. epidemiology, policy, etc).

PUBH 6255. Organizational Responses to the Local, National, and Global HIV/AIDS Epidemics. 2 Credits.

This seminar focuses on the rapidly evolving responses of local, national and global governmental and non-governmental organizations to the HIV/AIDS epidemic. Inspirational leaders of selected HIV/AIDS organizations are invited to describe how their organizations contribute to fighting the epidemic; the leadership and management skills that they use in their daily work; and their strategic decision-making processes. Basic principles of epidemiology, leadership and organizational strategy and structure are addressed through didactic presentations and interactive faculty-student dialogue. Lessons learned through the lens of HIV/AIDS organizations are broadly applicable to other public health problems. Students learn about the strengths and challenges of different types of public health organizations as they make career decisions about their own transition to the public health work force. Prerequisites: PUBH 6003, HIV/AIDS experience, or permission of the instructor.

PUBH 6258. Advanced Topics in Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting in public health and medical research environments.

PUBH 6259. Epidemiology Surveillance in Public Health. 2 Credits.

Focus on foundations of public health surveillance systems for communicable as well as chronic diseases. Outbreak investigation methods are included, as well as surveillance data sources, data management, data analysis, ethical issues, surveillance system evaluation, and use of information for prevention. Surveillance systems for reportable diseases, nosocomial infections, bioterrorism events, cancer, environmental disease, vaccine-related adverse events, bovine spongiform encephalopathy, and military personnel are discussed. Prerequisites: PUBH 6003.

PUBH 6260. Advanced Data Analysis for Public Health. 3 Credits.

Advanced data analysis using the SAS System to expand on the analytic techniques gained in PUBH 6002 and PUBH 6249 and to provide students with the applied statistical skills required to analyze various types of public health datasets. Prerequisites: PUBH 6002 and PUBH 6249.

PUBH 6262. Introduction to Geographic Information Systems. 1 Credit.

Geographic information systems (GIS) for mapping and display of health data. The course makes use of ArcGIS 8.3. The use of spatial statistics for the detection of clusters and patterns in the spread of diseases. Working with geodatabases, shape files, layers, query information from attribute tables, geocode addresses and customizing GIS applications.

PUBH 6263. Advanced GIS. 1 Credit.

Provides mid to advanced level training in GIS for display and analysis of health data. Use software ArcGIS 9.3 and additional extensions such as Spatial Analyst and Geostatistical Analyst. Also uses GeoDa software. Emphasizes benefits of using GIS to do more than simply manage and map data. GIS supports a range of spatial analysis functions that enable researchers to extract additional meaning from manipulating geographic data. Learn to work with raster datasets and geodatabases to build spatial models for analyzing health data and evaluating spatial patterns of health events based on notion of distance. Prerequisites: PUBH 6262.

PUBH 6264. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and 6249.

PUBH 6265. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sa.

PUBH 6266. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6201, STAT 6202 and PUBH 6264.

PUBH 6267. Time Series Applications in Public Health. 2 Credits.

Introduce basic concepts for the identification and modeling of time series in the time domain approach. Learn a new set of terminology standards and a different way to analyze these type of data and to forecast future values of a time series and its accuracy. Software used is SAS/ETS and 3 procedures: ARIMA, AUTOREG, FORECAST. New mathematical notation is used. Prerequisites: PUBH 6249.

PUBH 6268. Advanced SAS. 1 Credit.

Intensive in advanced programming using SAS. Expand technical skills to provide advanced SAS tools for data management and graphics. Topics to include Interactive Matrix Language (IML), SAS Macro facility language, and drill-down graphs using SAS/GRAPH. Prerequisites: PUBH 6002 and PUBH 6249; or permission of the instructor.

PUBH 6269. Reproductive Epidemiology. 1 Credit.

Current research, controversial issues, and methodological problems in epidemiology of reproductive and perinatal health. Present reproductive health issues such as conception and infertility; perinatal issues such as complications of pregnancy, infections in pregnancy, adverse pregnancy outcomes, and birth defects. Prerequisites: PUBH 6003.

PUBH 6270. HIV/AIDS Surveillance. 1 Credit.

Overview of surveillance methods used domestically and internationally to monitor HIV/AIDS epidemic. Surveillance systems including sentinel, population based, behavioral, and incidence surveillance are presented and discussed. Strengths and weaknesses of these various systems are discussed in addition to how data from these systems impact and inform HIV/AIDS related policies and programs. Prerequisites: PUBH 6003.

PUBH 6271. Disaster Epidemiology. 1 Credit.

Introduction to disaster epidemiology that elucidates the important role epidemiologists play in assessing the health and psychological effects of natural and man-made disasters and in identifying factors that contribute to these effects. Focus on applications of epidemiologic methods to the study of public health consequences of disasters, case studies from actual disasters used to illustrate various roles of epidemiologist in responding to these events and lessons learned. Highlight key skills that epidemiologists need to be part of a response and recovery. Identify methodological issues for future work. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6272. Epidemiology of Infectious Agents Associated with Human Cancer. 1 Credit.

Describes the role of infectious agents in the etiology of human cancer. Emphasis on differences between specific oncogenic viruses. Other oncogenic agents, bacterial and parasitic, are also discussed. Discuss laboratory approaches to the documentation of their pathogenicity, how behavior affects mode of transmission, and which types of data provide strongest support for documenting oncogenic potential for humans. Prerequisites: PUBH 6003.

PUBH 6273. Ethnographic Methods. 1 Credit.

Use ethnographic field methods in conjunction with epidemiological research. Introduction to specific methods used to examine health phenomena and determinants of disease. Learn specific applied skills that can be modified with socio-cultural modifications to evaluate urban sites and other settings. Basic skills in application of ethnographic methods, including recursive observations, participant observations, and variety of approaches to interviewing such as in-depth, structured and non-structured as well as conversational interviewing. Discuss use of multiple approaches in conjunction with ethnography, including focus groups, archival, document, statistical and secondary data analysis, and survey research methods. Course emphasizes use of ethnographic research methods in community-based health settings and evaluates issues in cultural competency and how to garner stakeholder support to conduct epidemiologic studies. Prerequisites: PUBH 6003.

PUBH 6274. Emerging Infectious Diseases for Public Health Professionals. 2 Credits.

Focus on epidemiology of emerging infectious diseases of public health importance, including factors leading to their development, management of emerging infectious diseases from a public health and laboratory standpoint, including biosafety, and strategies for emergency preparedness from a national and international perspective. Emphasis on the context of emerging infectious diseases and strategic approaches to their containment. Prerequisites: PUBH 6003 or MICR 6292; or permission of the instructor.

PUBH 6275. Essential Public Health Laboratory Skills. 2 Credits.

This course provides public health students with practical laboratory experience. Prerequisites: MICR 6239 or permission of the instructor.

PUBH 6276. Public Health Microbiology. 3 Credits.

Gain in-depth understanding of important non-viral pathogens pertinent to public health microbiology. Learn how to isolate and identify pathogens using critical thinking and problem solving skills.

PUBH 6278. Public Health Virology. 3 Credits.

In-depth understanding of viral pathogenesis by focusing on current research, controversial issues, and public health relevance. Survey of family of viruses most relevant to today's public health efforts, concentrating on virus-host interactions and therapeutic strategies.

PUBH 6280. Microbiology and Emerging Infectious Diseases Final Project. 2 Credits.

Focus on the synthesis and summary of data acquired through epidemiologic and/or public health laboratory research. Biosafety training, CITI training, HIPAA training and permission of the instructor are required prior to enrollment. Prerequisites: PUBH 6002, PUBH 6003, PUBH 6292, and PUBH 6245.

PUBH 6281. Analysis of Complex Surveys Using SAS and Stata. 2 Credits.

Appropriate methods to analyze survey data collected using complex sampling methods are discussed and applied to national survey data to address provocative public health research questions. An equivalent Stata course may be substituted for prerequisite 6249. Prerequisites: PUBH 6003 and PUBH 6249.

PUBH 6282. Introduction to R Programming. 1 Credit.

R is an open source software environment for statistical computing and graphics. Data transfer between SAS and R, data manipulation and visualization within R, programming and debugging, R libraries, and graphics theory. Prerequisites: PUBH 6249. Recommended background: Programming experience in a statistical package such as Stata or in high level language such as C, Python, Perl.

PUBH 6299. Topics in Epidemiology. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6305. Fundamentals for Health Policy: Public Health and Health Care. 2 Credits.

An overview of public health and health care in the United States as an introduction to the study and analysis of health policy. Presents the governmental framework, institutions, financing streams, workforce, constituencies, and interest groups engaged in the health sector to ensure that students begin their policy analytic training with grounding in the political, economic, and social realities of public health and health care.

PUBH 6310. Statistical Analysis in Health Policy. 3 Credits.

Quantitative and statistical methods of data analysis for health policy and health services research. Instruction in conducting data analyses using Stata statistical and data analysis software and application of acquired skills to health policy and health services research. Practical experience in programming and analysis of various health policy-related questions. Entering and importing data; creating, saving, and merging data sets; creating and modifying variables; labeling variables and values; and conducting analysis ranging from univariate to multivariate analyses, including multiple regression and logistic regression. The use of existing data sets to analyze health policy issues and interpret these analyses for policy purposes. Prerequisite: PUBH 6002.

PUBH 6315. Introduction to Health Policy Analysis. 2 Credits.

Core elements of health policy analysis: problem definition, background, the political, economic, and social landscape; development of policy options and recommendations. Written, graphic, and oral presentation skills associated with policy analysis. Summer, Fall, Spring. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6320. Advanced Health Policy Analysis. 3 Credits.

Practical applications of basic quantitative tools in health policy. Problem definition; political, social, and economic assessment of a problem; program evaluation and data analysis; development of policy options; and the written and oral presentation of findings and recommendations. Prerequisites: PUBH 6305 or PUBH 6012; and PUBH 6310 and PUBH 6315.

PUBH 6325. Federal Policymaking and Policy Advocacy. 2 Credits.

The federal health policymaking process, including an overview of the legislative, administrative, and judicial processes that affect policymaking; federal budget, authorization, and appropriation processes; common techniques and strategies used to advance legislative and regulatory policies, including coalition building and the use of policy studies and media relations. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6330. Health Services and Law. 3 Credits.

Examination of the ways in which the law and legal system in the United States influence and are influenced by the health care system. How judicial, statutory, regulatory, and constitutional sources of law embody health policy and affect access to and quality and financing of health care, as well as the regulation of patient rights.

PUBH 6335. Public Health and Law. 3 Credits.

How the law can both promote public health and conflict with the rights of individuals protected under the U.S. Constitution; legal concepts that underlie the public health system and inform public health policymaking; major areas of public health activity; the future of public health.

PUBH 6340. Health Economics and Finance. 3 Credits.

Examination of economic principles as they apply to health policy in the public and private sectors. The basic framework of economics is used to analyze the behavior of consumers, hospitals, physicians, and insurers, as well as pharmaceutical companies and long-term care providers. Overview of Medicare and Medicaid. Economic analyses of current issues in the marketplace, including rising health spending in the context of the national economy and the federal budget, insurance market dynamics, key issues in the long-term care industry, shifting market forces and power within the health care arena, and new payment initiatives and delivery system models. Prerequisites: PUBH 6352 or an undergraduate economics course.

PUBH 6345. Health Policy Research Design. 2 Credits.**PUBH 6350. Health Policy Capstone. 2 Credits.**

Required for MPH graduate students in the health policy concentration in the final semester before graduation. Students synthesize and integrate knowledge across multiple public health disciplines; apply theories, principles, and skills in ways that approximate professional practice in the field of health policy; and demonstrate mastery of the required knowledge and competencies addressed in the curriculum. Prerequisites: PUBH 6012 or PUBH 6305; and PUBH 6320.

PUBH 6352. Basics of Economics for Health Policy. 1 Credit.

An introduction to modern microeconomics -- the study of how consumers, firms, industries, and the public sector make decisions and allocate their resources in the economy. The principles of supply and demand and elasticity in both the private and public sectors are analyzed.

PUBH 6353. Child Health Advocacy. 1 Credit.

Introduction to child health advocacy. Affordable Care Act (ACA), preventive care, school health, environmental issues, and emergency care. The use of data for advocacy.

PUBH 6354. Mental Health/Substance Abuse Policy. 2 Credits.

Provides an overview of the U.S. mental health and substance abuse delivery system, its components, and the policy challenges created by the organization of this system. Considers the behavioral health care system from the perspective of several main "actors" in the system: patients, providers (primarily doctors and hospitals), health plans, and payers (public and private). Prerequisite: PUBH 6305.

PUBH 6355. Comparative Health Policy. 2 Credits.

Archetypical health care systems, financing, and reform efforts, with emphasis on the trade-offs between efficiency and equity. Comparison of current policy challenges and solutions faced by policymakers in the U.S. and in other countries. Prerequisites: PUBH 6012 and PUBH 6305.

PUBH 6356. State Health Policy. 2 Credits.

Students develop a briefing on health and health care for a new governor and health secretary in order to gain a practical understanding of state health policy and programs. The course is designed to replicate the experience of a newly hired policy staff member learning the requirements for the position in a particular state. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6357. Health Economics and Policy: Cost Containment Strategies. 2 Credits.

Health care cost containment in the context of the current implementation of national health reform. Cost containment strategies; economic underpinnings, anticipated impacts, perspectives of and implications for health care providers and systems, and political considerations. Prerequisite: PUBH 6340.

PUBH 6358. Vaccine Policy. 2 Credits.

The development of U.S. vaccine policy and the growth of various markets targeting routine vaccination of all populations; interactions among business, legal, political, public health, medical, federal/state/local government, and consumer communities that combine to influence vaccine delivery in a broad range of settings. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6359. Reproductive Health Policy. 1 Credit.

Overview of reproductive health policy at the federal and state levels. Balancing the interests of competing stakeholders; the fundamental underlying role of significant disparities in financing for and access to reproductive health services; and how policymaking can alleviate or exacerbate preexisting issues.

PUBH 6360. Advanced Maternal and Child Health Policy. 1 Credit.

In-depth exploration of maternal and child health policy in the U.S., with a particular emphasis on the role of personal and public health services for women, children, youth and their families in the context of health and human services system change. Prerequisite: PUBH 6561.

PUBH 6361. Health Workforce Policy. 2 Credits.

Strategies for the prevention and control of infectious diseases, focusing on low and middle income countries. Goals, strategies, and challenges of major global health intervention programs. Surveillance systems, vaccination programs, chemotherapy as a prevention and treatment tool, nutritional supplementation, environmental approaches, and potential benefits of integrating multiple interventions. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6363. The Health Care Legislative Process. 1 Credit.

How health care legislation is developed in and moves through the U.S. House of Representatives and Senate. The roles of the committees of jurisdiction in each house and how the rules of each house affect legislative outcomes.

PUBH 6364. Federal Budget Process for Health Policy. 1 Credit.

Focuses on how the Congressional budget process shapes the funding and design of federal health care programs, ranging from entitlement programs like Medicare to appropriated programs like community health centers. Discussions cover budget resolutions, appropriations bills, and budget reconciliation legislation, as well as Congressional procedures and committees through which they are considered. Prerequisite: PUBH 6305.

PUBH 6366. Health Care Corporate Compliance. 2 Credits.

The federal laws and regulations that affect U.S. health care industry participants, particularly those relating to the prevention of fraud and abuse, and the role of corporate compliance programs. Prerequisites: HSML 6215 or PUBH 6330.

PUBH 6367. Population Health, Public Health, and Health Reform. 2 Credits.

In-depth assessment of how a reforming health care system can be expected to change the policy landscape for population and public health in the United States; direct changes evolving at the state and local level and national payment and health system reforms. Prerequisites: One of the following: HSML 6202, PUBH 6006, PUBH 6012, or PUBH 6305.

PUBH 6368. Law, Medicine, and Ethics. 3 Credits.

Legal, ethical, and policy issues that arise in the biomedical arena; the definitions of life and death, the nature of personal identity, the requirements of justice, and the boundaries of liberty. Prerequisites: PUBH 6330 or PUBH 6335.

PUBH 6370. Medicare/Medicaid Law and Policy. 2 Credits.

Describes current legal and public policy issues in the Medicare and Medicaid programs, including the legal, operational, financial, and organizational rules for the two programs. Prerequisite: PUBH 6315.

PUBH 6372. Minority Health Policy. 2 Credits.

Introduces students to the concept of health disparities and the implications of disparities for health care practice and policy. Students will learn how disparities are defined and measured, as well as emerging approaches in practice and policy to reducing disparities. Fall. Prerequisite: PUBH 6315.

PUBH 6374. Pharmaceutical Policy. 2 Credits.

Legal and regulatory frameworks related to the demand for and supply / quality of pharmaceutical products. Policies specific to drug development, pricing, reimbursement, use, dissemination of information, and post-marketing surveillance. Prerequisite: PUBH 6315.

PUBH 6376. Primary Health Care Policy. 2 Credits.

Politics and policy behind the provision of primary health care in the United States. The rise of the field of primary care and how it is supported and financed; the role of insurers and government in regulation and oversight in the areas of access, cost, and quality. Prerequisite: PUBH 6315.

PUBH 6378. HIV Policy in the US. 2 Credits.

Examines the policy response to the HIV epidemic in the United States and how the epidemic itself has helped to shape U.S. policy. How and why HIV became a national policy issue; circumstances surrounding the discovery of and early response to HIV; and main policy and programmatic developments and key players over time. The role and implications of the Affordable Care Act for individuals with HIV, the future of the Ryan White HIV/AIDS Program, and the impact of new treatment and prevention strategies on the future course of the epidemic.

PUBH 6380. Bridging Health Policy and Health Information Technology. 2 Credits.

Basics of health care informatics policy and core technological components for health services managers, public health professionals, health policy analysts, and health information technology staff. Policy and legal frameworks, governance and financial issues, technological infrastructure, and business and technological operations. Concepts and roles of information and how information technology can support the health care industry in promoting quality improvement.

PUBH 6382. Community Health Center Policy. 2 Credits.

PUBH 6384. Health Care Quality and Health Policy. 2 Credits.

The role of quality in the U.S. health care delivery system from the perspective of multiple stakeholders, including public and private payers, providers, consumers, and employers. Defining and measuring quality; how quality information is used; and policy implications of quality improvement. Recent changes under health reform legislation. Prerequisites: PUBH 6012 or PUBH 6305.

PUBH 6386. Public Health Preparedness Policy. 2 Credits.

Issues in public health emergency preparedness and response at the nexus of homeland and national security. The relationship between public health and criminal investigation, forensic epidemiology, and surveillance; biodefense; and the role of the scientific community. Infrastructure, threat themes, and associated preparedness and response policy.

PUBH 6390. Prescription Drugs: Policy and Public Health. 3 Credits.

Key policies and public health programs related to each stage of a prescription drug's life cycle; Congressional funding focused on speeding the development and approval of needed drugs, public and private approaches to increase access to prescription drugs, and exceptions to international laws that allow some countries to violate prescription drug patents to improve the health of impoverished citizens.

PUBH 6399. Topics in Health Policy. 3 Credits.

In-depth examination of a particular facet of public health policy. Topics and prerequisites vary.

PUBH 6400. Global Health Frameworks. 2 Credits.

Overview of current issues in global public health with particular emphasis on low and middle-income countries. Serves as both an introductory course for students entering the field of global health, as well as an update on current technical and policy issues for advanced students who may have considerable experience.

PUBH 6410. Global Health Study Design. 1,2 Credit.

Tools necessary for designing and understanding the research that goes into developing good public health programs; basic elements for the planning and design phase of a research project. Prerequisite or corequisite: PUBH 6009 or PUBH 6501. Prerequisite: PUBH 6003.

PUBH 6411. Global Health Qualitative Research Methods. 2 Credits.

An introduction to qualitative data collection and analysis in global health settings. Methodologies include survey design, interviews, focus groups, and participant observation. Archival research and clinical trial research are also addressed. The set of methods most commonly used to collect qualitative data in global health settings. Students are enabled to prepare interview guides, conduct in-depth interviews, and analyze and document the results from a qualitative field project. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6412. Global Health Quantitative Research Methods. 3 Credits.

Continuation of the series of global health methods courses. Examination of the fundamental concepts of empirical analysis and qualitative analysis, including open and axial coding, the basis of grounded theory, and regression analysis. Prerequisites: PUBH 6002 and PUBH 6410.

PUBH 6416. Ethical and Cultural Issues in Global Health Research and Programs. 1 Credit.

Examine procedures and concerns for protecting communities and human subjects involved in public health programs and research. Consider cultural considerations integral to ethical conduct of public health research and programming in the global context. Discuss history behind rules and regulations that govern ethical principles around conduct of research involving human subjects. Consider contribution that awareness of cultural contexts where we work makes to ethical nature of our work as global health professionals.

PUBH 6417. Cross-Cultural Approaches for Global Health Practice. 1 Credit.

How to communicate, negotiate, and be more effective across cultures; social aspects that affect communication within cultures and how to navigate communication in practical situations including in the work place and in risk and crisis situations. Corequisite: PUBH 6410. Prerequisite: PUBH 6416.

PUBH 6420. Understanding Commercial Determinants of Health. 1 Credit.

Conceptual understanding and frameworks for commercial determinants of health as key to improving public health.

PUBH 6421. Responsible Conduct of Research. 1 Credit.

Designed to raise awareness of the responsible conduct of research. Strategies for preventing irresponsible research practices, including unacceptable practices and research misconduct.

PUBH 6430. Theories for Global Health Communication Interventions. 2 Credits.

Use of communication theory and methods in health promotion. Integration of multidisciplinary approaches to public health communication. Prerequisites: PUBH 6007 and PUBH 6400.

PUBH 6431. Global Health Communication Strategies and Skills. 3 Credits.

Students conduct qualitative research to evaluate health communication programs, assess readability level and suitability of written health education materials, conduct content analyses, and review/critique current health communication literature. Prerequisites: PUBH 6430 or permission of the instructor; and PUBH 6007.

PUBH 6435. Global Health Program Development and Implementation. 2 Credits.

Basic concepts and principles of program development and implementation including data collection methods, decision making, and problem-solving techniques. Application of program development techniques to specific interventions. Prerequisite: PUBH 6400.

PUBH 6436. Global Health Program Management and Leadership. 2 Credits.

Essential tools for successful project, personnel, and program management. Leadership and management theory; key issues in managing global health programs and projects; leadership and management skills development; use of data in management decision making; and importance of quality, supply chain, and resource management. Restricted to students in the MPH in global health program design, monitoring, and evaluation program. Prerequisites: PUBH 6400 and PUBH 6435.

PUBH 6437. Global Health Program Evaluation. 3 Credits.

Fundamentals of program monitoring and evaluation; developing and using program theory in evaluation; impact evaluation and mixed-methods approaches; qualitative methods and statistical analysis for program evaluation. Prerequisites: PUBH 6002.

PUBH 6440. Global Health Economics and Finance. 2 Credits.

Examination of economics and finance principles as they apply to global health. Organization, delivery, and financing of health care in developing countries. Tools for analyzing issues related to global health economics and finance and application of those tools to a variety of a global health issues, including demand for health care, health care financing, social insurance, pharmaceuticals, and HIV/AIDS. Prerequisite: PUBH 6400.

PUBH 6441. Global Health Organizations and Regulations. 3 Credits.

The functions, capacities, and governance of international health organizations; the normative power of some international health organizations for regulatory processes; and evidence-based development of public health policies with attention to issues of global trade as it shapes worldwide and national health. Prerequisite: PUBH 6400.

PUBH 6442. Comparative Global Health Systems. 2 Credits.

Examination of national health systems, how they differ, and how they are performing. Health systems analyzed through four different lenses: health care organizations, health workforce development, health care financing, and health policy development. Comparison of health systems and health reforms in seven regions of the world and assessment of how health system performance might be improved. Course fee may apply. Prerequisite: PUBH 6400.

PUBH 6443. Global Health Agreements and Conventions. 2 Credits.

Explores the impact of regulations, trade and human rights on health by examining the relevant international declarations, agreements and conventions. This course examines a variety of topics including the impact of international trade agreements on health, the International Health Regulations and other regulations affecting global health, and the relationship between health and human rights. Prerequisite: PUBH 6400.

PUBH 6445. Quantitative Methods for Impact Evaluation. 2 Credits.

Learning to use and produce empirical research in the public health field; review of quantitative techniques and research designs used to uncover causal effects of policies and programs, with applications to public health topics. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6412.

PUBH 6450. Global Health Diplomacy. 2 Credits.

Introduction to the concept of global health diplomacy; how diplomacy has been used to advance health agendas and how health issues have been used to improve diplomatic relations between countries; formal health, multi-stakeholder health, and informal health diplomacy; comparative study of how different countries have devised health diplomacy strategies.

PUBH 6451. Monitoring/Evaluation of Sexual/Reproductive Health Programs in Low- and Middle- Income Countries. 2 Credits.

Overview of key sexual and reproductive health challenges in low- and middle-income countries; designing and measuring programs to address those challenges. Taught from the perspective of applied researchers working within an organization that implements sexual and reproductive health programs and services. Prerequisites: PUBH 6437, PUBH 6500 and PUBH 6503.

PUBH 6452. Social and Behavior Change Communication in Middle- to Low-Income Countries. 2 Credits.

The ways in which behavior change and sociocultural theories underpin the development of SBCC programs in politically, culturally, and socially diverse settings. Prerequisites: PUBH 6007 and PUBH 6503.

PUBH 6455. Global Vaccinology. 3 Credits.

Concepts, methods, and tools for making new and existing lifesaving vaccines more accessible to individuals in low- and middle- income country settings. Recommended for second-year MPH students. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6461. Ethics and Accountability in Humanitarian Settings. 1 Credit.

Principles and fundamentals of ethical approaches and accountability processes in the delivery of humanitarian services and possible solutions and interventions to address them. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6462. Nutrition and Food in Large Humanitarian Emergencies. 1 Credit.

Fundamentals of food aid programs and nutritional issues in emergency humanitarian situations and appropriate local and international responses in lower-income countries. Field-based program responses in international, resource-scarce settings, as conducted by NGOs and UN agencies. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6463. Communication Strategies and Planning in Humanitarian Settings. 2 Credits.

Principles of and major challenges in communication planning with wide range of stakeholders in humanitarian settings; solutions and interventions to identify related risks and appropriately respond to and effectively plan communication strategies. PUBH 6480 may be taken as a corequisite. Prerequisites: PUBH 6007 and PUBH 6480.

PUBH 6464. Mental Health in Humanitarian Settings. 1 Credit.

Principles of and fundamental challenges to mental health in humanitarian settings, including potential solutions and interventions; foundational knowledge and skills in mental health and psychosocial support services in such settings. PUBH 6480 may be taken as a corequisite. Restricted to PUBH 6480.

PUBH 6465. Reproductive Health and Gender-Based Violence in Humanitarian Settings. 1 Credit.

Key issues, challenges, policies, and interventions related to sexual and reproductive health and gender-based violence in humanitarian settings for persons affected by armed conflict and natural disasters. PUBH 6480 may be taken as a corequisite. Prerequisite: PUBH 6480.

PUBH 6469. Humanitarian Aid Seminar Series. 1 Credit.

Targeted talks and panel discussions with humanitarian aid workers from a variety of agencies addressing important or controversial contemporary topics in humanitarian settings. Corequisite or prerequisite: PUBH 6480.

PUBH 6480. Public Health in Humanitarian Settings. 2 Credits.

Technical aspects of high-priority public health interventions; consideration of how and why sound public health interventions should be implemented in both emergency and chronic humanitarian settings; the roles of diverse humanitarian actors.

PUBH 6481. Global Mental Health. 2 Credits.

Focus on global mental health knowledge and public health policy implementation skills regarding the integration of mental health, public health, and primary care in diverse health systems and challenging cultural contexts. Prerequisite: PUBH 6400.

PUBH 6482. International Food and Nutrition Policy. 2 Credits.

Major global food and nutrition issues, their determinants, and the strategies that in place to address them. Students identify major nutrition and food challenges in a country or region as well as the policies and programs that have proven successful in addressing those challenges. Prerequisite: PUBH 6400.

PUBH 6484. Prevention and Control of Vector Borne Diseases. 2 Credits.

Study of insects and other vectors responsible for transmission of diseases in developing countries, including plague, malaria, dengue fever, onchocerciasis (river blindness), and chikungunya virus. Special focus on developing countries, particularly in the Middle East, Africa, Asia, and Latin America. Diseases such as West Nile Virus and Lyme disease in the United States and elsewhere are also addressed. New methods for effective management and control.

PUBH 6486. Global Health Programs and Approaches to the Control of Infectious Diseases. 2 Credits.

Strategies for the control of infectious diseases with a focus on low and middle income countries; identifying and critiquing goals, strategies, and challenges of major global health intervention programs designed to prevent and control infectious diseases. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6487. Emerging Zoonotic Diseases and Global Food Production. 1 Credit.

Analysis of trends in emerging zoonotic diseases and their links to global food production. Case studies on the use of surveillance systems and outbreak detection techniques to monitor emerging zoonotic diseases. Development of skills to analyze surveillance systems, policy reports, and literature related to emerging zoonotic diseases and food-borne outbreaks within a global context. Prerequisites: PUBH 6003.

PUBH 6488. Cost-effectiveness Analysis in Public Health and Health Care. 2 Credits.

The application of cost-effectiveness analysis (CEA) to enhance the efficiency of programs and services both in the United States and developing countries. A variety of topics and related analytical tools such as cost benefit analysis, decision analysis, and sensitivity analysis are covered. Students learn to perform cost-benefit and cost-effectiveness analyses and understand the strengths and limitations of these methods and how to apply them to a broad range of health issues.

PUBH 6489. Evaluation of Food and Nutrition Programs and Policies. 1 Credit.

Introduction to major global food and nutrition issues, strategies used to address these problems, and commonly-used program impact theories and evaluation frameworks; application of evaluation methods and approaches to nutrition and food programs and policies. Prerequisite: PUBH 6437.

PUBH 6491. Public Health Leadership Seminar. 1 Credit.

Leadership lessons derived from the careers of a diverse group of successful executives and entrepreneurs from multiple sectors, including corporate, government, nonprofit, and the arts. Development of skills for effective engagement with peers, personal network, potential employers, and business partners. Permission of the faculty member required prior to enrollment.

PUBH 6492. Global Health Programs and Approaches to the Control of Chronic Diseases. 2 Credits.

Concepts, methods, and tools to address chronic non-communicable diseases (NCDs); global public health and development dimension of NCDs, their epidemiology and risks, and health systems approaches for their control with focus on low- and middle-income countries. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6400.

PUBH 6493. Fundamentals of Supply Chain Management in Developing Countries. 2 Credits.

Practical approaches used by government policymakers, essential drugs program managers, NGOs, donors, and others to ensure that high-quality essential drugs are available, affordable and used rationally; existing and potential challenges and workable solutions related to managing the drug supply in developing countries. Restricted to graduate students.

PUBH 6494. Population, Public Health Practice, and Sustainable Development. 2 Credits.

The reciprocal connections between the dynamics of population growth, distribution, and age structure to health, well-being, and socioeconomic development.

PUBH 6495. Field Trial Methods and Application. 2 Credits.

Concepts, methods, and tools necessary to conduct community-based randomized trials in low- and middle-income country settings; the process of running a randomized field trial from selecting a topic, through implementation, to analysis and reporting. Most appropriate for students in their second year of study. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6499. Topics in Global Health. 3 Credits.

Examination of a particular facet of public health. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6500. Planning and Implementing Health Promotion Programs. 3 Credits.

Students develop skills to effectively plan, design, and implement programs that address public health problems for defined populations in a variety of settings. Prerequisite: PUBH 6007.

PUBH 6501. Program Evaluation. 3 Credits.

The knowledge, competencies, and skills needed to plan and implement evaluations of public health programs in a variety of settings; types of program evaluation, including needs assessment, process evaluation, quantitative and qualitative monitoring of outputs, outcomes, and impact. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6007; and PUBH 6435 or PUBH 6500.

PUBH 6502. Practical Data Analysis for Prevention and Community Health. 1 Credit.

Practical aspects of dataset creation, data management, rudimentary statistical analysis and tabular/graphical presentation of results in the user-friendly environments of PASW (formerly SPSS) and MS Excel. Students create codebooks, enter and clean data, derive new variables from existing ones, choose appropriate analytical techniques and implement them, graph and tabulate results, and document and protect work. Examples are drawn from commonly-encountered situations in prevention and community health, such as needs assessments and program evaluations. Prerequisites: PUBH 6002, PUBH 6003 and PUBH 6500.

PUBH 6503. Introduction to Public Health Communication and Marketing. 3 Credits.

The application of health communication theories, principles and techniques, as well as marketing constructs and concepts, to advancing public health through practitioner-oriented health communication and social marketing campaigns and programs.

PUBH 6504. Social and Behavioral Science Research Methods. 3 Credits.

The processes of study design, data collection, and analysis using SPSS for quantitative research in prevention and community health. All phases of the observational/survey research process considered sequentially, from formulation of research questions to preparation of the final report. Prerequisites: PUBH 6002 and PUBH 6007; or permission of the instructor.

PUBH 6508. Cost-Effectiveness Analysis of Health Promotion Interventions. 3 Credits.

Theoretical basis for and practical skills needed to estimate the effectiveness, population impact, and cost of health promotion interventions; application to policy and cost-effectiveness and cost-utility analyses. Familiarity with basic algebra and statistics is assumed. Prerequisites: PUBH 6002 and PUBH 6003; and PUBH 6006 or PUBH 6012.

PUBH 6510. Community-Oriented Primary Care Principles and Practice. 3 Credits.

Theory and practice of community-oriented primary care, including an extended small group exercise carrying out a COPC project with a simulated community using Web-based data sets.

PUBH 6512. Community-Oriented Primary Care Policy and Issues. 2 Credits.

Advanced work on COPC methods and policy, focusing on issues related to the provision of health care in underserved communities. Prerequisite: PUBH 6510.

PUBH 6513. Community Health Management. 2 Credits.

Management and development of community health services. Builds upon principles for management and community-oriented primary care. Prerequisites: PUBH 6003 and PUBH 6510.

PUBH 6514. Preventing Health Disparities. 2 Credits.

Provides students with an understanding of how social, political, and economic factors contribute to disparities (e.g. racial, ethnic, gender, and geographical) in health and health care and how to use evidence-based approaches to prevent or address health disparities.

PUBH 6515. High Risk and Special Populations. 2 Credits.

Provides students with an overview of the methods to plan, implement and evaluation health promotion and education programs targeted towards high risk and special populations. The course reviews the socioeconomic, political-economic, cultural and psychosocial factors of populations who are considered to be at high risk for specific health problems and efforts that have been addressed in current health promotion programs. Prerequisite: PUBH 6007.

PUBH 6516. Community Health Information Resources. 2 Credits.

COPC and community health promotion require diverse information skills in order to assess community needs and strengths, determine priority health issues, analyze data, plan interventions, and evaluate programs. This course introduces students to the information resources useful in planning and implementing COPC and community health projects that address racism. The selected resources support methods for defining a community, characterizing a community's social and health characteristics, investigating a prioritized problem, and developing programs and solutions. Students learn how to choose resources, search them, and consider bias in information sources.

PUBH 6530. Qualitative Methods in Health Promotion. 2 Credits.

Application of qualitative methods in the development of health promotion interventions, evaluations, and research. Collecting and analyzing qualitative data through participant observation, interviewing, group methods, and case studies. Prerequisite: PUBH 6007.

PUBH 6531. Health Promotion in Health Care Settings. 2 Credits.

Behavioral change counseling and training skills to improve health by changing individuals' behaviors and by developing training materials for use with providers, health professionals and high risk groups. This is an advanced course for second year students. Prerequisites: PUBH 6007 and PUBH 6500.

PUBH 6532. Community Organization, Development, and Advocacy. 3 Credits.

Educates health promotion practitioners in how to organize community groups to promote health. The focus is on learning how to use resources available in the community to advocate change. Prerequisite: PUBH 6007.

PUBH 6533. Design and Conduct of Community Health Surveys. 2 Credits.

This course teaches students how to frame questions in health promotion surveys using sound principles of questionnaire design with emphasis on reliability and validity. Students learn survey design principles and methods and how to analyze survey data.

PUBH 6534. Community-Based Participatory Research. 1 Credit.

Students learn how to conduct community research in collaboration with community leaders and residents. Emphasizes the principles of CBPR for addressing health promotion issues in communities including community needs and administrative and policy changes.

PUBH 6535. Promotion of Mental Health. 2 Credits.

Increases understanding about issues in mental health promotion. The emphasis is on mental health as a public health issue and linkages between individual mental health and the environment. Prerequisite: PUBH 6007.

PUBH 6536. Workplace Health Promotion. 2 Credits.

Planning, management and evaluation of programs designed to serve employees' needs, promotion of employee health and reduction of health care costs in the workplace. Prerequisite: PUBH 6007.

PUBH 6537. Health Promotion and Aging. 2 Credits.

Introduces students to the basic health aspects of the aging process and special health promotion needs for this group. Problems of aging and public health solutions for older Americans are examined. Students are able to define the public health concerns for aging Americans, how aging is affected by a multitude of factors, identify health promotion strategies to assist in reaching out to this population and develop methods of collaboration with agencies and organizations to improve the health of the aging population. Prerequisite: PUBH 6007.

PUBH 6550. Maternal and Child Health I. 3 Credits.

Public health issues affecting the health and well-being of women, children, and families. A multidisciplinary perspective that integrates the biological, demographic, epidemiological, economic, behavioral, social, cultural and environmental aspects.

PUBH 6551. Maternal and Child Health II. 3 Credits.

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PUBH 6552. Women's Health. 2 Credits.

Issues of women's health through the life cycle. The process of critically evaluating women's health research and issues.

PUBH 6553. Adolescent Health. 2 Credits.

Issues of physical, mental, and social development and their bearing on the health of adolescents, with special emphasis on prevention.

PUBH 6554. Children and Youth with Special Needs. 2 Credits.

In order to place children and youth with special needs into a public health framework, this course presents an introduction to and an overview of children and youth with special needs due to a developmental disability. Many aspects of developmental disability are addressed including 'concept' and definitions of disability, causes, epidemiological considerations, and development of federal legislation. The scope and range of developmental disabilities are reviewed along with classification schemes. Both national and international distributions are considered from a sociopolitical viewpoint.

PUBH 6555. Reproductive Health: U.S. and Global Perspectives. 2 Credits.

Reproductive health from a variety of public health perspectives, from defining reproductive health, past perspectives, needed improvements, and the factors that influence reproductive health.

PUBH 6556. Maternal and Child Nutrition. 2 Credits.

Covers the nutritional needs of women during the child bearing years, infants, children and adolescents. The course emphasizes the life course approach to nutrition and has a special emphasis on the effects of diet during infancy on obesity and degenerative diseases in later life. Students examine the biological basis of nutrition, identify risk factors associated with poor nutrition in individuals and populations and evaluate domestic and international programs. Summer (1 credit) and Spring (2 credits).

PUBH 6557. Child Development and Public Health. 2 Credits.

Examination of the development of children from a public health perspective and provide a detailed examination of the indicators of children's health that are needed to assist public health professionals improve children's health.

PUBH 6558. Women, Gender, and Health. 2 Credits.

Focuses on gender as a social determinant of health. Emphasis placed on examining the frameworks that are used in public health research to understand gender-based issues and how these frameworks affect the types of programs and intervention efforts developed.

PUBH 6559. HIV Prevention: An Interdisciplinary Approach. 2 Credits.

Provides an interdisciplinary overview of HIV prevention research from the behavioral, biological and biomedical perspective. Students are encouraged to approach the assignments and discussions from their own particular expertise and career interests/goals.

PUBH 6560. School Health and Safety. 1,2 Credit.

Examines the history, organization, financing, and politics of school health programs. It provides an overview of the core components of school health as defined by the Center for Disease Control and Prevention: health services, health education, physical education, nutrition services, counseling or mental health, school environmental health, health promotion, and family/community involvement. Summer (1 credit); Spring (2 credits).

PUBH 6561. Maternal and Child Health Policy Analysis. 2 Credits.

Provides instruction in maternal and child health policy in the U.S. with a particular emphasis on policies related to the organization, financing, delivery, and quality oversight of personal health services for mothers and children.

PUBH 6562. Physical Activity and Obesity Interventions: From the Individual to the Environment. 2 Credits.

This course broadly examines the public health issues related to physical activity and obesity, particularly as they relate to solutions for addressing individual factors and the obesogenic environment. Students gain a further understanding of the social, physiological, behavioral, and environmental factors related to both obesity and physical activity. The course focuses on examining multiple levels of solutions, specifically: 1) individual and behavioral interventions; 2) school-based and community-level interventions; 3) environmental interventions; 4) policy-level interventions. Students are expected to critically evaluate the necessary components of interventions, and apply that knowledge to future programmatic efforts.

PUBH 6563. Global Child Health. 2 Credits.

Elements of science, policy, challenges, and successes of global child health; focus on low and middle income countries and children under five years of age. Learn the burden of disease and associated risk factors; cost-effective interventions and tools. Restricted to graduate students.

PUBH 6570. Advanced Public Health Communication: Theory and Practice. 3 Credits.

Focuses on the use of communication to positively influence people's - and population's - understanding of health information, decision-making, and health behavior. Students study, and in a group project apply, a range of theories and techniques germane to effective message design and delivery. Prerequisite: PUBH 6503.

PUBH 6571. Social Marketing: Theory and Practice. 3 Credits.

The use of marketing to change the behavior of people, populations, and policy makers in ways that are in their, and society's, best interests. Students in this skills-based course study and work in teams to apply a range of marketing strategies to a real-world situation. Prerequisite: PUBH 6503.

PUBH 6572. Marketing Research for Public Health. 3 Credits.

The use of marketing research techniques used to better understand customers of public health programs in order to improve program design, implementation, and effectiveness. A range of qualitative and quantitative techniques are studied for their relevance to program planning, development, and continuous improvement.

PUBH 6573. Media Advocacy for Public Health. 3 Credits.

Focuses on the use of communication to positively influence public policy and public opinion. In this skills-based course students study and apply a range of theories and techniques germane to the policy advocacy process. Prerequisite: PUBH 6503.

PUBH 6574. Public Health Branding: Theory and Practice. 2 Credits.

This course focuses on the use of branding in the public health and social sectors. Learning from the commercial sector, we examine how to brand behaviors as well as products and services. We review branding methods, examine research on branding and its effectiveness, and build skills in branding for public health objectives.

PUBH 6575. Communication Skills for Public Health Professionals. 1 Credit.

Helps students develop writing and oral presentation skills through intensive, interactive training, practice, and feedback. Provides participants with a solid foundation for all forms of public health and other scientific and technical written and oral communication.

PUBH 6590. Introduction to Social Entrepreneurship. 2 Credits.

Examine innovative organizations created to improve people's lives and contribute to improved social and economic conditions. Emphasis on how such organizations are started, how they are sustained, and the various business models that are adopted to achieve an organizational mission.

PUBH 6591. PA/MPH Clinical Leadership Seminar. 1 Credit.

For first-year physician assistant and master of public health program students, an orientation to their roles as health professionals. Special emphasis on preventive and community medicine.

PUBH 6599. Topics in Prevention and Community Health. 1-3 Credits.

In-depth examination of a particular facet of prevention and community health. Topics and prerequisites vary.

PUBH 6610. Public Health Nutrition Practice and Leadership. 1 Credit.

This course provides an overview of public health nutrition practice. Students develop communication, management and leadership skills necessary for successful careers. Students also explore potential practicum and culminating experience options, and how to use these experiences to achieve their career goals. This course is designed for first year students in the public health nutrition MPH program.

PUBH 6611. Nutrition Assessment. 2 Credits.

The anthropometric, biochemical, clinical, and dietary methods for assessing nutritional status in individuals. The process of conducting food and nutrition environment assessments. Prerequisites: EXNS 2119 or PUBH 6619; or other equivalent course with permission of the instructor.

PUBH 6612. Food Systems in Public Health. 2 Credits.

A systems approach to understanding food systems and associated public health issues. How the current food system evolved, and how issues such as climate change and population growth may affect food systems in the future. The role of public health practitioners in meeting the population's need for safe, sufficient, and nutritious food. Policies, programs, and proposals aimed at creating healthier, more sustainable food systems.

PUBH 6613. U.S. Food Policy and Politics. 2 Credits.

The programs, regulations, and legislation that pertain to food production, food safety, nutrition assistance, and dietary guidance in the United States at the federal, state, and local levels.

PUBH 6619. Fundamentals of Nutrition Science. 3 Credits.

The fundamental scientific principles of human nutrition; improving diet and nutritional status in the broader context of public health; nutrition assessment, study designs in nutrition science research, the role of nutrition in chronic disease, and current topics in nutrition science.

PUBH 6620. Designing Healthy Communities. 2 Credits.

Issues at the intersection of public health and planning; evaluating needs and creating change in communities facing food access, physical activity, and age related challenges; the built environment as a means of improving health and preventing chronic disease.

PUBH 6621. Applied Data Analysis in Exercise and Nutrition Sciences. 1 Credit.

Introduction to data management and data analysis using the SAS System; data analysis procedures for specific research questions and settings within the context of exercise and nutrition sciences. Restricted to students in the MPH in physical activity in public health program, program design and evaluation track, or with the permission of the advisor. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6682. Managing Natural Resources for Food Production. 3 Credits.

The relevance of natural resource conservation for ensuring healthy agricultural, food, and environmental systems; various approaches to achieving sustainable systems. Restricted to students in the graduate certificate in food policy leadership program.

PUBH 6683. Applied Food Policy Immersion Experience. 2 Credits.

Leadership theories and an opportunity to build leadership skills and engage with food policy and agriculture leaders from a variety of sectors. Includes site visits to public and private organizations significant in food policy. Restricted to students in the graduate certificate in food policy leadership program. Prerequisites: PUBH 6680 and PUBH 6682.

PUBH 6699. Topics in Nutrition Sciences. 3 Credits.

Examination of a particular facet of nutrition sciences. Topics vary by semester. May be repeated for credit provided topic differs. See the Schedule of Classes for more details.

PUBH 6704. Health Information Technology, Informatics, and Decision Making. 3 Credits.

Operationalizing fundamental technology, processes, policies and concepts of healthcare informatics and decision management to translate data into actionable information within the framework of improving quality, safety, productivity, and experience.

PUBH 6706. Population and Community Health Analytics. 3 Credits.

Overview of the concepts of population and community health, the informatics and analytics necessary to assess population health, and best approaches for decision makers and policy makers using and communicating population and community health data.

PUBH 6850. Introduction to SAS for Public Health Research. 1 Credit.

Conducting basic data management tasks with SAS software; creating libraries, data sets, and variables, and generating basic descriptive statistics and simple graphics of public health and biomedical data.

PUBH 6851. Introduction to R for Public Health Research. 1 Credit.

Read, clean, transform, tidy, and summarize public health data in R. Explore data and write R functions to make workflow more efficient.

PUBH 6852. Introduction to Python for Public Health Research. 1 Credit.

Introduction to the basic concepts of Python programming language, illustrated with applications in biomedical sciences and health informatics.

PUBH 6853. Use of Statistical Packages for Data Management and Data Analysis. 3 Credits.

Data management and data analysis using statistical software. Creating and manipulating variables, merging and concatenating data sets, and implementing common statistical methods such as Student's t-test, linear regression, and logistic regression. Prerequisites: PUBH 6002.

PUBH 6854. Applied Computing in Health Data Science. 3 Credits.

Concepts of computing in biomedical sciences and health informatics. Foundations of Unix shell, command line tools, R and Python programming languages, and their applications in public health. PUBH 6860 may be taken simultaneously. Prerequisites: PUBH 6860. Credit cannot be earned for this course and PUBH 4201.

PUBH 6856. Advanced SAS for Public Health Research. 1 Credit.

Advanced SAS programming. Interactive Matrix Language, SAS macro facility, Structured Query Language, and SAS/GRAPH options for creating drill-down graphs to analyze public health data sets. Prerequisites: PUBH 6002; and PUBH 6249 or PUBH 6853; or permission of the instructor. Credit cannot be earned for this course and PUBH 6268.

PUBH 6859. High Performance and Cloud Computing. 3 Credits.

Introduction to high performance computing and cloud computing, including issues such as data transfer, security, virtual machines, and containers. HPC at GW, Amazon Web Services, and Google Cloud for biohealth computing. Prerequisites: PUBH 6851 and PUBH 6852 or permission of the instructor.

PUBH 6860. Principles of Bioinformatics. 3 Credits.

Biological concepts of molecular biology, genome organization, and evolution; computational concepts of alignment, database searching, phylogeny, and structure; and basic programming concepts including the shell, scripting, and databases. Prerequisites: PUBH 6002 or equivalent.

PUBH 6861. Public Health Genomics. 3 Credits.

Molecular technology and its impact on public health practice and discourse in the post-genomic era. The use of genomics to solve or help alleviate public health challenges. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6862. Applied Linear Regression Analysis for Public Health Research. 3 Credits.

Review of basic statistical inference and an overview of the construction of linear regression models for application to public health and biomedical data sets. Prerequisites: Prior completion of a course in undergraduate statistics and one semester of calculus.

PUBH 6863. Applied Meta-Analysis. 1 Credit.

Examination of meta-analysis (MA) with case studies using R. Statistical methods, including fixed- and random-effects MA; MA for binary and continuous data; heterogeneity in MA; meta-regression; and publication bias. Recommended background: Prior completion of an introductory course in biostatistical methods, such as PUBH 6002 or PUBH 6003, or an equivalent, is strongly recommended.

PUBH 6864. Applied Survival Analysis for Public Health Research. 3 Credits.

Application of survival or time-to-event data in public health studies. Censoring, survival functions, Kaplan-Meier curves, log-rank tests, Cox proportional hazards regression, parametric survival models, recurrent events, and competing risks. Prerequisites: PUBH 6249 or PUBH 6853. Recommended background: undergraduate calculus.

PUBH 6865. Applied Categorical Data Analysis. 3 Credits.

Comprehensive overview of methods for analyzing binary and multicategory response data. Contingency table methods for assessing associations and logistic regression for binary, nominal, and ordinal outcomes, including models for matched data. Prerequisites: PUBH 6002 and PUBH 6003.

PUBH 6866. Principles of Clinical Trials. 3 Credits.

Introduction to basic principles for design, conduct, analysis, and reporting of clinical trials. Developing a proposal for a clinical trial. Prerequisites: PUBH 6002 or equivalent.

PUBH 6868. Quantitative Methods. 3 Credits.

Basic mathematical statistics: probability, fundamental distributions including binomial, Poisson and normal, central limit theorem, consistency, basic point estimation, hypothesis testing, linear models, and maximum likelihood estimation. Prerequisites: PUBH 6002 and prior completion of at least two courses in single variable calculus. Corequisites: PUBH 6249 or PUBH 6853.

PUBH 6869. Principles of Biostatistical Consulting. 1 Credit.

Principles and practice of biostatistical consulting and related skills and knowledge for public health and medical research environments. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended. Credit cannot be earned for this course and PUBH 6258.

PUBH 6879. Propensity Score Methods for Causal Inference in Observational Studies. 3 Credits.

Designing observational studies; drawing causal inferences using propensity score methods; and performing propensity score analysis using R with hands-on data. Prerequisites: PUBH 6851 and PUBH 6865 or permission of the instructor.

PUBH 6883. Biostatistics Consulting Practicum. 1 Credit.

Supervised experiences involving the synthesis of biostatistical skills with consultations in one or more areas of health research. Students in the MPH programs in biostatistics and in epidemiology may register with permission of the instructor. Restricted to students in the MS in biostatistics and MS in epidemiology programs. Recommended background: Prior completion of at least two graduate-level courses in statistics and an introductory course that discusses common health research designs, such as PUBH 6003, or their equivalent is strongly recommended.

PUBH 6884. Bioinformatics Algorithms and Data Structures. 3 Credits.

Algorithmic foundations of bioinformatics, ranging from generic algorithmic techniques to specific algorithms used in various areas of bioinformatics. Theoretical background is complemented with solving practical problems. Prerequisites: PUBH 6854 or equivalent. Credit cannot be earned for this course and PUBH 4202.

PUBH 6885. Computational Biology. 3 Credits.

Introduction to modern computational biology, including omics data science, high-throughput technologies, multi-omics data integration, and analytical methods with real-world applications. Permission of the instructor is required prior to enrollment.

PUBH 6886. Statistical and Machine Learning for Public Health Research. 3 Credits.

Application and evaluation of supervised and unsupervised statistical and machine learning algorithms in the context of biomedical and public health research. Permission of the instructor is required prior to enrollment.

PUBH 6887. Applied Longitudinal Data Analysis for Public Health Research. 3 Credits.

Introduction to commonly used methods for longitudinal data analysis including fixed effects models, linear and generalized linear mixed effects models, and generalized estimating equations. Missing data. Prerequisites: PUBH 6862 and PUBH 6965; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202.

PUBH 6894. Research Analytics. 3 Credits.

Key concepts in research analytics; skills and experiences needed to leverage big data to improve public health through data integration.

PUBH 6897. Research in Biostatistics and Bioinformatics. 1-4 Credits.

Independent research. Must be approved in advance by advisor/instructor. Restricted to graduate students in the Department of Biostatistics and Bioinformatics.

PUBH 6898. Master of Science Thesis. 1-2 Credits.

Master's thesis.

PUBH 6899. Topics in Biostatistics and Bioinformatics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

PUBH 6999. Master of Science in Epidemiology Thesis. 2 Credits.

Thesis research. Restricted to students in the MS in epidemiology program.

PUBH 8010. Doctoral Independent Study. 1-3 Credits.

Doctoral students complete an independent study plan to meet predetermined project and/or research work under the supervision of a faculty member. Restricted to GWSPH doctoral students.

PUBH 8110. Research Rotations. 2 Credits.

Students conduct formal rotations with a laboratory or research group to gain research and reporting experience with the mentorship of EOH faculty. Includes identification of an environmental health research problem, collection or analysis of data, and reporting on the results. May be repeated for credit. Restricted to students in the PhD in environmental program or with the permission of the instructor.

PUBH 8116. Communicating Research Results. 2 Credits.

The importance of strategic communication to public health progress. Students gain communication skills that help to transcend educational barriers and facilitate connections with peers, policymakers, and the broader public. Restricted to doctoral students who have satisfactorily completed the comprehensive examination or with the permission of the dissertation chair.

PUBH 8144. Advanced Environmental Health Data Development and Modeling. 1 Credit.

Advanced doctoral level material on environmental exposure assessment using methods covered in PUBH 6144. Restricted to doctoral candidates. Prerequisites: PUBH 6131 or PUBH 6853. Corequisites: PUBH 6144.

PUBH 8242. Advanced Topics in Clinical Epidemiology and Public Health: Reading the Research. 1 Credit.

Evidence-based problem-solving approach using methods covered in PUBH 6242. Restricted to doctoral students. Prerequisites: PUBH 6003 or equivalent. Corequisites: PUBH 6242. Credit cannot be earned for this course and PUBH 6243.

PUBH 8244. Doctoral Topics: Cancer Epidemiology. 1 Credit.

Course focuses on critical review and interpretation of cancer epidemiology literature as well as issues in research design in the field. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6244.

PUBH 8245. Doctoral Topics: Infectious Disease Epidemiology. 1 Credit.

Provides doctoral level material on the content of infectious disease epidemiology. The course focuses on critical review and interpretation of infectious disease literature as well as issues preparing an analytic research paper on an emerging infectious disease and the application of tools used to describe the epidemiology of those diseases. Spring Prerequisites: PUBH 6003. Corequisites: PUBH 6245.

PUBH 8250. Doctoral Topics: Epidemiology of HIV/AIDS. 1 Credit.

Students select specific topic within area of HIV/AIDS epidemiology. Options include responding to a data analysis problem; responding to a methodological problem found within HIV/AIDS research; or another topic approved by instructor. Prerequisites: PUBH 6001 and PUBH 6003. Corequisites: PUBH 6250.

PUBH 8259. Doctoral Topics: Epidemiologic Surveillance in Public Health. 1 Credit.

Course provides doctoral level material on the content of surveillance offered in PUBH 6259. Focus is on critical review and interpretation of surveillance literature as well as issues preparing an analytic research paper. Prerequisites: PUBH 6002 and PUBH 6003. Corequisites: PUBH 6259.

PUBH 8283. Doctoral Biostatistics Consulting Practicum. 2 Credits.

Working under supervision, students develop an experience-based understanding of how biostatistical skills are used in one or more areas of health research. Students must have completed at least 6 credits in any combination of general or specialized graduate-level statistics courses, such as PUBH 6202, PUBH 6260, STAT 6201, or STAT 6202, before enrolling in this course. Restricted to PhD students.

PUBH 8364. Quantitative Methods. 3 Credits.

Introduces basic concepts in mathematical statistics. Topics include probabilities (unconditional and conditional), density and distribution functions of continuous and discrete random variables, including expected values. Specific distribution functions discussed are Binomial, Poisson, Hypergeometric, and Gaussian distributions. Additional topics include bivariable distributions, variance-covariance matrix, limiting theory, asymptotic results, and maximum likelihood estimation. Prerequisites: MATH 1231 and MATH 1232; and PUBH 6002 and PUBH 6249.

PUBH 8365. Design of Medical Studies. 3 Credits.

Design of medical investigations, including the randomized clinical trial, observational cohort study, and the retrospective case-control study. Specific methods regarding sample size, power and precision and statistical procedures for randomization and sampling. Ethics of clinical trials and the intention-to-treat principle. Prerequisite: PUBH 6002.

PUBH 8366. Biostatistical Methods. 3 Credits.

Biostatistical methods for asymptotically efficient tests and estimates of relative risks and odds ratios from prospective and retrospective matched and unmatched studies. Fixed and random effects models. Logistic regression, conditional logistic regression. Poisson regression. Maximum likelihood and efficient scores. Prerequisites: STAT 6202 or permission of the instructor.

PUBH 8401. Foundations in Public Health Leadership. 3 Credits.

Course modules cover personal leadership; leadership models, theories, concepts, tools, and skills; and practical application of leadership to real world situations. Restricted to doctoral candidates.

PUBH 8402. Leadership and Decision Making: Skills Based Approach. 2 Credits.

Using leadership and decision making skills to solve complex health problems and implement successful solutions to improve population health in all communities; decision making, program management, quality and risk management, human resources and budget, governance, and change management.

PUBH 8403. Leadership in Public Health Policy and Practice. 2 Credits.

Students work in teams on projects for clients from public health-related agencies or organizations in the Washington, DC, area that address issues in environmental and occupational health, global health, health behavior, and health policy. Restricted to students in the DrPh program. Prerequisite: PUBH 8402.

PUBH 8404. Advanced Topics: Health Systems and Health Policy Research. 3 Credits.

Examination and assessment of issues related to the intersection of health care systems and health policy, and how health policy and health services research can inform the development and evaluation of health care systems and health policy. Restricted to doctoral candidates. Prerequisite: PUBH 6315.

PUBH 8405. Advanced Topics: Health Economics Research. 3 Credits.

Critical financing issues for U.S. public health and health care services and systems. The role of health services research in understanding the effects of these issues and informing the deliberations and decisions of policymakers.

PUBH 8406. Advanced Topics: Health Research in the Global Arena. 3 Credits.

Alternative field methods adopted from sociology, anthropology, economics, and political sciences for social sciences and policy research. Builds data collection, instruments, measurements, indicators, and data analysis and interpretation skills in specific socio-cultural contexts. Ethical issues in international research.

PUBH 8407. Advanced Topics: Health Leadership in International Settings. 3 Credits.

Doctoral students develop the tools and experiences needed to build capacity for leadership in global health. Prerequisite: PUBH 8406.

PUBH 8408. Advanced Topics: Health Behavior Research & Practice Applications. 3 Credits.

Advanced topics relating theory to practice in areas of health education and behavioral change. Application of qualitative and quantitative research to health related behavior at individual and community levels.

PUBH 8409. Advanced Topics: Health Communication Research. 3 Credits.

Methods of communications research designed to alter health behavior. Emphasis on critical analysis of communications research aimed at the mass public, groups, and interpersonal level.

PUBH 8411. Advanced Topics: Principles of Human Health Risk Science. 3 Credits.

This course provides the doctoral student with a comprehensive orientation to the frameworks, principles and issues involved in assessing, managing and communicating environmental health risks. This fundamental, interdisciplinary course is designed to foster dialogue and insights about contemporary risk science and management issues, including ethical concerns and technical issues that influence policy making. Restricted to students in the environmental and occupational health program, or with permission of the instructor.

PUBH 8412. Advanced Topics: Environmental and Occupational Health Research and Practice. 3 Credits.

This course exposes students to the theory and reality of both research and practice in environmental and occupational health. There is an emphasis on the use of public health science in policy and regulatory decisions. Prerequisites: PUBH 8411 or permission of the instructor.

PUBH 8413. Research Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their research methods and analytic skills. These activities include participating in the development and submission of sponsored research proposals; being formally affiliated with a research project, assuming responsibility for completing a real-world research project; engaging in empirical data collection and analysis efforts.

PUBH 8414. Policy and Management Leadership. 1-10 Credits.

Students develop and enhance their management, leadership, and policymaking skills for problem solving in real-world settings; public health departments, community health centers, legislative settings, and public or teaching hospitals.

PUBH 8415. Instructional Leadership. 1-10 Credits.

Students participate in a range of activities designed to develop and enhance their teaching skills. These activities include course development, teaching master's level courses, acting as TA for undergraduate courses, advising students about their class performance, evaluating student performance, and developing remedial programs for students.

PUBH 8416. Study Design & Evaluation Methods. 3 Credits.

Prepares doctoral students to design and conduct program and policy evaluation in public health. Intensive introduction to the principles of study program design and evaluation research emphasizing the ability to synthesize the population-based intervention literature, apply planning and management methods, describe and apply research methods from a range of disciplines, and prepare a program research proposal.

PUBH 8417. Qualitative Research Methods and Analysis. 3 Credits.

Techniques for designing and conducting qualitative research and for analyzing and reporting qualitative data relevant to program development and implementation, community assessment, and policy analysis. Prerequisites: PUBH 8416.

PUBH 8418. Applied Statistical Analysis. 3 Credits.

Intensive course in data management and data analysis using STATA®. Database management system techniques and data analytical strategies for the appropriate analysis of data sets obtained from a variety of studies will be presented. The student will manipulate national data sets from epidemiological studies as well as Demographic and Health Survey (DHS) data. Prereq: PubH 8416.

PUBH 8419. Measurement in Public Health and Health Services. 3 Credits.

Review principles of measurement and assessment as they apply to public health and health services research constructs, review existing state-of-the-art measures of individual and population health status (e.g., morbidity, mortality, functioning and health-related quality of life) and of individual and community health behavior. Explore current measurement issues in health research.

PUBH 8420. Advanced Analysis and Dissemination. 3 Credits.

Advanced multivariate data analyses of complex datasets and programs, including advanced cross-sectional techniques, time-series analysis, and the use of panel data. Evaluation of results, and dissemination of findings to relevant stakeholders. Fall. Prerequisites: PUBH 8417 and PUBH 8418.

PUBH 8422. Advanced Health Care and Public Health Research Design. 2 Credits.

Design of protocol suitable for implementation as part of DrPH dissertation requirement. Permission of the instructor, completion of required coursework, and successful completion of the comprehensive examination required prior to enrollment.

PUBH 8423. Dissertation Research. 1-12 Credits.

Dissertation research for DrPH. Prerequisite: PUBH 8422.

PUBH 8434. Behavioral Medicine and Public Health. 3 Credits.

Investigation into the field of behavioral medicine, which integrates behavioral, psychosocial, and biomedical sciences, with specific applications to public health. Restricted to PhD students in the social and behavioral sciences in public health program or with the permission of the instructor.

PUBH 8435. Dissertation Proposal Development for Social and Behavioral Sciences. 2 Credits.

Advise and assist doctoral students in developing and defending their dissertation proposal. Restricted to doctoral students who have successfully completed comprehensive examinations.

PUBH 8610. Statistical Methods for Health Policy. 3 Credits.

Application of statistical analysis in health policy and public health research using Stata® to analyze a variety of large public health data sets. Prior completion of at least one graduate-level statistics course is required. Restricted to doctoral students. Credit cannot be earned for this course and PUBH 6310.

PUBH 8620. Seminar: Foundations of U.S. Health Policy. 3 Credits.

Reintroduction to the basics of U.S. health policy, combining advanced legal, policy, and regulatory content acquisition with advanced health law and policy analysis skills. Restricted to doctoral students in health policy or with the permission of the instructor.

PUBH 8622. Health Care Payments, Systems, and Delivery Models. 3 Credits.

Survey of long-standing practices and recent developments in provider payment and the organization of health care delivery in the United States. Restricted to doctoral students in the health policy program or with the permission of the instructor.

PUBH 8875. Linear Models in Biostatistics. 3 Credits.

Introduction to the theory of linear models with applications to public health and biomedical data. Least squares, maximum likelihood, and distribution theory for linear regression. Prerequisites: PUBH 6862; and PUBH 6868 or PUBH 8364 or STAT 6201. Corequisites: STAT 6202. Recommended background: prior completion of coursework in linear algebra and multivariable calculus.

PUBH 8877. Generalized Linear Models in Biostatistics. 3 Credits.

Theoretical development of most commonly used methods for categorical and count data presented within the unified framework of the generalized linear model. Prerequisites: PUBH 6865; and PUBH 6868, or PUBH 8364, or STAT 6201 and STAT 6202. Recommended background: prior completion of coursework in linear algebra.

PUBH 8878. Statistical Genetics. 3 Credits.

Application of statistical concepts to family- and population-based genetic data. Human evolution, genome-wide association studies, gene-environment interactions, and genetic architecture with emphasis on applications to real data and analyses. Prerequisites: PUBH 6860.

PUBH 8999. Dissertation Research. 1-12 Credits.

Dissertation research.

PUBLIC POLICY AND PUBLIC ADMINISTRATION (PPPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

PPPA 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

PPPA 1099. Variable Topics. 36 Credits.

PPPA 2000. Justice and the Legal System I. 3 Credits.

The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country.

PPPA 2001. Justice and the Legal System II. 3 Credits.

Continuation of PPPA 2000. The structure and function of constitutional law: the Supreme Court as an institution, how its cases are decided, and effects of its decisions on the political and social life of the country. Prerequisite: PPPA 2000.

PPPA 2117. Executive Branch Politics. 3 Credits.

Contemporary concepts and issues in public administration and management. Major trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSC 2217.

PPPA 2701. Sustainability and Environmental Policy. 3 Credits.

A survey of the intersection of the principles of sustainability and the set of public policies that affect environmental management in the United States. Consideration of the idea that environmental policy is inevitably implemented in a complex interaction of both natural and human systems. Topics applicable to most environmental policy debates, such as the the balance between costs and benefits of environmental protection. Introduction to a "toolkit" of environmental policy instruments ranging from highly prescriptive command-and-control regulations to flexible market-based policies.

PPPA 5099. Variable Topics. 1-99 Credits.

PPPA 6000. Perspectives on Public Values. 1 Credit.

The underpinnings and skills necessary for a functioning democratic society; empathy and the ability to have civil discourse to create, analyze, pass, implement, and evaluate policy and programs.

PPPA 6001. Introduction to Public Service and Administration. 3 Credits.

Introduction to the discipline of public administration. The intellectual traditions and theoretical frames of reference that inform public administration as a field of professional practice and study. Current and continuing challenges and controversies.

PPPA 6002. Research Methods and Applied Statistics. 3 Credits.

Development of skills and knowledge for conducting original research and critically evaluating empirical studies. Various research designs and data collection techniques are examined. Focus on computerizing data sets for quantitative analysis, analyzing strength of relationships, selecting appropriate statistical techniques, and testing statistical hypotheses.

PPPA 6003. Economics for Public Decision-Making. 3 Credits.

The basic tools and concepts in microeconomic analysis and how these tools can be useful in public decision-making.

PPPA 6004. Managing Public Organizations. 3 Credits.

Organizational dynamics, management approaches, and workplace relationships that affect behavior in public organizations. Prerequisite: PPPA 6001.

PPPA 6005. Public Budgeting, Revenue, and Expenditure Analysis. 3 Credits.

Survey of institutions and analytical tools associated with raising revenue and allocating/managing resources at all levels of government. Hands-on budgeting skills and communication of analysis to decision-makers.

PPPA 6006. Policy Analysis. 3 Credits.

Development of skills in conducting and critiquing policy analyses. Application of methodologies used in analyzing possible consequences of specified alternatives as applied in the public policy decision-making process. Appropriate applications and limitations of policy analysis and its relationship to politics and the policy process.

PPPA 6007. Microeconomics for Public Policy I. 3 Credits.

Intermediate microeconomics with a focus on policy-related topics and examples. Restricted to students in the MA in environmental resource policy, public affairs, and public policy programs.

PPPA 6008. MPA/MPP Capstone. 3 Credits.

For MPA and MPP students completing their degree program at the end of the fall semester. This course substitutes for PPPA 6009 and PPPA 6019, respectively.

PPPA 6009. MPA Capstone Seminar. 3 Credits.

Integration and synthesis of the knowledge and skills acquired during the MPA program. Analysis and integration of ethical, political, economic, managerial, and personal values and issues in the field. Prerequisites: Completion of all core courses in the MPA curriculum.

PPPA 6010. Politics and The Policy Process. 3 Credits.

The role of policy analysts in public policymaking. The impact that the political, economic, cultural, and bureaucratic context has on the policymaking process and outcomes. Political and ethical issues raised by the intricate interface of the private, not-for-profit, and public sectors in public policy formulation and implementation.

PPPA 6011. Politics and Policy Analysis. 3 Credits.

Foundations of the public policy field; the role of policy analysts in the policy making process; agenda setting, decision making, policy implementation, program evaluation, and policy feedback.

PPPA 6013. Econometrics for Policy Research I. 3 Credits.

Multivariate research methods in policy analysis.

PPPA 6014. Microeconomics for Public Policy II. 3 Credits.

The application of intermediate microeconomic theory to the study of public policy; models of individual choice in policy analysis, policy aspects of models of the firm, theory of market failure and welfare economics, and resource allocation decisions in the public sector. Credit cannot be earned for both PPPA 6014 and SMPP 6206. Prerequisite: PPPA 6007.

PPPA 6015. Benefit-Cost Analysis. 3 Credits.

The application of microeconomic theory and welfare economics to the empirical evaluation of public policies and programs. Applied welfare economics as a framework for policy analysis; empirical measures of welfare change; techniques of benefit-cost analysis. Prerequisite: PPPA 6014.

PPPA 6016. Public and Nonprofit Program Evaluation. 3 Credits.

Theory and practice of program evaluation and evaluative research. Exploration of scope and limitations of current practice in evaluation, considering economic, political, social, and administrative factors. Examination of methodological considerations for design, data collection, analysis, and dissemination. Prerequisite: PPPA 6002 .

PPPA 6017. Introductory Microeconomics for Public Policy. 3 Credits.

Intermediate microeconomics with a focus on policy-relevant topics and examples. Restricted to MPA and MPP degree candidates.

PPPA 6018. Public Policy, Governance, and the Global Market. 3 Credits.

The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets, and globalization. The evolution of national, transatlantic, and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization, and industry standards.

PPPA 6019. MPP Capstone. 3 Credits.

Policy theory and typologies; policy formulation, implementation, and evaluation; ethics and practice in policy analysis, processes, content, and contexts; policy linkages to multiple disciplines. Students submit an analysis of a substantive policy primarily utilizing resources in the DC region.

PPPA 6020. Decision Modeling for Public Policy. 3 Credits.

Practical modeling approaches used by policy analysts to explain and assess complex problems, bound a solution space, or determine what data is needed to support policy decisions; using spreadsheets (specifically, Microsoft Excel) to begin modeling policy problems. Prerequisite: PPPA 6002.

PPPA 6021. Data Visualization. 3 Credits.

How graphics can be used to obfuscate, illuminate, and compel. Focusing on the programming language R, includes working with large-scale data and distilling such data into pictures that communicate. Prerequisite: PPPA 6013.

PPPA 6024. Leadership in Complex Organizations. 3 Credits.

What the manager must know and do to provide leadership and guidance in large, complex organizations. An exploration of leadership theories and the factors and processes that condition effective leadership.

PPPA 6025. Ethics and Public Values. 3 Credits.

Ethical dimensions of personal and professional judgments of public officials. Cases are used to consider the ethos of public organizations and the moral foundations of public policy.

PPPA 6027. Program Management. 1 Credit.

Program management as a basis for developing policy and evaluating programs; how managers look at problems, the competing demands they face, what (and who) influences their decisions and actions, and how they get things done.

PPPA 6031. Governing and Managing Nonprofit Organizations. 3 Credits.

Historical, legal, and social foundations of the nonprofit sector. Developing organizational strategy and capacity; managing staff, boards, and volunteers; financial management; fund raising, marketing, public advocacy, and other external relations; partnerships and entrepreneurial activities; measuring performance; and policy issues.

PPPA 6032. Managing Fund Raising and Philanthropy. 3 Credits.

Fund-raising for nonprofit organizations and the management of relationships between donors and recipient organizations. Positioning the organization for fund raising; roles of staff and volunteers; principal techniques for identifying, cultivating, and soliciting donors; ethical principles; emerging trends; and relevant policy issues.

PPPA 6033. Nonprofit Enterprise. 3 Credits.

The use of business methods by nonprofit organizations, commercialization in the nonprofit sector, and the relationship between nonprofit and for-profit entities in pursuing social purposes. Case studies.

PPPA 6034. Managing Nonprofit Boards. 3 Credits.

Overview of the responsibilities, roles, and management of nonprofit boards. The emphasis is on governing boards, but advisory councils and boards of other types are also considered.

PPPA 6042. Managing State and Local Governments. 3 Credits.

Examination of state and local governmental structures and functions, their place within the federal system, their revenue sources, their limitations, and the alternatives available to encourage more effective administration to meet public and private demands.

PPPA 6043. Land Use Planning and Community Development. 3 Credits.

Theory and practice of land use planning. Issues of competing land uses in an era of increased sprawl, population pressure, and environmental threat. Growth management techniques and practices in states and localities; the use of various regulatory controls and economic incentives to achieve desired outcomes. The idea of “sustainable community.”

PPPA 6044. State Politics and Policy. 3 Credits.

Important concepts of state politics and government with emphasis on how those concepts affect the formulation and implementation of policy. The functions of state government and the political, economic, and legal factors that shape state public policies.

PPPA 6048. Financing State and Local Government. 3 Credits.

Analysis of the theory and practice of public finance in state and local governments. Includes the financing of services through municipal taxation, intergovernmental funds, debt instruments, and other revenue sources. Review of expenditures as well as financial management practices.

PPPA 6049. Urban and Regional Policy Analysis. 3 Credits.

Examination of selected national policies and their effects on urban areas and governments. Emphasis on policy dimensions of urban systems and their relationship to the social, political, and economic context. Against the background of urban politics and administration, areas of health, education, welfare, manpower, transportation, and housing are addressed.

PPPA 6051. Governmental Budgeting. 3 Credits.

Survey of the actors, institutions, and processes in the federal budgeting system. Executive budget preparation/execution, legislative review and approval of budget requirements, and independent audit of government spending.

PPPA 6052. Tax Policy Analysis. 3 Credits.

This course provides a guided, critical study of budgeting by the U.S. Government: its conceptual foundations, structure, processes, accounting, scoring, and results. This process is evaluated, as a system and by its component elements, using the criteria of performance with respect to its fundamental objectives; fiscal and economic stability and efficiency, including for those programs aimed at promoting equity. Because of the dominant role of the Congress in the budget process, attention is focused on the system and process created by the Congressional Budget Act of 1974.

PPPA 6053. Financial Management for Public and Nonprofit Organizations. 3 Credits.

Intensive analysis, using the case study approach, of concepts and principles used in the not-for-profit sector for financial management purposes. Disciplines of accounting, budgeting, operations control, management, and auditing are integrated into comprehensive management control systems and include issues of system design and implementation.

PPPA 6054. Issues in Federal Budgeting. 3 Credits.

Policy tools available to pursue social objectives, including grants, loans, contracting out, regulation, tax credits, and tax expenditures. Focus on criteria such as effectiveness, efficiency, equity, legitimacy, and administrative ease.

PPPA 6055. Contracting Out and Public-Private Partnerships. 3 Credits.

Contracting out and public-private partnerships as methods of delivering government goods and services. Policy and implementation issues, including when and how contracting out may provide a more efficient and effective method of delivering government goods and services.

PPPA 6056. Regulatory Comment Clinic. 3 Credits.

Survey of regulatory theories, institutions, policies, and procedures. Application of economic tools to analyze the effect of existing and proposed regulations on social welfare. Communication of analysis to decision makers and the public.

PPPA 6057. International Development Administration. 3 Credits.

An institutional and policy context for work in the international development industry. Mainstream policies, reform efforts, and alternative approaches. Major actors, selected policy areas, and regional and comparative perspectives.

PPPA 6058. International Development NGO Management. 3 Credits.

Provides an understanding of the primary implementers of international development assistance. Overview of NGO management, highlighting those features that are particular to NGOs active in international development, including NGO relations with government and donors. Recommended background: PPPA 6057 or permission of the instructor.

PPPA 6059. International Development Management Processes and Tools. 3 Credits.

Training in development management tools and processes; application of international development approaches specific to the development management profession. Key theories and perspectives of community development and development management. Recommended background: PPPA 6057 or permission of the instructor.

PPPA 6060. Policy Formulation and Administration. 3 Credits.

Impact of economic and political factors on public policy formulation and implementation; intensive analysis of the analytical, normative, and decision-making models of the policy process with special emphasis on their relationship to current policy problems.

PPPA 6061. Banking and Financial Institutions Policy. 3 Credits.

This course examines the broad range of policy issues applicable to banking and financial institutions – including those related to monetary policy, financial stability, consumer protection, and community reinvestment. This area includes a number of questions that are at the forefront of the current national policy debate about the appropriate role of government and how best to regulate financial institutions and financial markets.

PPPA 6062. Community Development Policy and Management. 3 Credits.

This course examines the policy and practice of community development, including how private sector developers and lenders work with nonprofits, foundations, and the public sector to promote sustainable affordable housing, economic development, and other community-based projects that meet both financial as well as social impact criteria. This category of finance and development is intended to help people and communities just outside the margins of conventional, mainstream finance join the economic mainstream – and to help the economic mainstream enter emerging opportunity markets. The course explores different types of community development opportunities, including affordable housing, charter school, community facility, small business lending, and nonprofit real estate projects. The course also addresses emerging trends that are likely to affect community development policymakers and practitioners, including transportation oriented development, “green” development, use of technology, comprehensive community initiatives, and new ways of raising capital for community development projects.

PPPA 6063. Policy Issues in Corporate Social Responsibility (CSR) and Impact Investing. 3 Credits.

This course examines the role of the public and nonprofit sectors in supporting corporate and investor activities that are intended to have social and environmental, in addition to financial, benefits. These activities – often referred to as “corporate Social Responsibility” (CSR) and “impact investing” – have been described as having significant potential to create social benefits in addition to being in the financial best interests of the corporation or investor. At the same time, some critics of these activities have said that they are less about producing social benefits and more about marketing private sector activities that are primarily designed to produce corporate financial gains. The course explores what is meant by these two terms, what steps the public and nonprofit sectors have taken to support the wide range of activities that these terms encompass, and what have been the results of this work both in the United States and in other countries. The course also addresses emerging trends that are likely to affect the public and nonprofit role in CSR and impact investing in the future.

PPPA 6065. Federalism and Public Policy. 3 Credits.

PPPA 6066. U.S. Environmental Policy. 3 Credits.

Current issues in environmental policy; biodiversity, land use including wilderness protection, climate change, environmental justice, economic growth, and ecological sustainability.

PPPA 6067. Environment, Energy, Technology, and Society. 3 Credits.

The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as SMPP 6207.

PPPA 6068. Leading Diverse and Inclusive Organizations. 3 Credits.

Organizational leadership, decision-making, and communications skills necessary for leading in a diverse, multicultural, multi-generational environment.

PPPA 6072. Legislative Management and Congress. 3 Credits.

Analysis of Congress as a management system; examination of its internal administration and its role in formulating policy through legislation. Staffing practices, leadership, rules and procedures, oversight functions, and coalition building.

PPPA 6075. Law and the Public Administrator. 3 Credits.

Exploration and analysis of the functions of law in a democratic society. Emphasis is placed upon the procedural, historical, and jurisprudential dimensions of American law. This broad perspective seeks to convey understanding of the law as a legal and moral force guiding and constraining public decision making.

PPPA 6076. Federal Government Regulation of Society. 3 Credits.

Analysis of the federal regulatory process as it affects the public and private sectors. The regulatory process from legal, economic, administrative, and political perspectives.

PPPA 6077. Case Studies in Public Policy. 1-3 Credits.

Critical analysis of topical issues in public policy, using a case-study approach. Specific issues covered vary.

PPPA 6081. Poverty and Social Policy. 3 Credits.

Introduction to analytical and political issues surrounding the ongoing American and British debates on poverty and social policy; evaluating social assistance programs; the complementary roles of policy analysis and public management.

PPPA 6085. Special Topics in Public Policy. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more information.

PPPA 6097. Practicum in Public Policy and Public Administration. 0 Credits.

PPPA 6098. Independent Research. 1-12 Credits.

Permission of the instructor and program director required prior to enrollment.

PPPA 6140. Introduction to Environmental Law. 3 Credits.

Federal environmental statutes, implementing regulations, state regulatory programs, international environmental agreements; environmental governance tools; strengths, weaknesses of legal, administrative, private approaches to environmental threats; the role of federal courts, administrative law in environmental protection.

PPPA 6145. Global Environmental Justice and Policy. 3 Credits.

Environmental justice, considered as both a movement and a public policy. Examination of environmental injustices—both perceived and actual—affecting individuals, communities, and populations. Adherence to, and enforcement of, environmental laws and regulations that affect the allocation of environmental benefits and the distribution of sources of toxic pollution and other hazards.

PPPA 6198. Environmental Resource Policy Capstone. 3 Credits.

Team development of a project sponsored by an external entity, such as a government or nongovernmental agency, or participation in an aspect of a research project directed by a faculty member. The student team functions as an external consultant tasked with analysis of the chosen issue.

PPPA 6207. Program Management. 1 Credit.**PPPA 6295. Research Topics in Environmental Resource Policy. 1-3 Credits.**

May be repeated for credit to a maximum of 6 credits.

PPPA 8022. Econometrics for Policy Research II. 3 Credits.

For doctoral students who wish to use econometric tools in their research. An equivalent course in introductory econometrics may be substituted for the prerequisite with permission. Prerequisite: PPPA 6013.

PPPA 8023. Mixed Methods in Research Design. 3 Credits.

The historical and philosophical foundations of mixed method research design; review of canonical designs; developing and honing skills to implement mixed methods research designs.

PPPA 8085. U.S. Social Policy. 3 Credits.

Development and implementation of social welfare policy in the United States. Introduction to welfare state theory and different welfare models. Critical interrogation of the values and ideologies underlying the policy formulation process. Restricted to doctoral students. Recommended background: A general understanding of the public sector is helpful.

PPPA 8100. Seminar: Literature of Public Administration. 3 Credits.

Contemporary and historical literature in the institutional and intellectual development of public administration.

PPPA 8101. Research Methods. 3 Credits.

Doctoral seminar on theory and practice in research methodology. Data sources and gathering, research models and designs. Critical evaluation of research studies. Emphasis on application of research methods to policy questions.

PPPA 8105. Public Finance and Human Capital. 3 Credits.

The many facets of budgeting and finance and the research approaches used to study issues in this field.

PPPA 8111. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Restricted to doctoral candidates. Credit cannot be earned for this course and SMPP 8311.

PPPA 8123. Seminar: The Policy Organization. 3 Credits.

Unique problems of complex organizations: public, private, and mixed. Emerging concepts and theories. Selected issues.

PPPA 8164. Seminar on Program Evaluation. 3 Credits.

Doctoral seminar on theory and practice in public and nonprofit program evaluation. The broad range of approaches undertaken, current controversies in the field, and the political and ethical context for evaluators.

PPPA 8174. Seminar: Public Management. 3 Credits.

Public organization theory and behavior. Organizational behavior, organization theory, and public management. Key traditions of inquiry in the study of public organizations.

Restricted to students in the PhD in public policy and administration program.

PPPA 8183. Current Topics and Research. 1 Credit.

Current scholarship discussed in a seminar setting. The conduct of research and presentation of research findings. May be repeated for credit.

PPPA 8190. Philosophical Foundations of Policy and Administrative Research. 3 Credits.

Philosophy of science as applied to research in public policy and public administration. The nature of and current problems related to epistemology, development and role of theories, and relationships among theory, methodology, and empirical data.

PPPA 8191. Dissertation Workshop. 3 Credits.

Critical analysis of current research. Formulation of a dissertation proposal and development of dissertation research strategies. Credit for this course may be applied toward the dissertation credit requirement. Restricted to public policy and administration doctoral candidates who have taken and passed the qualifying examination and completed all required course work in a policy or public administration field.

PPPA 8197. Doctoral Seminar: Special Topics. 1-3 Credits.

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PPPA 8998. Advanced Reading and Research. 1-12 Credits.

Restricted to doctoral candidates preparing for the general examination.

PPPA 8999. Dissertation Research. 3-12 Credits.

Doctoral candidates in dissertation research. Restricted to doctoral candidates.

REGULATORY AFFAIRS (RAFF)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

RAFF 5099. Variable Topics. 1-99 Credits.

RAFF 6201. Introduction to Global Regulatory Affairs. 3 Credits.

Foundations of regulatory affairs, including U.S. and international legislation and regulatory processes guidelines. Roles of leaders of regulatory affairs in developing products, navigating the regulatory review and approval process, and contributing to keeping products on the market.

RAFF 6202. Regulatory Drug Biologics. 3 Credits.

Development and evaluation of the regulatory affairs strategies that support drug and biologic development. Research science, study design, master file, risk/benefit analyses, product specifications and milestone identification, IND and NDA.

RAFF 6203. Regulatory Device Diagnostics. 3 Credits.

Development and evaluation of the regulatory affairs strategies that support device and diagnostics development. Research science, study design, master file, risk/benefit analyses, product specifications and milestone identification, IDE, 510K, PMA.

RAFF 6204. Clinical Research for Regulatory Affairs. 3 Credits.

The planning and conduct of clinical trials. Topics include protocol development, study design, post-marketing surveillance, and evaluation and assessment of regulatory submissions. Strategies for achieving clinical development goals.

RAFF 6205. Regulatory Affairs Compliance. 3 Credits.

Analysis and evaluation of regulatory affairs compliance strategies and guidelines. Pre and post marketing compliance of medical products, oversight, labeling, advertising and use.

RAFF 6275. Leadership in Regulatory Affairs. 3 Credits.

Theories of leadership and change are integrated in the development of change proposals for the regulatory affairs field. The development of leadership solutions to problems in leading regulatory strategic change; integration of all field coursework into implementation plans for health care system changes.

RELIGION (REL)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

REL 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

REL 1003. Introduction to World Religions. 3 Credits.

Introduction to the major religions of the world: Judaism, Christianity, Islam, Hinduism, Buddhism, Confucianism, and Daoism. Examination of the central aspects of these religions including the doctrinal, ethical, ritual, experiential, and social dimensions. Exploration of similarities and differences between these religious traditions.

REL 1009. The Hebrew Scriptures. 3 Credits.

The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature.

REL 1010. The New Testament. 3 Credits.

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement.

REL 1010W. The New Testament. 3 Credits.

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 1099. Variable Topics. 1-36 Credits.**REL 2165. The Gospels. 3 Credits.**

Study of the four canonical gospels (traditionally those of Matthew, Mark, Luke, and John) in terms of each presenting a distinct literary portrait of Jesus of Nazareth and each being the product of a religious community that shared at least some beliefs and practices with surrounding "pagan" and Jewish communities.

REL 2169. Lost Gospels. 3 Credits.

Examination of some of the gospels not included in the Christian canon. These include, among others, Q, the Gospel of Thomas, the Gospel of Mary, and the Gospel of Judas. These lost gospels provide a fresh perspective on the development and diversity of early Christianity.

REL 2201. Judaism. 3 Credits.

A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals.

REL 2211. Rabbinic Thought and Literature. 3 Credits.

The thought-world of rabbinic Judaism in its formative period, 100 to 500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

REL 2301. Christianity. 3 Credits.

Typical themes, patterns, and points of diversity within the Christian religion; commonly shared and contested features and complex relationship with broader culture.

REL 2314. Contemporary Philosophy of Religion. 3 Credits.

The arguments of major figures in contemporary schools of thought within the philosophy of religion, including analytic, continental, deconstructionist, and process philosophy.

REL 2401. Islam. 3 Credits.

Islam as both a religion and a civilization. The basic Islamic beliefs and practices: the Qur'an, Hadith, and Islamic intellectual legacy; and the history of Islam from 632 to the present with particular attention to its encounter with the West.

REL 2501. Hinduism. 3 Credits.

Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

REL 2506. Religion, Myth, and Magic. 3 Credits.

Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. (Same as ANTH 2506).

REL 2562. Mythologies of India. 3 Credits.

The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

REL 2601. Buddhism. 3 Credits.

Consideration of the Buddhist tradition both thematically and historically, focusing on topics such as Buddhist doctrine, meditation, and rituals. The lived tradition in the pre-modern and modern periods.

REL 2802. Introduction to Chinese Religions. 3 Credits.

General introduction to Chinese religions focusing on religious doctrines and institutions; religious practices, including ancestor worship, family and communal rituals, spirit possession, fengshui theories, pilgrimage, popular worship of ghosts and gods. (Same as EALL 2802).

REL 2811. Confucian Literature in East Asia. 3 Credits.

Introduction to Confucian literature in China and other parts of East Asia, from its beginnings to the present day. The various historical, philosophical, and religious dimensions of Confucian texts and practices; the role of Confucianism in the formation and development of Chinese and East Asian political systems, family systems, and gender relationships; recent intellectual debates on Confucianism in East Asia. (Same as EALL 3811, EALL 6811).

REL 2814. Religion and Philosophy in East Asia. 3 Credits.

Historical introduction to the major religious and philosophical traditions in China, Japan, and Korea, with focuses on ancestor worship, shamanistic cults, Confucianism, Buddhism, Daoism, and Shinto. The interactions of common East Asian religious and philosophical traditions how these traditions evolved over time, and the way each cultures assimilates foreign elements. How the very ideas of religion and philosophy are formulated and practiced differently in East Asia from those in the Western tradition. (Same as EALL 3814, REL 3814).

REL 2831. Introduction to Daoism. 3 Credits.

A general introduction to the Daoist tradition from the antiquity to contemporary times, through reading major Daoist classics, scriptures, poems, novels, and examining Daoist material cultures and bodily cultivation techniques. Those who take it for graduate credit will have extra assignments. (Same as EALL 3831, EALL 6831).

REL 2921. The Religions Wage Peace. 3 Credits.

Resources in various world religions that contribute to peacemaking in interpersonal relations and in domestic and international politics. Consideration of ways in which religions contribute to intolerance and violence. Case-based approach to religions as related to peace and conflict resolution.

REL 2922. Ethics and World Religions. 3 Credits.

Modern concepts of ethics and their relation to major world religions, religion as stimulus and barrier to moral change, and modern moral issues ranging from bioethics to war.

REL 2945. Psychological Study of Spirituality. 3 Credits.

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Formerly REL 3945. Recommended background: Prior completion of a religion (REL) course. Same As: PSYC 2945.

REL 2981. Women in Western Religion. 3 Credits.

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WSTU 3981.

REL 2990. Selected Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

REL 3099. Variable Topics. 1-12 Credits.**REL 3141. Second Temple/Hellenistic Judaism. 3 Credits.**

History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

REL 3151. The Historical Jesus. 3 Credits.

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus. Same As: REL 3151W.

REL 3151W. The Historical Jesus. 3 Credits.

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: REL 3151.

REL 3161. The Life and Thought of Paul. 3 Credits.

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

REL 3161W. The Life and Thought of Paul. 3 Credits.

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 3221. Issues in Jewish Ethics. 3 Credits.

Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

REL 3291. Modern Jewish Thought. 3 Credits.

Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

REL 3310. Apocalypse and Social Change. 3 Credits.

Investigation of typical ideas, patterns, and areas of social engagement associated with the genre of religious literature known as apocalypse. Why and how diverse groups within Jewish, Christian, and Muslim traditions crafted apocalypses that have shaped cultures across the globe from past to present.

REL 3321. Christian Ethics and Modern Society. 3 Credits.

Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

REL 3341. Christianity in the Ancient World. 3 Credits.

Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

REL 3342. Medieval Faith and Symbolism. 3 Credits.

Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.

REL 3343. Religion in the Renaissance and Reformation. 3 Credits.

Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.

REL 3344. Christianity in the Modern World. 3 Credits.

Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.

REL 3405. Shi'ite Islam. 3 Credits.

This course examines the emergence and development of Shi'ism as a branch of Islamic orthodoxy with particular emphasis on its doctrine, practices, theology, the law, politics, and the geographical and political context within which a distinct Shi'i identity developed.

REL 3414. Islamic Philosophy and Theology. 3 Credits.

Major schools of Islamic philosophy and theology considered in morphological and historical contexts. Relation between revelation and reason, determination and free will, and divine and human knowledge, and among science, philosophy, and religion. Recommended background: REL 2401 or basic knowledge of Islam. Same As: REL 6414.

REL 3419. Islamic Civilization and the West. 3 Credits.

Interaction between Islamic and Western civilization during the past fourteen centuries. Christian contact with and development of views about Islam; formation of Islamic civilization and the influence of Islamic ideas upon the West; encroachment upon and subsequent colonization of the Islamic world by the West; the spread of Western ideas among Muslims; and Islamic responses to the advent of modernism coming from the West. Present day relations.

REL 3425. Islamic Political Thought. 3 Credits.

Islamic political thought from inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists and its encounter with political thought from the Western world in the modern period. Same As: REL 6425.

REL 3431. Sufism/Islamic Mysticism. 3 Credits.

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Same As: REL 6431.

REL 3432. Persian Sufi Literature East and West. 3 Credits.

The teachings of Sufism as reflected in the history of Persian Sufi literature. The influence of that literature on literary figures outside of the Islamic world, especially in the West, but also in India and China, from the 18th to the 20th centuries.

REL 3475. Islamic Religion and Art. 3 Credits.

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design. Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same As: REL 6475.

REL 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. (Same as WGSS 3481).

REL 3482. Gender and Piety in Islam. 3 Credits.

Issues related to gender, sainthood, and piety in Islam. Reading of classical primary texts and historical, ethnographic, and philosophical works. Focus on mysticism and metaphysics in Sufi and Shi'i traditions. Final projects are creative or research oriented.

REL 3566. Dharma in Hinduism and Buddhism. 3 Credits.

Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3612. Buddhist Ethics. 3 Credits.

Introduction to basic concepts in Buddhist ethics. Exploration of the unique landscape of Buddhist moral psychology. Analysis of the moral thought of leading contemporary Buddhists Thich Nhat Hanh and the Dalai Lama. Prerequisites: .

REL 3614. Buddhist Philosophy. 3 Credits.

Development of working definitions of dharma as it is used in law, religion, ethics, and narrative in Buddhist and Brahmanical/Hindu texts of India's classical period.

REL 3615. Buddhist Contemplative Traditions in Theory and Practice. 3 Credits.

Exploration of Buddhist meditation. The meditation movement in the West and the emerging science of meditation. Includes discussion of and practicing different styles of Buddhist meditation.

REL 3666. The Book of Revelation and Other Apocalypses. 3 Credits.

Examination of the Book of Revelation in its original historical context. This includes investigation of the origins of apocalyptic thought within Judaism and comparison of the Book of Revelation with other apocalypses such as Daniel, 1 Enoch, and 4 Ezra.

REL 3701. Religion in the United States. 3 Credits.

Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

REL 3711. Religion in Contemporary America. 3 Credits.

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

REL 3711W. Religion in Contemporary America. 3 Credits.

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 3814W. Religion and Philosophy in East Asia. 3 Credits.

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as EALL 3814).

REL 3831W. Daoism in East Asia. 3 Credits.

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as EALL 3831).

REL 3832. Myth, Ritual, and Popular Religion in China. 3 Credits.

Key aspects of popular religious myths, symbols, rituals, and practices in China, such as ancestor worship, spirit possession, fengshui theories, and pilgrimage. Same As: EALL 3832.

REL 3841. Religion and Politics in China. 3 Credits.

The changes, destructions, and reconstructions of Chinese religions from the late nineteenth century to the present. The relationship between the (re)making of Chinese religions and the making of a modern Chinese nation state. Same As: CHIN 3841.

REL 3881. Women, Gender, and Religion in China. 3 Credits.

Historical introduction to women and men as gendered subjects and the construction of gender and power in Chinese religions. May be taken for graduate credit with extra work assigned. Same as EALL 3881/WGSS 3811. (Same as EALL 3881, WGSS 3881).

REL 3901. Thinking About Religion: Classic and Contemporary Approaches. 3 Credits.

Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 3910. Perennial Philosophy. 3 Credits.

The meaning of the concept of 'perennial philosophy' as understood by various scholars of thought throughout Eastern and Western history, including its contemporary significance. Perennial philosophy as it concerns the nature of the 'divine reality,' the human state, the cosmos, the arts, and relations between religions.

REL 3912. Religion and Science. 3 Credits.

The relationship between religion and science globally and over time. Egypt, Greece, the Far East, India, and the Islamic world; the West during the Renaissance, with a focus on alchemy and the hermetical tradition; and the Scientific Revolution in the 17th century and biological revolution in the 19th century. Issues and various currents of thought in the contemporary world.

REL 3915. Islam and Hinduism in South Asia. 3 Credits.

Investigation of the historical development and contemporary practice of Islam in South Asia (India, Nepal, Pakistan, Bangladesh, and Afghanistan). Particular attention to devotional traditions within Sufism and Bhakti Hinduism.

REL 3923. Violence and Peace in Judaism, Christianity, and Islam. 3 Credits.

Historical analysis of the violent and peaceful dimensions of the three Abrahamic faiths, with focus on the relationship of the scriptures of each of the three traditions to the later interpretations that supported both violent and peaceful readings of those texts.

REL 3930. Mysticism East and West. 3 Credits.

Mysticism and its various meanings in Eastern and Western religious and spiritual traditions. Comparative study of major figures and works. What schools of mysticism teach about the nature of God and the world and the human state. The rapport between mysticism and various forms of sacred and traditional art.

REL 3931. Interfaith Dialogue in World Religions. 3 Credits.

Comparison of certain families of religions and the doctrinal debates in which they have engaged, including Hindu-Buddhist, inter-Hindu, inter-Buddhist, Buddhist-Confucian, Jewish-Christian, inter-Christian (Catholic-Protestant), Christian-Islamic, and inter-Islamic debates.

REL 3989. The Goddess in India and Beyond. 3 Credits.

The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskrit, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.

REL 3990. Selected Topics in Religion. 3 Credits.

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

REL 3990W. Selected Topics in Religion. 3 Credits.

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 3999. Readings and Research. 2-3 Credits.

REL 4101W. Senior Capstone Seminar. 3 Credits.

Required of religion majors. Students refine and consolidate what they have learned over the course of their studies. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 4191W. Senior Honors Thesis. 3 Credits.

Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

REL 5099. Variable Topics. 1-99 Credits.

REL 5701. Selected Topics. 4 Credits.

REL 6201. Special Topics in Religion. 3 Credits.

May be repeated for credit provided the topic differs.

REL 6401. Islamic Historiographies. 3 Credits.

Muslim historiographic traditions from the 7th to 15th centuries, including what they looked like and how they developed; the development of scholarly methods used to evaluate the source materials for these traditions in the formative and classical periods of Islam; key developments in postclassical, non-Arabic Muslim historiographic traditions in the Indian Subcontinent, Ottoman Turkey, and the Persian lands.

REL 6402. Qur'an and Hadith. 3 Credits.

The structure, major themes, and literary aspects of the twin sources of Islam. Commentaries written by Muslim scholars and their part in spreading the teachings of the sacred book of Islam. The general principle elements of Islamic theology, law, politics, ethics, philosophy, and art and architecture. The science of Hadith, its types, its relation to the Qur'an, and methods used for authentication of the sayings of the Prophet. The historical role of the Qur'an and Hadith both in classical as well as modern period with particular emphasis on its part in forming Muslim perception of society, history, and politics.

REL 6412. Shi'i Thought. 3 Credits.

Introduction to Shi'i Islam, with a particular focus on the integration of textual, rational, polemical, and philosophical sources in the development of the fundamental doctrines of Twelver, Isma'ili, and Zaydi (Imami) Shi'ism. Restricted to MA students in Islamic Studies.

REL 6413. Philosophy and Mysticism in the Shi'i World. 3 Credits.

Major figures and concepts in philosophy and mysticism in the Shi'i world, including Sufism and the 'irfān tradition, with a focus on ethics. Parallel phenomena in Judaism and Christianity. Restricted to students in the MA in Islamic studies program.

REL 6414. Islamic Philosophy and Theology. 3 Credits.

Major schools of Islamic philosophy and theology considered in morphological and historical contexts. Relation between revelation and reason, determination and free will, and divine and human knowledge, and among science, philosophy, and religion. Recommended background: REL 2401 or basic knowledge of Islam. Same As: REL 3414.

REL 6420. Shi'i Political Thought. 3 Credits.

Survey of contemporary Twelver Shi'i political thought, focusing on scholars from Lebanon, Iraq, and Iran, during the twentieth and twenty-first centuries. Restricted to students in the MA in Islamic studies program.

REL 6425. Islamic Political Thought. 3 Credits.

Islamic political thought from inception during the lifetime of the Prophet to its elaboration and expansion by philosophers, theologians and political theorists and its encounter with political thought from the Western world in the modern period. Same As: REL 3425.

REL 6431. Sufism/Islamic Mysticism. 3 Credits.

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Same As: REL 3431.

REL 6441. Islamic Law. 3 Credits.

Islamic positive law in the contemporary context. The family law of Islam (marriage, dowry, custody, guardianship and various forms of divorce); the law of inheritance and public trust (waqf) as two selected topics of Islamic private law. Examination of theories of jihad and siyar in the contemporary context of nation-state systems of international relationships. Islamic rituals ('ibadat) whose spirituality prevails the totality of the Islamic set of laws and regulations.

REL 6442. Principles of Shi'i Jurisprudence. 3 Credits.

Islamic legal theory in the Shi'i tradition. Topics include sources of Shi'i law; resolving contradictory reports from divinely-inspired sources; authentic vs. inauthentic evidence; distinguishing which actions are obligatory, forbidden, and permissible; and parallels with secular legal systems. Restricted to students in the MA in Islamic studies program.

REL 6460. Topics in the Study of Islam. 3 Credits.

Study of topics in Islam, as selected by the instructor, that may include philosophy, theology, mysticism, law, and/or literature. Prerequisites: A course on Islam or permission of the instructor.

REL 6461. Topics in Islamic Thought. 3 Credits.

Perennial major issues in Islamic theology, philosophy, and Sufism such as Divine Unity, prophetology, eschatology, religious knowledge, sacred law, and ethics. Prerequisites: A course on Islam or permission of the instructor.

REL 6475. Islamic Religion and Art. 3 Credits.

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design. Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same As: REL 3475.

REL 6481. Global Islamic Feminisms. 3 Credits.

History and current trajectory of Islamic feminism, beginning with various debates over understandings of its meanings and manifestations. Introduction to multidisciplinary methods of analysis for national and global contexts. Recommended background: Previous knowledge of or coursework in Islam.

REL 6511. Currents of Modern Hinduism. 3 Credits.

Hinduism since the early seventeenth century. Colonialism, the impact of missionaries, orientalism, reform, relations between Brahmanical and popular Hinduism, Sanskrit and vernacular traditions, regionalism, communalism, nationalism, fundamentalism, politicized "syndicated" Hinduism, and secularism.

REL 6557. India's Great Epics. 3 Credits.

The Mahabharata and the Ramayana are treated in alternate offerings of the course. These founding epic texts of devotional (bhakti) Hinduism are taught in English translation. Vernacular and performative versions of the epics and Western adaptations.

REL 6771. American Religion to 1830. 3 Credits.

Religious thought and life during the Colonial and early National periods.

REL 6773. American Religion Since 1830. 3 Credits.

Religious thought and life from the Civil War to the present.

REL 6831. Introduction to Daoism. 3 Credits.

A general introduction to the Daoist tradition from the antiquity to contemporary times, through reading major Daoist classics, scriptures, poems, novels, and examining Daoist material cultures and bodily cultivation techniques. Students taking the course for graduate credit must complete additional work. (Same as EALL 3831W, EALL 6831, REL 3831W).

REL 6901. Thinking about Religion: Classic and Contemporary Approaches. 3 Credits.

Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion.

REL 6911. Myth, Ritual, and Language. 3 Credits.

Method and theory in the interpretation of myth and narrative, ritual and sacrifice, and symbolism, with primary reference to the history of religions.

REL 6997. Readings and Research. 2-3 Credits.

Investigation of special problems.

REL 6998. Thesis Research. 3 Credits.

REL 6999. Thesis Research. 3 Credits.

SCHOOL OF EDUCATION AND HUMAN DEVELOPMENT (SEHD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SEHD 0940. Continuing Doctoral Research. 1 Credit.

Continuous enrollment for doctoral students working toward completion of their dissertation. Credit cannot be earned for this course and CNSL 0940, CPED 0940, EDUC 0940, HOL 0940, SPED 0940.

SEHD 5099. Variable Topics. 1-99 Credits.

SEHD 8100. Special Topics. 12 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Same As: CPED 8100. Credit cannot be earned for this course and CNSL 8100, EDUC 8100, HOL 8100, SPED 8100.

SEHD 8101. Research and Independent Study. 1-3 Credits.

Students work under the supervision of a faculty member to complete an approved project. May be repeated for credit. Same As: CNSL 8101, CPED 8101, EDUC 8101, HOL 8101, SPED 8101.

SEHD 8998. Pre-Dissertation Seminar. 3 Credits.

Required of all GSEHD doctoral candidates. Approval of the dissertation research proposal by the dissertation committee is necessary for successful completion of the seminar. Permission of the instructor is required prior to enrollment. Same As: EDUC 8998. Credit cannot be earned for this course and CNSL 8998, HOL 8998.

SEHD 8999. Dissertation Research. 3-6 Credits.

Doctoral candidates work with dissertation committee members to complete their research and prepare to defend their dissertation. Prerequisite: SEHD 8998. Same As: CNSL 8999, CPED 8999, EDUC 8999, HOL 8999, SPED 8999.

SCHOOL OF ENGINEERING AND APPLIED SCIENCE (SEAS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SEAS 0920. Continuing Research - Master's. 0 Credits.

Continuing research. (Fall, spring, and summer, Every Year).

SEAS 0930. Examination Preparation. 0 Credits.

Provides continuous enrollment for graduate students who are studying for a comprehensive or qualifying examination for the current or following semester but are not enrolled in any courses.

SEAS 0940. Continuing Research - Doctoral. 0 Credits.

Continuing research.

SEAS 1001. Engineering Orientation. 1 Credit.

Introduction to careers in engineering and computer science, University resources, and computer skill development. Emphasizes teamwork skills by applying them to several design projects. (Fall).

SEAS 1099. Variable Topics. 1-36 Credits.

SEAS 1800. Special Topics in Engineering. 1-3 Credits.

Experimental offerings on introductory-level topics and applications related to various disciplines in engineering. Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Open both to GW undergraduate students and to high school students. (Fall, spring, and summer).

SEAS 4800. Special Topics. 1-3 Credits.

Special topics related to new technology and advances, experimental offering on new course topics and applications. Topic to be announced in the schedule of classes. May be repeated for credit provided the topic differs. Recommended background: Undergraduate student. (Fall, spring, and summer).

SEAS 5099. Variable Topics. 1-99 Credits.

SEAS 6014. Introduction to Software and Hardware Security. 3 Credits.

Fundamental principles of designing secure software and hardware systems and the range of attacks that seek to compromise them. Overview of computer architecture and present attacks targeting the hardware, operating system, and application layers. Restricted to SEAS online students only. (As arranged, Every Year).

SEAS 6100. Innovation and Technology. 3 Credits.

Introduction to design and management of technology; Law of Diffusion of Innovation; identification of fundamental engineering design limits; sustained vs. disruptive engineering and technology, best practices from innovators and visionaries; engineering solutions at the prototype state; benefits of intellectual property protections; transformative technology and assessment from a holistic and global view point; application of the lean start-up approach to real-world challenges including sustainability. Restricted to SEAS students or with the instructor's permission. (Fall and spring).

SEAS 6200. Launching Technical Ventures. 3 Credits.

Fundamentals of building an organization and the capabilities necessary to launch and nurture early-stage ventures. Lean start-up management practices, with insights and lessons learned to avoid common mistakes associated with launching new businesses. (Spring).

SEAS 6300. Climate Change Policy and Regulation. 3 Credits.

Past and present policies, regulations, and standards at the local, national, and international levels addressing climate change-related challenges facing society; creating and guiding policy that is scientifically sound and resonates with the public; technological, institutional, and political infrastructures of air-land-water interactions; regulation of technologies at the forefront of climate action policy. (Fall, spring, and summer, Every Year).

SEAS 6303. Climate Change Capstone. 3 Credits.

Case studies suggested by examination of NASA's Soil Moisture Active Passive (SMAP) satellite mission; the Department of Energy's Innovation Hub (JCAP); federal climate change policy with regard to the Paris Agreement; Intended Nationally Determined Contributions; and other topics. (Fall, spring, and summer, Every Year).

SEAS 6401. Data Analytics Foundations and Practicum. 3 Credits.

Introduction to concepts and techniques in data analytics. Basic techniques of data science; algorithms for data mining; basics of statistical modeling and their "Big Data" applications. Concepts, abstractions, and practical techniques. Restricted to students in the MS in data analytics program. (Fall, Every Year).

SEAS 6402. Data Analytics Capstone. 3 Credits.

Students apply previously learned data analytics concepts and tools to the solution of practical problems in a year-long project. Planning, design, and construction of the project, including project demonstration, project specifications, report writing, and presentations. Restricted to students in the MS in data analytics program. Prerequisites: CSCI 6362 or EMSE 6765; CSCI 6441 or EMSE 6586; and CSCI 6444 and EMSE 6574. (Spring, Every Year).

SEAS 6410. Security Data Visualization. 3 Credits.

Visualization aspect of security data, including study of data analytics and scaling up information security, security metrics and security monitoring techniques focusing on industry applications. Tools for security data visualization and analytics. Restricted to online program students. Prerequisites: EMSE 6767. (As arranged, Every Year).

SEAS 6411. Management and Compliance in Cloud Computing. 3 Credits.

Maintaining compliance in the cloud. Theory, methodology, and procedures related to cloud computing; proper audit procedures for discovering system vulnerabilities; documenting findings according to the standards of compliance-based auditing. Restricted to SEAS online students. Prerequisites: ECE 6132. (As arranged, Every Year).

SEAS 6412. Cloud Migration Strategy. 3 Credits.

Migrating traditional IT services to a cloud-based environment. Technical and business considerations necessary to develop an effective cloud migration strategy for an organization. Decision analysis framework to prioritize migration applications. Restricted to SEAS online students. Prerequisites: ECE 6132. (As arranged, Every Year).

SEAS 6800. Special Topics. 1-3 Credits.

Experimental offering of new course topics and applications related to advances in technology. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. (Fall, spring, and summer).

SCHOOL OF MEDIA AND PUBLIC AFFAIRS (SMPA)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPA 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SMPA 1050. Media in a Free Society. 3 Credits.

The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

SMPA 1099. Variable Topics. 1-36 Credits.**SMPA 1225. Forensics Practice (Debate). 1 Credit.****SMPA 2101. Journalism: Theory & Practice. 3 Credits.**

Overview of theories and key issues in journalism in the United States. News and democracy, the historical and social evolution of journalism, news values, journalism as occupation/profession, technologies, and changes in journalistic practices. Restricted to SMPA students.

SMPA 2102. Introduction to Political Communication. 3 Credits.

Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors. Prerequisite: PSC 1002.

SMPA 2110W. Introduction to News Writing and Reporting. 3 Credits.

Fundamentals of news reporting and writing, with emphasis on print media; news judgment, information gathering skills, and crafting news and feature stories. Directly admitted freshmen may enroll in their second semester; all other freshmen require departmental permission. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPA 2111W. Advanced News Reporting. 4 Credits.

Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public interest; outside and in-class reporting and writing assignments. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Restricted to journalism and mass communication majors, or students with permission of the instructor. Prerequisite: SMPA 2110W.

SMPA 2112. Digital Media I: Introduction to Video Production. 3 Credits.

Foundational introduction to digital media production. Videography and non-linear editing, with emphasis on use in journalism and political communication. Laboratory fee. Restricted to students in the political communication and journalism and mass communication programs.

SMPA 2113. Digital Media II: Introduction to Web Production and Social Media. 3 Credits.

Foundational introduction to digital media production. Web content and design; photography and audio applied to the web; and using social media. Emphasis on use in journalism and political communication. Laboratory fee. Restricted to students in the political communication and journalism and mass communication programs.

SMPA 2120. Public Opinion. 3 Credits.

Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

SMPA 2151. Research Methods. 3 Credits.

Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and interpreting results of cultural and social science research within a societal framework. Prerequisites: STAT 1053 or STAT 1051 or STAT 1111 or STAT 1127.

SMPA 2152. Data Analysis for Journalism and Political Communication. 3 Credits.

Understanding, critiquing, and performing analysis of data sets with applications to journalism and political communication; using data to tell stories and answer questions. Analyzing A/B tests and field experiments; basics of visualizing data; regression. Laboratory fee. Prerequisites: STAT 1051 or STAT 1053 or STAT 1111 or STAT 1127.

SMPA 2173. Media Law. 3 Credits.

Freedom of the press. Changing laws of journalism and mass communication, including defamation, privacy, reporting access, obscenity and indecency, media ownership, intellectual property, advertising, and electronic communication.

SMPA 2177. Media History. 3 Credits.

American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

SMPA 3099. Variable Topics. 1-12 Credits.**SMPA 3150. Journalism Ethics. 3 Credits.**

Principles of media ethics; application to contemporary and developing issues and challenges in journalism. Restricted to juniors and seniors only. Prerequisite: SMPA 2111W.

SMPA 3193. Selected Topics in Journalism and Mass Communication Skills. 3-4 Credits.

Topics announced in Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3194. Selected Topics in Political Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

SMPA 3195. Selected Topics in Journalism and Mass Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

SMPA 3195W. Selected Topics in Journalism and Mass Communication. 3-4 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPA 3196. Independent Study. 1-3 Credits.

Students pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Restricted to seniors.

SMPA 3197. Internship. 1-3 Credits.

Students spend at least five hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor. Guidelines are available in the SMPA office and online. May be taken P/NP only. Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

SMPA 3230. Reporting in the Digital Age. 3 Credits.

Understanding the emerging tools and developing the technological skills needed to analyze data for news. Students learn to find reliable information through social media and other online tools, use spreadsheets as a reporting tool, and download data for analysis, to create graphics, and to report and write stories based on the analysis. Laboratory fee. Prerequisite: SMPA 2110W.

SMPA 3232. Online Journalism Workshop. 4 Credits.

Capstone production experience for SMPA majors. Provides advanced journalism and multimedia production skills needed to produce and report for a news website. Laboratory fee. Prerequisites: SMPA 2110W and SMPA 2112.

SMPA 3233. Photojournalism. 3 Credits.

Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee.

SMPA 3234. Editing and Design for Print and Web. 3 Credits.

Editing, design, layout, and photo selection for newspapers, magazines, and web. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Prerequisites: SMPA 2110W.

SMPA 3235W. Broadcast News Writing. 3 Credits.

Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3236W. Broadcast News Reporting. 3 Credits.

Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SMPA 2110W and SMPA 2112.

SMPA 3239. Television News Practicum. 4 Credits.

Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcast. Laboratory fee. Prerequisites: SMPA 3235W and SMPA 3236W.

SMPA 3240W. Washington Reporting. 3 Credits.

Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3241W. Campaign Reporting. 3 Credits.

Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3242. Investigative Reporting. 3 Credits.

Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrongdoing. Prerequisite: SMPA 2110W.

SMPA 3243W. Feature Writing. 3 Credits.

Learn to frame, research, and write a wide range of feature articles, including profiles, interviews and personal memoirs. Weekly writing assignments and a major final project are discussed and scrutinized in a workshop setting. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3244W. Narrative Journalism. 3 Credits.

The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110.

SMPA 3245W. Editorial and Persuasive Writing. 3 Credits.

Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110.

SMPA 3246. Specialized Reporting. 3 Credits.

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 2110W.

SMPA 3246W. Specialized Reporting. 3 Credits.

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: SMPA 2110W.

SMPA 3247. Documentary Production. 4 Credits.

Advanced techniques in writing, researching, producing, and editing long-form documentaries. Prerequisites: SMPA 2112 and SMPA 3479; or permission of the instructor.

SMPA 3333. Media Organizations and Audiences. 3 Credits.

Organizations and economic relationships in the U.S. entertainment industry, particularly television and film; relationships within and between organizations, how media industries operate, and how media professionals carry out their work.

SMPA 3350. Public Diplomacy. 3 Credits.

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 3352. Principles of Public Relations. 3 Credits.

Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

SMPA 3353. Strategic Political Communication. 3 Credits.

Origins of strategic approaches to political communication; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisites: SMPA 2102 or permission of the instructor.

SMPA 3354. Political Campaign Communication. 3 Credits.

Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

SMPA 3355. Campaign Advertising. 3 Credits.

Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet. Prerequisite: SMPA 2112.

SMPA 3357W. Political Speech Writing. 4 Credits.

Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPA 3358. Strategic Practicum. 3 Credits.

Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 3353.

SMPA 3428. Media, Politics, and Government. 3 Credits.

The impact of mainstream media and online outlets on politics and the governing process. Topics include the role of social media, online advertising, comedy shows, and the changing ways that voters receive information. Instructor permission required. Same As: PSC 2228.

SMPA 3450. Social Media. 3 Credits.

Practical and theoretical implications of social media; what it means to be social and how social media has changed how individuals interact and do business; birth and history of social media and why certain forms of social media flourish while others fail.

SMPA 3459. Language and Politics. 3 Credits.

Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

SMPA 3460. Race, Media, and Politics. 3 Credits.

Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

SMPA 3461. Campaigns and Elections. 3 Credits.

The role of the news media in campaigns and elections. Offered in even-numbered years.

SMPA 3463. Media Bias. 3 Credits.

Exploration of empirical and theoretical understanding of media bias, its effects on power, and implications for democracy.

SMPA 3467. Globalization and Media. 3 Credits.

The media have played a central role in shaping the rapidly changing international scene –both its new global connectedness and its intensifying tribal impulses. At the same time, a new category of media has emerged which is truly global in scope, even while national and regional media have retained their own distinctive characteristics. The great challenges confronting media in a time of technological revolution and cultural tension are sometimes broadly shared across national frontiers and sometimes sharply differentiated. These themes are explored in this course which includes a short term abroad component in Paris over spring break. Students meet with journalists, executives, government officials and scholars who bring both an international and European perspective on major media issues.

SMPA 3468. Communication and Global Social Change. 3 Credits.

The study and practice of communication, development, and social change; theories and arguments informing debates and communication programs, merits and impact of various approaches, and design and implementation of communication programs.

SMPA 3469. International Communication. 3 Credits.

A survey of theoretical themes in international communication and their practical applications: information production and circulation, global media industries, and cultures.

SMPA 3470. Comparative Media Systems. 3 Credits.

In-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

SMPA 3471. Media in the Developing World. 3 Credits.

Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western "cultural imperialism." Media and Islam; role of the Internet; and theories of media and globalization.

SMPA 3472. Media and Foreign Policy. 3 Credits.

The emerging role of news media in international affairs and diplomacy. Globalization of news media advances in digital information and communication technologies and consequences for the international system and diplomacy.

SMPA 3475. Media Management. 3 Credits.

Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

SMPA 3476. Media, Technology, and Culture. 3 Credits.

Concepts, principles, and socio-political implications of new and changing media and related technologies. Focus on intersection of new technologies and the anthropology of everyday life, in particular self-governance, policy development, cultural rupture and cohesion, the tension between national security and individual privacy rights, and First Amendment issues.

SMPA 3477. Information Technology and Politics. 3 Credits.

The effect of new information technologies on the media, public discourse, and political life; ways in which politics has shaped the development of technology.

SMPA 3479. Documentary. 3 Credits.

Origins, genres, and analysis of documentary film. Power, reach, and conceptual frameworks of documentary filmmaking.

SMPA 3480. The Future of Journalism. 3 Credits.

Reasons behind the decline of traditional newspaper and broadcast journalism; the impact of the web and other digital tools on traditional journalism values; new business models for news.

SMPA 4180. Online Journalism Workshop. 4 Credits.

Capstone experience for journalism majors. Advanced journalism and multimedia production skills needed to produce and report for a news website. Prerequisites: SMPA 2112 and SMPA 2113; and SMPA 2111W. (Same as SMPA 3232).

SMPA 4181. Television News Workshop. 4 Credits.

Capstone production experience for SMPA majors. Students report, produce, direct, and edit GW student news broadcasts. Laboratory fee. Prerequisites: SMPA 2111 or SMPA 2111W; and SMPA 2112, SMPA 2113 and SMPA 3236W. (Same as SMPA 3239).

SMPA 4182. Specialized Journalism Workshop. 4 Credits.

Capstone experience for journalism majors. In-depth study of advanced journalism skills or specific topic areas. Laboratory fee. Prerequisites: SMPA 2111W; and SMPA 2112 and SMPA 2113.

SMPA 4198. Special Honors Research Seminar. 3 Credits.

. Restricted to senior special honors candidates in political communication. Prerequisites: SMPA 4199 and permission of the department.

SMPA 4199. Senior Seminar. 3 Credits.

Capstone course limited to SMPA majors.

SMPA 5099. Variable Topics. 1-99 Credits.**SMPA 6201. Strategic Communications Skills. 1.5 Credit.**

Specialized skills, such as crisis communication, political uses of social media, digital PR, web development and strategy, and speechwriting. Topics vary by semester. May be repeated for a maximum of 6 credits provided the topic differs. See department for more details.

SMPA 6202. Media Effects, Public Opinion, and Persuasion. 3 Credits.

Theories of media effects and persuasion. Institutional functions and individual effects of mediated communication. Impacts of different textual content and format on individual thinking and emotion; forces that shape content production.

SMPA 6203. Information, Technology, and Political Communication. 3 Credits.

Issues pertaining to the political uses of the Internet, social media, and other new media; the effect that new information technologies have on political life and the ways in which politics shape technology development.

SMPA 6204. Strategic Political Communication. 3 Credits.

Theory, techniques, and implications of strategic communication as employed by individuals, groups, organizations, and governments to advance their interests; applications to non-electoral politics and policymaking; use of political, psychological, sociological, and other processes; methodological considerations; domestic and international applications.

SMPA 6205. Media, Development, and Globalization. 3 Credits.

Theories of media and globalization. The changing role of communication media, including the Internet and other newer technologies as well as traditional books, film, newspapers, telephone, and satellite in establishing closer relationships and interdependencies among people, their cultures, and their organizations in various countries.

SMPA 6206. Advocacy Communication and Political Networks. 3 Credits.

Cross-disciplinary approaches to global changes in the nature of governance and collective action. The role of new technology, social movements, NGOs and transnational advocacy networks. Information campaigns and advocacy communication.

SMPA 6207. Political Persuasion and Public Opinion. 3 Credits.

Major theories and perspectives in public opinion and persuasion research. Information processing, psychological models applied to politics and media research (cognition, attitudes, resistance, heuristics), public opinion dynamics.

SMPA 6208. Politics and Public Relations Fundamentals. 3 Credits.

Basic knowledge of the skills to design, implement, and evaluate public relations activities. Case studies of public relations applied to politics. Techniques and tactics used by public relations professionals.

SMPA 6210. Media and Foreign Policy. 3 Credits.

The effects of U.S. media on U.S. and foreign governments, and of foreign media on the U.S.; effects of other countries' media on each other; the impact of the Internet, inexpensive global phoning, CNN, al Jazeera, and other newer technologies and networks on the stuff of international relations: diplomacy, military operations, trade negotiations.

SMPA 6220. Strategic Practicum. 3 Credits.

Design of strategy for an information and influence campaign. Research on issues and actors, identification of critical decision-making points and key constituencies, development of communication strategies more likely to achieve stated objectives of a campaign. Prerequisite: SMPA 6204. For students doing a strategic communication capstone project, this course replaces SMPA 6297.

SMPA 6230. Principles and Methods of Documentary Filmmaking. 6 Credits.

Analytical and practical exploration of the elements of documentary filmmaking. The genres of nonfiction filmmaking; fundamentals of film conceptualization, documentary screenwriting, story structure, and production theory; and basic practical elements of production. Permission of the instructor required prior to enrollment.

SMPA 6231. Documentary Filmmaking Practicum. 3 Credits.

Intensive practical experience in documentary film production. Students produce a 10 to 15-minute documentary film on a selected topic. Emphasis on major markers in film production: treatment and script writing, location shooting, Final Cut Pro editing, graphics, music, and final sound mix. Prerequisites: SMPA 6230 and permission of the instructor.

SMPA 6241. Research Design. 3 Credits.

Design, applications, and limitations of quantitative research as applied to the field of media and strategic communication. Framing of research questions, identification of variables and formulation of hypotheses, measurement, sampling, data gathering techniques, and preparation of research reports. Brief exposure to qualitative research.

SMPA 6242. Analytics and Data Analysis for Strategic Communication. 3 Credits.

Familiarity with major data analytic and analysis techniques used by strategic communication practitioners. Topics covered include basic statistical analysis, multivariate regression, experiments, focus groups, and survey research. Prerequisite: An undergraduate statistics course.

SMPA 6250. Topics in Media Processes and Institutions. 3 Credits.

Topics address such issues as the history of media content, institutions, and process; impact of changing communication technology on culture; history and development of mass-produced culture; and professional ideology and practice of journalism. May be repeated for credit provided the topic differs.

SMPA 6270. Special Topics in Media and Public Affairs. 3 Credits.

Topics vary by semester. Consult the Schedule of Classes for more details.

SMPA 6272. Media Bias, Power, and Democracy. 3 Credits.

Consideration of the available scholarly evidence in order to develop a more sophisticated empirical and theoretical understanding of what constitutes media bias. How do we recognize and measure bias? Are there patterns in decisions about news coverage that indicate bias? Which political parties and economic interests benefit from patterns of news coverage?.

SMPA 6274. Media and War. 3 Credits.

Historic and contemporary examination of the media's role in wartime. Topics include covering war, the role of the media in generating support for foreign intervention, propaganda, effects of war coverage on public opinion, media and genocide, and public diplomacy. Ethical, philosophical and political implications of the media's role.

SMPA 6275. Public Diplomacy. 3 Credits.

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues, including international information dissemination, educational and cultural exchange, and international broadcasting.

SMPA 6295. Internship. 3 Credits.

Students identify a suitable employer for an internship relevant to program themes and goals. Permission of the director of graduate studies required prior to enrollment.

SMPA 6296. Directed Readings and Research. 3 Credits.

Independent research with SMPA faculty member. Must be approved in advance by supervising professor and director of graduate studies.

SMPA 6297. Capstone Project. 3 Credits.**SMPA 6298. Capstone Project. 3 Credits.****SMPA 6998. Thesis Research. 3 Credits.****SMPA 6999. Thesis Research. 3 Credits.**

SLAVIC LANGUAGES AND LITERATURE (SLAV)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SLAV 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SLAV 1001. First-Year Russian I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing Russian. Heritage speakers require permission to register. Laboratory fee.

SLAV 1002. First-Year Russian II. 4 Credits.

Continuation of SLAV 1001. Fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite: SLAV 1001. Heritage speakers require permission to register. Laboratory fee.

SLAV 1003. Second-Year Russian I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing Russian. Heritage speakers require permission to register. Prerequisite: SLAV 1002.

SLAV 1004. Second-Year Russian II. 4 Credits.

Continuation of SLAV 1003. Fundamentals of speaking, understanding, reading, and writing Russian. Heritage speakers require permission to register. Prerequisites: SLAV 1003 or placement test.

SLAV 1012. Intensive Basic Russian I. 8 Credits.

Intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to SLAV 1001- SLAV 1002). Recommended for majors. Heritage speakers require permission to register. Laboratory fee.

SLAV 1013. Russian for Heritage Speakers I. 3 Credits.

Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. Prerequisite: a placement test.

SLAV 1014. Russian for Heritage Speakers II. 3 Credits.

Continuation of SLAV 1013. Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies. Prerequisite: a placement test.

SLAV 1017. Russian Rock Music: A Cultural History. 3 Credits.

Russian rock and its role in the cultural and political history of the Soviet Union and modern-day Russia. Emphasis on the role of rock music in the time leading up to the disintegration of the Soviet Union, as well as current-day trends. In English.

SLAV 1034. Intensive Basic Russian II. 8 Credits.

Continuation of SLAV 1012. Intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to SLAV 1003- SLAV 1004). Recommended for majors. Prerequisite: SLAV 1002 or SLAV 1012. Heritage speakers require permission to register. Laboratory fee.

SLAV 1099. Variable Topics. 1-36 Credits.**SLAV 1391. Introduction to Russian Literature I. 3 Credits.**

Russian literature and society from 1800 to the 1860s, with a focus on the Golden Age of Russian literature; poems and stories by Pushkin, Lermontov, Gogol, and Turgenev.

SLAV 1391W. Introduction to Russian Literature I. 3 Credits.

Russian literature and society from 1800 to the 1860s, with a focus on the Golden Age of Russian literature; poems and stories by Pushkin, Lermontov, Gogol, and Turgenev. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SLAV 1392. Introduction to Russian Literature II. 3 Credits.

Continuation of SLAV 1391. Russian literature and society on their way to modernity; great works of prose and drama by Dostoevsky, Tolstoy, Chekhov, and Bunin.

SLAV 2005. Intermediate Russian I. 5 Credits.

Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisites: SLAV 1004 or SLAV 1034; or permission of the instructor.

SLAV 2006. Intermediate Russian I. 5 Credits.

Continuation of SLAV 2005. Practice in speaking, listening, reading, and writing at the intermediate level. Prerequisites: SLAV 1004 or SLAV 1034; or permission of the instructor.

SLAV 2007. Russia Today: Topics in Advanced Russian I. 3 Credits.

Practice in speaking, listening, reading, and writing at the advanced level. Prerequisites: SLAV 2006 or permission of the instructor.

SLAV 2008. Russia Today: Topics in Advanced Russian II. 3 Credits.

Continuation of SLAV 2007. Practice in speaking, listening, reading, and writing at the advanced level. Prerequisites: SLAV 2006 or permission of the instructor.

SLAV 2015. Readings in the Russian Press I. 3 Credits.

Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

SLAV 2016. Readings in the Russian Press II. 3 Credits.

Continuation of SLAV 2015. Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

SLAV 2310. The Russian Media Since Communism. 3 Credits.

The Russian media as a prototype for media in a totalitarian state (the Soviet Union), an emerging democracy (1987 to 2000), and an authoritarian state (2000 to present). Taught in English. Prerequisite for students seeking to satisfy Russian major program requirements: SLAV 2006.

SLAV 2320. The Social History of Modern Russian Music. 3 Credits.

The development of Russian modern music from the 1960s to the present and its cultural, political, and social consequences. Origins as a protest phenomenon and government efforts to co-opt the movement. Taught in English with translated materials.

SLAV 2361. Russian Culture. 3 Credits.

Survey of Russian cultural heritage from its ancient origins through the early nineteenth century. Architecture from the medieval period through the end of the Empire style. Iconography, the influence of the Church, and effects of the West on Russian culture.

SLAV 2362. Russian Culture. 3 Credits.

Survey of Russian culture from the nineteenth century through the present, including intellectual movements; realism in music, art, and theatre; ballet; avant-garde painting; and effects of Soviet policies and of Perestroika.

SLAV 2365. Twentieth-Century Russian Literature to World War II. 3 Credits.

Russian literature and culture of the first half of the twentieth century: the impact of the revolution on writers and literature; avant-garde, socialist realism, and emigre literature (Nabokov)—in English.

SLAV 2366. Russian Literature from World War II to the Present. 3 Credits.

Literature in wartime and in postwar years from Solzhenitsyn to the latest trends: the "thaws," village and urban prose, post-Soviet literature, Russian postmodernism—in English.

SLAV 2471. Nineteenth-Century Russian Prose. 3 Credits.

Reading and discussion of selected prose texts of the nineteenth century from Pushkin to Chekhov—in Russian. Prerequisites: SLAV 2006 and SLAV 1391 and SLAV 1392.

SLAV 2472. Nineteenth-Century Russian Poetry. 3 Credits.

Reading and discussion of selected poetry of the nineteenth century (Pushkin, Lermontov, Nekrasov, and others)—in Russian.

SLAV 2473. 20th-Century Russian Prose. 3 Credits.

Reading and discussion of selected prose of the twentieth century from Bunin to Solzhenitsyn—in Russian.

SLAV 2474. Twentieth-Century Russian Poetry. 3 Credits.

Reading and discussion of selected poetry of the twentieth century from Blok to Brodsky—in Russian. Prerequisites: SLAV 2006 and SLAV 2365 and SLAV 2366.

SLAV 2785. Introduction to Russian Cinema I. 3 Credits.

(In English; all films subtitled.) From Russian silents to the introduction of sound and color (1896-1946). The great revolutionary directors—Eisenstein, Pudovkin, Dovzhenko.

SLAV 2786. Introduction to Russian Cinema II. 3 Credits.

Continuation of SLAV 2785. (In English; all films subtitled.) From post-war to post-perestroika cinema (since 1946): war films, adventure, films about youth.

SLAV 3099. Variable Topics. 1-12 Credits.

SLAV 4595. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs.

SLAV 4595W. Special Topics. 3 Credits.

SLAV 4597. Senior Honors Thesis I. 3 Credits.

Senior honors thesis on a topic related to Russian language, literature, or culture. Required of honors students in the Russian languages and literature program. Restricted to honors students in the Russian languages and literature program.

SLAV 4598. Senior Honors Thesis II. 3 Credits.

Continuation of SLAV 4597. Senior honors thesis on a topic related to Russian language, literature, or culture. Required of honors students in the Russian languages and literature program. Restricted to honors students in the Russian languages and literature program.

SLAV 5099. Variable Topics. 1-99 Credits.

SOCIOLOGY (SOC)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SOC 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SOC 1001. Introduction to Sociology. 3 Credits.

A broad overview of the "sociological imagination" as a way of understanding social issues and personal experience; sociology's place among the social sciences; basic elements of sociological perspectives. Credit will not be given for both SOC 1001 and SOC 1002. Same as SOC 1002.

SOC 1002. The Sociological Imagination. 3 Credits.

Definition and application of the concept of the sociological imagination; the connection between personal troubles and public issues; race, gender, inequality, and education. Credit will not be given for both SOC 1002 and SOC 1001. Same as SOC 1001.

SOC 1003. Introduction to Criminal Justice. 3 Credits.

The formal institutions that structure criminal justice systems viewed in a sociological and political context. Contemporary American practices and policies that define crime and responses to it, including criminal law, criminology, policing, and penology.

SOC 1099. Variable Topics. 1-36 Credits.

SOC 2000. Sophomore Colloquium. 3 Credits.

The Sophomore Colloquia are small seminar-style courses limited to second-year students in Columbian College. These courses engage students deeply in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects of the students. Topics vary by semester; see department for more details. Permission of the instructor required prior to enrollment.

SOC 2101. Social Research Methods. 3 Credits.

Introduction to basic research methods in sociology. Topics include research design, sampling, measurement, and analysis of survey data via computer application. Prerequisites: SOC 1001 or SOC 1002.

SOC 2102. Techniques of Data Analysis. 3 Credits.

Continuation of SOC 2101. Statistical analysis of sociological data with a strong emphasis on computer applications. Prerequisites: SOC 1001 or SOC 1002; and PSC 2101 or PSYC 2101 or SOC 2101.

SOC 2103. Classical Sociological Theory. 3 Credits.

Analysis and critique of the development of Western European and North American social thought in the period of modernity. Consideration of the development of classical theoretical statements and the emergence of topics of sociological inquiry globally. Prerequisites: SOC 1001 or SOC 1002.

SOC 2103W. Classical Sociological Theory. 3 Credits.

Analysis and critique of the development of Western European and North American social thought in the period of modernity. Consideration of the development of classical theoretical statements and the emergence of topics of sociological inquiry globally. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SOC 1001 or SOC 1002.

SOC 2104. Contemporary Sociological Theory. 3 Credits.

A systematic evaluation of the work of selected social theorists of the post-World War II era. Emphasis on application of theoretical concepts to matters of present-day concern. Prerequisites: SOC 1001 or SOC 1002. Same As: SOC 2104W.

SOC 2104W. Contemporary Sociological Theory. 3 Credits.

A systematic evaluation of the work of selected social theorists of the post-World War II era. Emphasis on application of theoretical concepts to matters of present-day concern. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SOC 1001 or SOC 1002. Same As: SOC 2104.

SOC 2105. Social Problems in American Society. 3 Credits.

Introduction to critical social problems (e.g., unemployment, poverty, crime, discrimination) in the United States and how they are, and have historically been, researched and understood by the academic and non-academic worlds. Concepts, theories, and methods of sociological research; examination of the field of social problems generally, emphasizing contemporary social problems. Prerequisites: SOC 1001 or SOC 1002.

SOC 2111. Field Research. 3 Credits.

Examination of the logic of qualitative inquiry and techniques of qualitative data collection and analysis. Various research methods are covered, with an emphasis on intensive interviewing, participant observation in field settings, and focus groups. Prerequisites: SOC 1001 or SOC 1002.

SOC 2112. Evaluation Research. 3 Credits.

Introduction to the evaluation of public programs designed to address the impact of social problems on individuals, households, and larger collective groups. Application of social science theory and research methods to the assessment of impact benefits and costs of such programs. Prerequisites: SOC 1001 or SOC 1002.

SOC 2135. Youth and Delinquency. 3 Credits.

Analysis of historical, economic, and social conditions affecting both difficulties in socializing youth and the evolution of the state's formal systems of control. Prerequisites: SOC 1001 or SOC 1002.

SOC 2136. Criminology. 3 Credits.

Nature and distribution of crime as related to the development and operation of criminal law and various social and legal institutions. Analysis of the historical, social, legal, and cultural conditions affecting the nature of crime, criminality, and the development of state responses made to it. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2137. Transnational Crime. 3 Credits.

Violation of laws across national boundaries in an environment of increased globalization; causation, victimization, and control. Examination of transnational crime as a social problem rooted in global inequality and disparate levels of development, not simply as a security or crime problem. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2139. Alternatives to Imprisonment. 3 Credits.

Incarceration as a prominent feature of formal social control in the United States; the efficacy of strategies to reduce reliance on prisons; historical use of imprisonment and alternatives; the recent increase in correctional control and its social, cultural, and economic costs; the impact of incarceration on reducing crime; obstacles to reforming current incarceration policies; and the effectiveness of front-end and back-end strategies to reduce reliance on imprisonment. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2145. Criminal Law. 3 Credits.

Introduction to the sources and fundamental principles of criminal law and procedure using major sociological perspectives as interpretive tools. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2146. The Bill of Rights and Criminal Justice. 3 Credits.

Examination of the powers of law enforcement and how they relate to the rights conferred upon suspects and defendants by the U.S. Constitution.

SOC 2150. Sociology of Sports. 3 Credits.

Sport as a social institution; the role, consequences, and functions of sport in U.S. society; relationship between sport and institutions including education, mass media, economics, and politics.

SOC 2151. Jackie Robinson: Race, Sports, and the American Dream. 3 Credits.

How Jackie Robinson's struggles and accomplishments can help in understanding current issues in race, sport, and U.S. society. The background leading to, and the impact emanating from, Robinson's entry into major league baseball.

SOC 2152. Media, Class, Race, and Family. 3 Credits.

The reciprocal influences of mass media content and social structure, with particular attention to dominant media narratives. Methodologies for identifying and deconstructing media messages, marketing strategies, and entertainment themes, and how these align or conflict with social circumstances. Prerequisites: SOC 1001 or SOC 1002.

SOC 2161. Sociology of Complex Organizations. 3 Credits.

Review of sociological approaches to the study of complex organizations. Selected and comparative emphasis on bureaucratic organization in both government and private sectors. Prerequisites: SOC 1001 or SOC 1002.

SOC 2162. Sociology of the Family. 3 Credits.

An examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement and old age. Special emphasis on development and maintenance of interpersonal relations. Prerequisites: COMM 1025 or SOC 1001 or SOC 1002. Same as COMM 2162.

SOC 2163. Sociology of Education. 3 Credits.

Analysis of educational systems from historical-comparative, institutional, and micro-sociological perspectives. Emphasis on educational systems in relation to the religious, cultural, economic, and political forces shaping their character; the role of formal education in modern society. Prerequisites: SOC 1001 or SOC 1002.

SOC 2164. Sociology of the Holocaust and Genocide. 3 Credits.

An interdisciplinary approach to the study of genocide from historical, anthropological, and sociological perspectives. The centrality of ideologies of power and race to acts of genocide. Genocides of the past century are examined to deepen students' understanding of the crime and its aftermath. Prerequisites: SOC 1001 or SOC 1002.

SOC 2165. Sociology of Religion. 3 Credits.

Analysis of the relationships between religion and society. Topics include the contribution of religion to social integration, social change, and social inequality; the nature of religious experience; religious symbolism; the basis of religious communities. Prerequisites: SOC 1001 or SOC 1002.

SOC 2167. Sociology of Law. 3 Credits.

Law as a social phenomenon and agency of social control; study of judicial process and the sources of and challenges to the legitimacy of law. Prerequisites: SOC 1003; and SOC 1001 or SOC 1002.

SOC 2168. Economic Sociology. 3 Credits.

Sociological approach to the study of microeconomic and macroeconomic behavior. Historical and comparative analyses informed by the literature of sociology and other social sciences. Critical review of economic policy in developing, post-communist, and advanced market societies. Prerequisites: SOC 1001 or SOC 1002.

SOC 2169. Urban Sociology. 3 Credits.

Analysis of the city from a sociological perspective. Topics include the social change and inequality associated with urban growth, neighborhood change, and suburbanization; residential segregation; the issue of whether community exists in cities; urban poverty and homelessness. Prerequisites: SOC 1001 or SOC 1002.

SOC 2170. Class and Inequality in American Society. 3 Credits.

Analysis of distribution of resources and opportunities for participation, education, and social mobility; international comparisons; analysis of public policies that affect these distributions. Prerequisites: SOC 1001 or SOC 1002. Same As: SOC 2170W.

SOC 2170W. Class and Inequality in American Society. 3 Credits.

Analysis of distribution of resources and opportunities for participation, education, and social mobility; international comparisons; analysis of public policies that affect these distributions. Prerequisites: SOC 1001 or SOC 1002. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: SOC 2170.

SOC 2172. Institutional Racism: Policies and Prescriptions. 3 Credits.

Institutional policies and practices in the United States that yield racially disparate outcomes. The origins of such policies and practices, potential changes, and how such changes can be achieved. Prerequisites: SOC 1001 or SOC 1002.

SOC 2173. Social Movements. 3 Credits.

General survey of the various forms of collective behavior (fads, panics, riots, social movements, etc.), and a more detailed study of the genesis, development, and decay of social movements and social revolutions. Prerequisites: SOC 1001 or SOC 1002.

SOC 2174. Sociology of Immigration. 3 Credits.

Theoretical and policy debates surrounding immigration in contemporary America and beyond; historical patterns of immigration, including the demographics of immigration and contexts of reception; immigration policy; and pathways of incorporation for immigrants and their children. Prerequisites: SOC 1001 or SOC 1002.

SOC 2175. Sociology of Sex and Gender. 3 Credits.

The consideration of gender and sex as organizing principles of social relations. Analysis of the dynamics of inequality in such areas as families, the workforce, culture and mass media, politics, sexual relationships, law medicine, religion, and education. Prerequisites: SOC 1001 or SOC 1002.

SOC 2177. Sociology of the Sex Industry. 3 Credits.

Sociological examination of sex workers and businesses in the United States and other nations. Analysis of major theoretical perspectives and research on the social organization of sex work, the experiences of participants, issues of gender and sexuality, and alternative policy frameworks regarding prostitution, pornography, and commercial stripping. Prerequisites: SOC 1001 or SOC 1002; and SOC 2175 or SOC 2178.

SOC 2178. Deviance and Control. 3 Credits.

Examination of deviant behavior and its control. Topics include theoretical perspectives, changing societal conceptions of deviance, deviant behavior and identity, and the dynamics of control agencies. Prerequisites: SOC 1001 or SOC 1002.

SOC 2179. Race and Minority Relations. 3 Credits.

Analysis of relationships between dominant and minority groups in society; nature and range of problems; analysis of the phenomenon of prejudice. Prerequisites: SOC 1001 or SOC 1002.

SOC 2181. Special Topics in Sociology. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Prerequisite: SOC 1001 or SOC 1002.

SOC 2181W. Special Topics. 3 Credits.

Topics vary by semester. May be repeated once for credit. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SOC 1001 or SOC 1002. Credit cannot be earned for this course and UW 2020W.

SOC 2183. Summer Study Abroad. 1 Credit.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of Classes for more details. Instructor approval required prior to registration.

SOC 2184. Violence and the Family. 3 Credits.

Comparative approach to power and violence in family systems. Analysis of devaluation of family relations. Critical survey of explanations of violence and responses made to it. Prerequisites: SOC 1001 or SOC 1002.

SOC 2185. Victims, Victimization, and the System. 3 Credits.

The history of the victim and their role in the story of their own victimization, from the past when victims had no role in recovering from damage done to modern-day active participation in the courtroom. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2189. Special Topics in Criminal Justice. 3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. Consult the Schedule of classes for more details. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2189W. Special Topics in Criminal Justice. 3 Credits.

Topics vary by semester. May be repeated once for credit provided the topics differs. Consult department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003.

SOC 2988. Internship in Law and Society. 3 Credits.

Study of the American legal system and its effects on individuals and society through practical experience. Students must have a confirmed and approved internship involving substantive work within the legal system. The internship should be appropriate for an undergraduate student and require a minimum work commitment of 15 hours per week. SOC 2167 and UW 2031/2031W may be taken concurrently. Restricted to students in the minor in law and society program. Prerequisites: SOC 2167; and UW 2031 or UW 2031W.

SOC 3099. Variable Topics. 1-12 Credits.

SOC 3195. Research. 1-3 Credits.

Independent study and special projects. Open only to selected undergraduates with promising academic records. Students must submit a written proposal of their plan of study for the approval of the member of the department who directs the research. Permission of the department required prior to enrollment. Prerequisites: SOC 1001 or SOC 1002.

SOC 4192. Advanced Seminar in Criminal Justice. 3 Credits.

Capstone seminar taken in conjunction with an internship in SOC 4193. Core issues and contemporary topics In-depth examination of the three branches of the criminal justice system. Restricted to seniors in the BA in criminal justice program. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003; and SOC 2136 or SOC 2145.

SOC 4193. Internship in Criminal Justice. 3 Credits.

Internship with an approved agency or organization in the criminal justice field taken in conjunction with SOC 4192. Restricted to seniors in the BA in criminal justice program. Prerequisites: SOC 1001 or SOC 1002; and SOC 1003; and SOC 2136 or SOC 2145.

SOC 4195. Senior Research Seminar. 3 Credits.

Directed research and writing on sociological topics. Preparation of a research proposal and a literature review. Restricted to seniors in the BA in sociology program. Prerequisites: SOC 2101 or SOC 2102; and SOC 2103 or SOC 2104. Same As: SOC 4195W.

SOC 4195W. Senior Research Seminar. 3 Credits.

Directed research and writing on sociological topics. Preparation of a research proposal and a literature review. Restricted to seniors in the BA in sociology program. Prerequisites: SOC 2101 or SOC 2102; and SOC 2103 or SOC 2104. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: SOC 4195.

SOC 5099. Variable Topics. 1-99 Credits.

SOC 6230. Sociological Research Methods. 3 Credits.

Survey of the procedures, methods, and problems of contemporary sociological data collection, with an emphasis on survey methods. Major topics include research design, instrument construction, survey sampling, and measurement.

SOC 6231. Data Analysis. 3 Credits.

Intensive study of quantitative data analysis techniques, with strong emphasis on computer applications. Prerequisite: SOC 6230.

SOC 6232. Qualitative Methodology: Doing Field Research. 3 Credits.

Practical application of data collection methods in natural settings; observation, participant observation, and field experience. Emphasis on implementing research projects by using these methods for purposes of developing empirically grounded theory.

SOC 6238. Development of Sociological Theory. 3 Credits.

Development of sociology from the early 1800s to the 1920s. Intensive analysis of the classical theoretical statements.

SOC 6239. Contemporary Sociological Theory. 3 Credits.

Intensive examination and evaluation of contemporary schools of sociological theory in Europe and America. Advanced analysis of theoretical perspectives.

SOC 6240. Field Research in Organizational Settings. 3 Credits.

Applications of field research techniques in formal organizational settings. Examination of the logic of qualitative inquiry and techniques of qualitative data collection. Intensive interviewing and participant observation in field settings are emphasized. Credit cannot be earned for this course and MGT 8383.

SOC 6242. Housing and Homelessness. 3 Credits.

The causes, history, and experiences of homelessness and existing programs and affordable housing policies to address the problem. Restricted to graduate students.

SOC 6244. Sociology of Families and Kinship. 3 Credits.

A systematic introduction to recent theoretical perspectives and empirical research on family patterns. The course combines a focus on how and why societal family patterns vary and change over time with an examination of how individuals vary in their experience of life course transitions, such as marriage, childbirth, employment, divorce, and retirement.

SOC 6245. Race Relations. 3 Credits.

Systematic analysis of race relations and inequality, primarily in the United States. Topics include current status and recent trends in inequality, the institutional and organizational patterning of discrimination, the structure of racial attitudes, theoretical perspectives on race relations, and selected policy issues.

SOC 6246. Comparative Race and Ethnicity. 3 Credits.

Examination of race and ethnic relations in comparative, international perspective. Selected societies are analyzed in terms of patterns of racial and ethnic inequality, intergroup relations, institutional foundations of discrimination, social control systems, and sources of social change.

SOC 6248. Race and Urban Redevelopment. 3 Credits.

An examination of sociological forces shaping the development of metropolitan areas, racial inequality, and the intersections of urban development and race relations. Major theories of urban and metropolitan development and causes of racial inequality; major past and current public policies.

SOC 6250. Urban Sociology. 3 Credits.

Systematic analysis of urbanization and life within urban areas, primarily in the United States. Topics include theoretical perspectives on urban growth and neighborhood change, housing, the community question, neighborhood effects on individuals within the metropolis, and selected policy issues.

SOC 6252. Selected Topics. 3 Credits.

Examination of selected topics of general importance to sociology. May be repeated once for credit.

SOC 6254. Evaluation Research. 3 Credits.

Systematic survey of the conceptualization, design, and practice of evaluation research. Prerequisite: SOC 6230.

SOC 6255. Practicum in Applied Sociology. 3,6 Credits.

Supervised sociological research through an internship in a local organization (e.g., a government agency, a non-governmental organization, or a research firm). The internship must be for at least 10 hours a week. Weekly seminar; final paper. Prerequisites: completion of all methodology requirements for the MA degree.

SOC 6257. Criminal Law for Forensic Scientists. 3 Credits.

An overview of criminal law offenses and procedures, evidence recovery, admissibility of scientific evidence, and expert testimony. Emphasis on the interaction between the criminal process and forensic science. Instruction includes a moot court exercise. (Same as FORS 6224).

SOC 6258. Deviance and Control. 3 Credits.

Examination of major theories and research in the field of deviance and social control, with special emphasis on recent empirical advances and comparative perspectives.

SOC 6259. Criminology. 3 Credits.

The status of various criminology theories. Theories of crime causation and crime control; cross-cultural research on crime.

SOC 6260. Special Topics in Criminal Justice. 3 Credits.

Examination of selected topics in criminal justice. May be repeated once for credit if the topic differs.

SOC 6261. Sociology of Law. 3 Credits.

The development and use of law in complex societies, including the different roles of civil and criminal law. The role of the sociology of law within the discipline of sociology.

SOC 6262. Corrections. 3 Credits.

Analysis of adult and juvenile correctional systems, including probation, parole, jails, and prisons. Topics include theoretical perspectives, the impact of corrections on crime rates, and evaluations of sentencing and other reforms.

SOC 6263. Race and Crime. 3 Credits.

Examination of race, crime, and punishment in American society. Analysis of competing theoretical explanations for interracial differences in crime rates, and racial patterns in the apprehension, adjudication, and punishment of offenders.

SOC 6264. Organized Crime. 3 Credits.

The role of organized crime in the political economy of different countries, with emphasis on the development of organized crime networks in the United States.

SOC 6265. Women, Welfare, and Poverty. 3 Credits.

How the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. (Same as WGSS 6265).

SOC 6266. Gender and Criminal Justice. 3 Credits.

How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. (Same as WGSS 6266).

SOC 6268. Race, Gender, and Class. 3 Credits.

How social structures are constructed through race, gender, and class and how they shape experience; the intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. (Same as WGSS 6268).

SOC 6271. Gender and Society. 3 Credits.

Current empirical and theoretical work on gender as an organizing principle of social relations; the relationship of gender to sex and sexuality. Same As: WGSS 6271.

SOC 6272. Theoretical Perspective-Gender. 3 Credits.**SOC 6273. The Sex Industry. 3 Credits.**

Sociological examination of prostitution, pornography, and other forms of sex work in the United States and internationally. Topics include theoretical perspectives, structure of the sex industry, workers' experiences, gender issues, political conflicts, and policy implications.

SOC 6286. The Law of Race and Slavery. 3 Credits.

The role of legal norms and processes in developing patterns of slavery and race relations in the United States and other societies. Permission of the instructor required prior to enrollment. Same as HIST 6312 and LAW 6596.

SOC 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290/ GEOG 6290/ STAT 6290.

SOC 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291/ GEOG 6291/ STAT 6291.

SOC 6295. Research. 1-12 Credits.

Independent study and special projects. Before permission is granted to register for SOC 6295, the student must submit a written plan of study for the approval of the staff member of the department who will be directing the research. May be repeated once for credit but to no more than a total of 6 credits.

SOC 6998. Thesis Research. 3 Credits.**SOC 6999. Thesis Research. 3 Credits.**

SPANISH (SPAN)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPAN 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SPAN 1001. Elementary Spanish I. 3 Credits.

Development of basic functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence.

SPAN 1002. Elementary Spanish II. 3 Credits.

Continuation of SPAN 1001. Development of basic functional and communicative proficiency in Spanish. Focus on the development of listening and speaking skills, reading and writing abilities, and intercultural competence. SPAN 1001 is prerequisite to SPAN 1002. Laboratory fee.

SPAN 1011. Intensive Beginning Spanish: the Spanish-speaking world. 6 Credits.

Development of functional and communicative proficiency in Spanish; listening and speaking skills, reading and writing abilities, and intercultural competence. Prior study of the language is not required. Language Center fee. Restricted to undergraduate students.

SPAN 1012. Intensive Elementary Spanish: the Spanish-speaking world. 6 Credits.

Development of functional and communicative proficiency in Spanish; listening and speaking skills, reading and writing abilities, and intercultural competence. Some study of the language and achievement of the appropriate placement test score are required prior to registration. Language Center fee. Restricted to undergraduate students.

SPAN 1013. Intermediate Spanish I: the Spanish-speaking world. 3 Credits.

Development of intermediate functional and communicative proficiency in Spanish; listening and speaking skills, reading and writing abilities, and intercultural competence. Achievement of the appropriate GW placement test score may replace the prerequisite. Language Center fee. Restricted to undergraduate students. Prerequisites: SPAN 1011 or SPAN 1012.

SPAN 1014. Intermediate Spanish II: the Spanish-speaking world. 3 Credits.

Continuation of SPAN 1013. Development of intermediate functional and communicative proficiency in Spanish; listening and speaking skills, reading and writing abilities, and intercultural competence. Achievement of the appropriate GW placement test score may substitute for the prerequisite. Language Center fee. Restricted to undergraduate students. Prerequisite: SPAN 1013.

SPAN 1034. Intensive Intermediate Spanish. 6 Credits.

Equivalent to the two-semester sequence SPAN 1013-SPAN 1014 that constitutes second-year instruction in Spanish language and cultures. Focus on developing language proficiency and cross-cultural competence and awareness through a task-based approach. Restricted to undergraduate students. Prerequisites: SPAN 1012. Credit cannot be earned for this course and SPAN 1013, SPAN 1014.

SPAN 1095. The Spanish-Speaking World: Spain, Latin America, and the United States. 3 Credits.

The cross-cultural and cross-continental encounters and exchanges that produced and continue to shape the Spanish-speaking world. Themes include encounters, empire, revolution/independence, nation-building, and Latinxs in the United States. Prerequisites: None. Recommended background: None.

SPAN 1099. Variable Topics. 1-36 Credits.

SPAN 1134. Intensive Intermediate Spanish for Heritage Learners. 6 Credits.

Development of reading and writing skills and knowledge of formal aspects of Spanish; cultural topics related to Hispanics/Latinos in the United States. An appropriate score on the Spanish for Heritage Learners Placement Test may substitute for the prerequisite courses. Restricted to undergraduate students. Prerequisites: SPAN 1011 and SPAN 1012.

SPAN 2005. Advanced Spanish I. 3 Credits.

Development of advanced Spanish proficiency; argumentative speaking, and writing. Cross-cultural competence and analysis of historical, social, and cultural practices and perspectives of Spanish-speaking societies. Restricted to undergraduate students. Prerequisites: SPAN 1034.

SPAN 2006. Advanced Spanish II. 3 Credits.

Continuation of SPAN 2005. Development of advanced Spanish proficiency; argumentative speaking, and writing. Cross-cultural competence and analysis of historical, social, and cultural practices and perspectives of Spanish-speaking societies. Restricted to undergraduate students. Prerequisites: SPAN 2005. Credit cannot be earned for this course and SPAN 2026, SPAN 2156.

SPAN 2026. Advanced Spanish for Heritage Learners. 3 Credits.

Advanced course for heritage speakers. Development of advanced Spanish writing, reading and oral abilities with a focus on argumentative speaking and writing. Focus on linguistic and cultural diversity of Spanish-speaking countries and communities. Prerequisites: SPAN 1014 or SPAN 1034 or SPAN 1134 or a score on the placement examination in the 96-110 range. Credit cannot be earned for this course and SPAN 2006, SPAN 2156.

SPAN 2056. Intensive Advanced Spanish. 6 Credits.

Development of advanced Spanish proficiency. Equivalent to the combination of SPAN 2005 and SPAN 2006. Restricted to undergraduate students. Prerequisites: SPAN 1014 or SPAN 1034. Credit cannot be earned for this course and SPAN 2005, SPAN 2006.

SPAN 2156. Intensive Advanced Spanish for Heritage Learners. 6 Credits.

Advanced course for students who grew up in a home in which Spanish was spoken regularly. Students develop reading, writing, and oral abilities and build awareness of linguistic and cultural diversity of Spanish-speaking societies. An appropriate score on the placement examination may replace the prerequisite courses. Restricted to undergraduate students. Prerequisites: SPAN 1014 or SPAN 1034 or SPAN 1134.

SPAN 3005. Experiencing Cuba: Past and Present. 2 Credits.

SPAN 3010W. Advanced Spanish Writing. 3 Credits.

Designed to develop writing skills within the fields of Spanish literature and culture. Students read and discuss literary and media texts while analyzing essential features and themes of Spanish/Hispanic cultures. Cultural and literary topics are used as basis for process-writing assignments (production, correction, revision). Students develop a writing portfolio. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: SPAN 2006 or SPAN 2056.

SPAN 3011. Spanish for Development Studies. 6 Credits.

SPAN 3012. Spanish for Development Studies in Chile. 3 Credits.

Critical analysis of development issues in the context of Chile's political aspiration to be seen as a developed country; integrates language and culture components in the Chilean environment through presentation of grammatical, lexical, and pragmatic tools. Restricted to students in the GW Chile program.

SPAN 3020. Spanish for Oral Communication. 3 Credits.

Development of effective strategies for oral communication and argumentation; expansion of vocabulary and register. Prerequisites: SPAN 2006 or SPAN 2056.

SPAN 3021. Advanced Spanish for Oral Communication—Latin America. 3 Credits.

For students enrolled in programs in Latin America. Prerequisite: SPAN 2006 or SPAN 2056.

SPAN 3022. Advanced Oral Proficiency: Environmental and Social Sustainability in Latin America. 3 Credits.

Development of advanced Spanish oral proficiency, critical content knowledge, terminology, and concepts through content-based coursework in the areas of environmental and social sustainability in Latin America. An appropriate placement test score may be used in place of the course prerequisite. Prerequisites: SPAN 2006 or SPAN 2506.

SPAN 3035. Spanish Language and Culture: Advanced. 3 Credits.

SPAN 3040. Advanced Spanish Service Learning. 3 Credits.

Advanced oral and written work through community engagement, with consideration of social change and reflection on civic engagement, leadership, and service. Students work on local community service projects. Laboratory fee. Prerequisites: SPAN 2006 or SPAN 2056.

SPAN 3099. Variable Topics. 1-12 Credits.

SPAN 3100. Texts and Contexts of the Spanish-Speaking World. 3 Credits.

Readings, textual analysis, writing and oral practice on a broad selection of texts and other cultural production from Spain and Latin America. Prerequisites: SPAN 2006 or SPAN 2056 or SPAN 2156. Same As: SPAN 3100W.

SPAN 3100W. Texts and Contexts of the Spanish-Speaking World. 3 Credits.

Readings, textual analysis, writing and oral practice on a broad selection of texts and other cultural production from Spain and Latin America. Prerequisites: SPAN 2006 or SPAN 2056 or SPAN 2156. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: SPAN 3100.

SPAN 3150. Hispanic Outreach and Education Practicum. 1 Credit.

Students serve as tutors and mentors to Latino students in local area schools, learning to interact effectively with members of Spanish-speaking communities in educational contexts while improving their own language skills and cultural awareness. An appropriate GW Spanish placement test score may substitute for the prerequisite. Prerequisite: SPAN 1014.

SPAN 3200. Bilingualism in the Spanish-Speaking World. 3 Credits.

Bilingualism as both individual and social phenomena in Spain, Latin America, and the United States. Analysis of language attitudes and policies and their role in the promotion of bilingualism. Restricted to undergraduate students. Prerequisites: SPAN 2006 or SPAN 2056 or SPAN 2156 or a minimum score of 111 on the Spanish placement examination.

SPAN 3400. Theatre of Spain and Latin America. 3 Credits.

Theatrical representation: presence and performance, body, voice, dialogue, and the unfolding of conflict. Theatrical traditions and movements may include Golden Age drama; neo-Classical and Romantic drama of the nineteenth century; drama of political protest; existentialist drama and the theater of the avant-gardes. Prerequisite: SPAN 3100.

SPAN 3410. Latin American Short Fiction. 3 Credits.

Short prose narratives as agents of questioning textual meaning and subverting former literary traditions. Writers may include Arenas, Borges, Cortázar, Fuentes, García Márquez, Quiroga, Peri Rossi, Ana Lydia Vega, Zapata Olivella. Prerequisite: SPAN 3100.

SPAN 3420. The Essayist Tradition in Latin America. 3 Credits.

Relations between state and nation in post-independence literary and political polemics of nineteenth-century Latin America. Topics may include the essay as a new genre for a new age; the figure of the public intellectual vis-à-vis the processes of state and nation formation; the post-colonial state and its imagined national, ethnic, racial, and economic communities. Prerequisite: SPAN 3100.

SPAN 3430. Afro-Latin America in the Diaspora. 3 Credits.

Major issues related to the diaspora of people of African descent in Latin America; racial-ethnic identity and nation, the myth of racial democracy, ties with the motherland, links with other diaspora communities, emigration, the role of the arts in these questions. Taught in Spanish. Prerequisite: SPAN 3100.

SPAN 3440. Caribbean Literature and Culture. 3 Credits.

Literary and cultural trends emanating from the Spanish-speaking Caribbean, focusing on Cuba, the Dominican republic, and Puerto Rico, with some attention to the circum-Caribbean regions of Central and South America. Taught in Spanish. Prerequisite: SPAN 3100.

SPAN 3500. Medieval Iberia in the Modern World. 3 Credits.

The presence of the Middle Ages in the modern world through study of texts and other cultural products. Topics may include multilingualism, contact and conflict between the three faiths of medieval Spain, creation of heroes, women, and sex. Prerequisite: SPAN 3100.

SPAN 3510. Heresy and the Other in Early Modern Iberia. 3 Credits.

The early modern period in Spain through the Inquisition and other related institutions as well as through artistic production. Prerequisite: SPAN 3100.

SPAN 3520. Latin American Colonial Literature. 3 Credits.

Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. Prerequisite: SPAN 3100.

SPAN 3530. Enlightenment Spain. 3 Credits.

Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. Prerequisite: SPAN 3100.

SPAN 3540. Major Authors of Spain and Latin America. 3 Credits.

Close readings of the work of a major author and application of related critical and theoretical material. Authors may include J.L. Borges, G. Garcia Marquez, Clarice Lispector, M.L. Bombal, Juan Goytisolo, Juan Rulfo, Alejo Carpentier, Mañuel Puig. Prerequisite: SPAN 3100.

SPAN 3550. Queer Latin America. 3 Credits.

Examination of queerness in Latin American as both theory and practice; how sexual and gender practices inform Latin American cultural production. Readings may include José Donoso, Manuel Puig, Pedro Lemebel, Sylvia Molloy, Gabriela Cabezón Cámara. Prerequisite: SPAN 3100.

SPAN 3570. Women Writers of Spain and Latin America. 3 Credits.

Works of well-established and more recent women writers in Spain and Latin America discussed in relation to feminist principles of criticism. Prerequisite: SPAN 3100.

SPAN 3600. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs. Prerequisite: SPAN 3100 .

SPAN 3650. Literature and Dictatorship. 3 Credits.

Study of the dynamic relationship between literature and politics during periods of intense social repression and censorship in Spain and/or Latin America. Issues raised in and by literature when discourse is controlled, censored, and repressed by military dictatorships. The role of culture in understanding traumatic historical events. Prerequisite: SPAN 3100 .

SPAN 3700. Cinema of Spain and Latin America. 3 Credits.

Film as a language of cultural and historical testimony in Spanish America and Spain. Topics may include the Silent Era, Surrealism, the Mexican Golden Age of the '40s, the New Cinema of the '50s, Peronist cinema in Argentina, socialist film in Cuba, and postmodern production. May be repeated for credit. Laboratory fee. Prerequisite: SPAN 3100 .

SPAN 3800. Fundamentals of Spanish Teaching and Learning. 3 Credits.

Development of skills and knowledge in teaching Spanish as a foreign language; key factors in the acquisition of a second language in the classroom setting; practical and functional aspects of the second language acquisition process. Designed primarily for future Spanish majors and minors with an interest in language teaching, but open to others. Permission of the instructor is required prior to enrollment.

SPAN 4200. Spanish Applied Linguistics. 3 Credits.

Principles and aspects of the Spanish language, as well as relevant notions of second language acquisition, technology, and assessment as applied to Spanish language teaching and learning. Taught in Spanish.

SPAN 4410. Contemporary Narrative in Latin America. 3 Credits.

Experimental fiction in Latin America, with focus on literature of the mid-1960s through the present. Authors may include Alejo Carpentier, Julio Cortázar, Diamela Eltit, Carlos Fuentes, Cabrera Infante, Lezama Lima, García Márquez, Octavio Paz, Ricardo Piglia, Elena Poniatowska, Mario Vargas Llosa. Prerequisite: SPAN 3100 .

SPAN 4450. Mexican Literature and Culture. 3 Credits.

Study and analysis of Mexico's most significant intellectual, historical, and cultural events from the Spanish Conquest of the Aztec empire to the present. Topics include the Spanish appropriation of the Aztec Empire, literature and cultural phenomena during the colonial period, the age of independence, the Mexican revolution, and contemporary Mexico. Prerequisite: SPAN 3100.

SPAN 4460. Southern Cone Literature and Culture. 3 Credits.

Study and analysis of some of the most significant writers, ideas, texts, and films of Argentina, Chile, and Uruguay. Issues of tradition, identity, representation, modernity, gender and sexuality, and literature and politics as seen in historical context. Prerequisite: SPAN 3100 .

SPAN 4480. Studies in Latinx Cultural Production. 3 Credits.

The cultural production of Latina/o ("Latinx") communities in the United States from the comparative perspective of Latin America and Spain. How a variety of linguistic, social, political, and intellectual experiences are reflected in the literary and cultural production of Latinx communities. The notion of Latinx and its application as an analytical framework. Taught in Spanish. Prerequisites: SPAN 3100 or equivalent with permission of the instructor. Recommended background: ENGL 3920 or AMST 2750W.

SPAN 4510. Cervantes Don Quixote. 3 Credits.

Issues raised in the text of Don Quijote: literature and life, words and deed, the fashioning of self, the structures of narrative, the limits and possibilities of representation, and the relation between appearance and reality, knowledge and understanding, fiction and truth. Cervantes' "invention" of the novel. Prerequisite: SPAN 3100 .

SPAN 4520. Topics in the Avant-garde. 3 Credits.

Study of the literary and artistic avant-gardes of Spain and Latin America in relation to the dialectic of enlightenment. Consideration of the avant-gardes as successful interpretations of modernity and as movements that anticipate, and in some instances instigate, the "post-modern" end of modernity. Prerequisite: SPAN 3100 .

SPAN 4540. The Myth of the Two Spains. 3 Credits.

Literature as an expression of the institutionalization of liberalism in nineteenth-century Spain and of official and popular resistance to this modernizing credo. Topics may include the romanticism of Quintana, Espronceda, Blanco-White and Becquer; the costumbrismo of Castro and Larra; the realism of Galdós; and the naturalism of Pardo Bazán and Clarín. Prerequisite: SPAN 3100.

SPAN 4550. 1898 to 1998: Spain's First Century without Empire. 3 Credits.

Spain's imperial crisis and its persistence throughout the twentieth century as a central theme in Spanish literary and intellectual culture. Decadence and regeneration; modern Spanish nationalism and cultural imperialism; Hispanicism and pan-nationalism; the Spanish Civil War, fascism, and liberalism; and the transition from fascism to democracy. Prerequisites: SPAN 3100.

SPAN 4560. Modern Poetry of Spain and Latin America. 3 Credits.

Poetry after modernism; forms and themes that characterize the work of authors such as Agustini, Guillén, Huidobro, Lezama, Mistral, Neruda, and Palés. Prerequisite: SPAN 3100 .

SPAN 4600. Special Topics. 3 Credits.

May be repeated for credit provided the topic differs.

SPAN 4650. Literary Translation. 3 Credits.

Combination literary translation workshop and seminar on translation theory. Study of the main issues of literary translation between Spanish and English, in both directions, as seen in different writers and genres. Translation of writings on cultural, philosophic, and political issues. Prerequisite: SPAN 3100 .

SPAN 4700. Film as Text in Latin America. 3 Credits.

Filmic analysis of Latin American cinema; film as a genre of art in its own right; the particular language of cinema; relationships between written text and film; and other interdisciplinary aspects of narrative. Taught in Spanish. Prerequisite: SPAN 3100.

SPAN 4800. Independent Study. 1-4 Credits.

Permission of the department chair and instructor required prior to enrollment. May be repeated for credit. Prerequisite: SPAN 3100.

SPAN 4910W. Proseminar I. 3 Credits.

Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Textual analysis, literary criticism, theory, and methods. Prerequisite: SPAN 3100 .

SPAN 4919. Honors Thesis Research. 1 Credit.

Students choose a topic in Spanish and Latin American literature, select a faculty advisor with specialization in the subfield, conduct research, and produce an annotated bibliography and a proposal that previews the main arguments of the thesis. Restricted to program majors with senior standing who meet the criteria for Special Honors. Prerequisites: SPAN 3100.

SPAN 4920W. Honors Thesis. 3 Credits.

Continuation of SPAN 4919. Completion of the thesis and oral presentation before Spanish program students and faculty. Approval of the Program Director is required. Restricted to Spanish majors who meet the criteria for special honors in Spanish and Latin American languages, literatures, and cultures. Prerequisites: SPAN 4919. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SPAN 5099. Variable Topics. 1-99 Credits.

SPECIAL EDUCATION (SPED)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPED 0920. Continuing Research - Master's. 1 Credit.

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SPED 0940. Continuing Research - Doctoral. 1 Credit.

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SPED 5099. Variable Topics. 1-99 Credits.

SPED 6100. Selected Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes. Credit cannot be earned for this course and CNSL 6100, CPED 6100, CPED 6199.

SPED 6101. Research and Independent Study. 1-3 Credits.

Individual study or research under guidance of staff member. Permission of the advisor required prior to enrollment. May be repeated for credit.

SPED 6201. Overview and Legal Issues in Educating Exceptional Learners. 3 Credits.

Survey course to acquaint prospective teachers with special education and to help them become aware of the various educational modifications necessary to accommodate children with special needs in a school program.

SPED 6202. Research and Current Trends in Special Education: Teacher Decision Making. 3 Credits.

Using a data-driven framework for assessing evidence-based practices in special education and competency in understanding, collecting, analyzing, and communicating relevant data.

SPED 6203. Research and Practice: Diagnostic Reading for Exceptional Learners. 3 Credits.

Understanding the reading process and knowledge of diagnostic measures and instructional interventions to promote reading competency for students with disabilities.

SPED 6210. Universal Design for Learning and Assessment. 3 Credits.

Overview and introduction to universal design for learning, including contemporary issues, applications of digital and assistive technologies, and tools for developing a comprehensive plan for implementation.

SPED 6214. Applied Research in Secondary Transition Practices. 3 Credits.

Students develop applied research knowledge and skills in the field of secondary transition; evaluate evidence-based transition practices to ensure positive post-school outcomes of youth with disabilities; and conduct, evaluate, and use inquiry to guide professional practices and interventions.

SPED 6221. Accessing Community Systems for Individuals with Disabilities. 3 Credits.

Overview of access to community systems and service delivery for individuals with special needs and their families. Material fee.

SPED 6222. Legal Issues and Public Policy for Individuals With Disabilities. 3 Credits.

Examination, interpretation, and analysis of legislation and policies affecting the education and career development of individuals with disabilities. Emphasis on federal legislation in the context of national policy reform in disability services. Material fee.

SPED 6223. Introduction to Brain Injury: Programs, Policies, and Resources. 3 Credits.

An overview of acquired brain injury and its effects; current trends in the field, related policy, research, and development of new resources.

SPED 6224. Brain Function and Impact of Brain Injury on Learning and Education. 3 Credits.

Provides an in-depth understanding of neuroanatomy related to the impact of brain injury on child and adolescent development and learning to prepare educators to participate in educational assessment and planning.

SPED 6227. Technology in Vocational Evaluation. 3 Credits.

Introduction to an array of assistive technology services and products facilitating professional interventions and vocational evaluation procedures; application to the assessment of persons with disabilities. Material fee.

SPED 6228. Community-Based Assessment and Work Sample Development. 3 Credits.

Introduction to community-based vocational appraisal methods; development of job training analysis skills, labor market surveys, work samples; requirements of The Americans with Disabilities Act; incorporation of assistive technology; classroom theory and field work. Material fee.

SPED 6229. Interpretation and Application of Academic and Vocational Assessment Information. 3 Credits.

Specific strategies and techniques to analyze, interpret, and synthesize assessment information for the development of comprehensive academic/vocational profiles for adolescents and adults with disabilities. Observation and recording procedures, report development, and postassessment conferencing are emphasized. Material fee.

SPED 6230. Vocational Assessment of Individuals with Disabilities. 3-6 Credits.

Investigation of vocational appraisal processes and techniques for individuals with disabilities. Includes assessment for transition using field-based assignments. Three credits of practicum experience for students specializing in vocational evaluation. Material fee. Same as CNSL 6130.

SPED 6231. Curriculum and Instructional Methods in Special Education and Transition. 3 Credits.

Techniques and processes used in programming for the needs of individuals with disabilities as they prepare for inclusion at the secondary level, transition to postsecondary programs, and employment; skills related to professional liaison and support roles in the design of curriculum and instructional strategies for students with disabilities. Material fee.

SPED 6232. Foundations in Special Education, Career Development, and Transition. 3 Credits.

Overview of historical, theoretical, and philosophical foundations of career development and transition. Explores directions for career development/transition practices in the context of educational reform and social and political change. Material fee.

SPED 6233. Curriculum in Special Education. 3 Credits.

Theory and practice in planning, implementing, and evaluating curriculum for individuals with disabilities; techniques for modifying curriculum and materials for individualized programming. Field-site curriculum implementation is required. Materials fee.

SPED 6234. Seminar in Advanced Writing and Professional Presentation. 3-6 Credits.

Analysis and development of advanced professional writing skills, including literature synthesis, persuasive writing, and proposal writing. Material fee.

SPED 6235. Employment Models for Individuals with Disabilities. 3 Credits.

Rationale, occupational resources, and programming strategies for job placement and the development and coordination of employment programs for individuals with disabilities. Material fee.

SPED 6236. Introduction to Career and Career-Technical Education and Transition Services. 3-6 Credits.

Introduction to programs and services that provide career development and transition planning for individuals with disabilities. Material fee.

SPED 6237. Learning Strategies, Assessment, and Instruction for Individuals with Learning Disabilities. 3-6 Credits.

Theory and practice in evidence-based reading interventions. Learning strategies; content enhancement focused on literacy and self-determination. Material fee.

SPED 6238. Issues in Educating Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.

Introduction to the academic, cognitive, social, and emotional characteristics of individuals with learning disabilities; etiological theories; educational service delivery models, with particular emphasis on the adolescent with learning disabilities. Policy issues, continuum of services, and the transition from school to post-school environments. Material fee.

SPED 6239. Teaching and Collaboration for Professionals Working with Students with Disabilities. 3 Credits.

Attitudes and beliefs regarding team teaching, collaboration, and inclusionary environments; interpersonal communication, the dynamics of collaborative teams, and environments in which special educators work. Materials fee.

SPED 6240. Family Support and Guidance in Special Education. 3 Credits.

The developmental process of parenting and how that process is affected by having a child with developmental delay or disability. Family systems theory, stress and coping mechanisms, and communication and support strategies. Material fee.

SPED 6242. Neurodevelopmental Assessment and Programming for Infants and Toddlers with Disabilities. 3 Credits.

Application of the neurodevelopmental model to techniques for developing and implementing educational programs for infants and toddlers with disabilities. SPED 6263 or SPED 6268 may be taken as a corequisite. Material fee. Prerequisites: SPED 6263 or SPED 6268; or permission of the instructor.

SPED 6243. Developmental Assessment of Infants. 3 Credits.

Theory and current practice in the assessment of infants with or at risk for developmental disabilities. Material fee.

SPED 6244. Ethical Considerations in Neonatal and Infant Intervention. 3 Credits.

Overview of the major ethical issues involved in neonatal and infant intervention. The impact of recent and emerging technological innovations considered from medical, legal, ethical, and psychosocial perspectives. Material fee.

SPED 6245. Developmental Implications of Prematurity and Risk. 3 Credits.

Causes of prematurity. Conditions that place children at developmental and educational risk.

SPED 6253. Introduction to Autism Spectrum Disorders. 3 Credits.

Overview of autism spectrum disorders with a focus on etiology, characteristics, and evidence-based practices. Topics include defining, assessing, accommodating, and instructing students with autism spectrum disorders.

SPED 6254. Autism Spectrum Disorders and Transition to Employment and Post-Secondary Life. 3 Credits.

The policies, principles, models, and processes involved in job development, job accommodations and modifications, and employment and post-secondary placement services for individuals with autism and related disabilities. Legislation is reviewed in terms of its impact on placement of persons with autism who transition into the workplace and/or post-secondary education.

SPED 6255. Collaboration with Systems and Families. 3 Credits.

Overview of models and strategies for coordinating services across disciplines and among school and community agencies for special populations. Emphasis on interdisciplinary team coordination, communication, decision making, planning, and follow-up for individuals with disabilities. Material fee.

SPED 6260. Developmental Assessment in Special Education. 3 Credits.

Key issues of effective collaboration, culture, and school-family partnerships in special education explored through a framework of educational research best practice.

SPED 6261. Practicum: Methods and Materials for Young Children with Disabilities. 3,6 Credits.

Implementation of educational strategies and materials, including designing and developing teaching materials, classroom teaching, feedback and evaluation with professor. A seminar accompanies this clinical experience.

SPED 6262. Formal Assessment of Young Children with Disabilities. 3 Credits.

Weekly seminar designed to prepare early childhood special educators to translate formal assessment data into instructional programming. Requires fieldwork with children. Material fee. Prerequisite: SPED 6260 .

SPED 6263. Development of the Infant with Special Needs. 3 Credits.

The processes of normal infant development and interrelationships among areas of development; relationship of these processes to the growth and development of infants with or at risk for developmental disabilities. Material fee.

SPED 6264. Medical and Genetic Conditions of Infants and Children with Developmental Disabilities. 3 Credits.

Introduction to medical and genetic conditions that affect the cognitive, language, and social development of infants and children with developmental disabilities.

SPED 6266. The Development of Language and Literacy. 3 Credits.

Within the context of typical and atypical development, the impact of various disabilities on language and literacy development. Material fee.

SPED 6267. Instructional and Assistive Technology in Early Childhood Special Education. 2,3 Credits.

Instructional strategies and assistive technology and their implications and uses for young children (0 to 5 yrs) in a wide variety of environments. Lectures, laboratory, and demonstrations. Material fee.

SPED 6268. Development of Children and Youth with Disabilities. 3 Credits.

Theories of human growth and development are considered as a framework for examination of typical and atypical development of children and youth. Material fee.

SPED 6269. Etiology, Symptomatology, and Approaches to Intervention with Children with Disabilities. 3 Credits.

An in-depth examination of the causes and characteristics of various disabilities. Current principles and approaches to intervention are examined. Material fee.

SPED 6272. Strategies for Inclusion: Addressing the Needs of Diverse Learners. 3 Credits.

Strategies by which teachers can more effectively assume the responsibility to serve all children in an inclusionary setting, including those who are second language learners and students with disabilities. Same as CPED 6172. Material fee.

SPED 6273. Impact of Culture on Education. 3 Credits.

The impact of culture and ethnicity on educational experiences. The relationship between school culture in the United States, one's own culture(s), and the cultures of diverse populations existing within our schools. Values, norms, rules, ethics, beliefs, attitudes, expectations, and assumptions of various cultures. Material fee.

SPED 6274. In-Service Planning/Programmng. 3 Credits.

SPED 6275. The Culturally and Linguistically Diverse Student with Disabilities: Policy, Research, and Trends. 3 Credits.

Educational service delivery for the culturally and linguistically diverse student. National, state, and local policies; current research in bilingual education, special education, and bilingual special education. Same as CPED 6175. Material fee.

SPED 6276. Academic and Psychosocial Assessment of the Culturally and Linguistically Diverse Student. 3 Credits.

Issues in academic and psychosocial assessment of second language learners. The impact of second language acquisition and culture on the assessment process; differentiation between language difference and disability; IEP development; the use of interpreters and translators; the involvement of family and communities; standardized and alternative assessments; and legislative mandates. Same as CPED 6176. Material fee.

SPED 6277. Teaching Culturally and Linguistically Diverse Students with Disabilities. 3 Credits.

Methods and materials for teaching students with disabilities who are English language learners. Classroom management, instructional and assessment strategies, materials and curricula, and collaborating with families and communities to meet the cultural, linguistic, academic, social, and emotional needs of students in various settings. Material fee.

SPED 6280. Developmental Assessment of Adolescents. 3 Credits.

Formal and informal psychoeducational assessment; assessment instruments commonly used with upper-elementary, junior, and senior high school students; the writing of psychoeducational reports. Material fee.

SPED 6283. The Urban Impact on Children and Youth with Disabilities. 3 Credits.

Effects of the total environment in which inner-city children live on their ability to learn and their cognitive, social-behavioral, and physical/health development. Material fee.

SPED 6288. Characteristics of Individuals with Learning, Emotional, and Intellectual Disabilities. 3 Credits.

An in-depth examination of typical and atypical growth and development, psychiatric diagnosis and psychosocial development issues, and general and specific characteristics of the student with serious emotional disabilities. May be repeated for credit. Material fee.

SPED 6290. Affective Development and Behavior Management in Special Education. 3 Credits.

Theory, programming, and behavior management strategies from theoretical and practical points of view. Material fee.

SPED 6299. Federal Education Policy Institute. 3 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6990. Internship in Teaching Children with Emotional and Behavioral Disabilities: Assistant Teacher. 3-6 Credits.

The federal role in education policymaking in the context of national, state, and local efforts to create school environments for effective learning and the promotion of social and emotional health in children and youth. Same as CPED 6199.

SPED 6991. Internship in Teaching Children with Emotional and Behavioral Disabilities: Co-Teacher. 3-6 Credits.

Continuation of SPED 6990. Graduate students become the primary teaching team in the classroom with ongoing supervision. Graduate students plan and apply psychoeducational teaching strategies with children with emotional and behavioral disabilities. Refinement of instructional and behavior management strategies. Weekly seminar continues. Material fee.

SPED 6992. Behavior Management Practicum: Adolescents with Disabilities. 3 Credits.

Field-based examination of theory of behavior development and techniques for classroom management. Material fee.

SPED 6993. Internship: Teaching Young Children with Disabilities. 3,6 Credits.

Supervised internship in early childhood special education. Weekly seminar. Material fee.

SPED 6994. Internship: Early Intervention. 3-6 Credits.

Supervised internship in early intervention. Weekly seminar. Material fee.

SPED 6995. School- and Community-Based Internship in Special Education and Transition. 1-9 Credits.

A 50- to 450-hour supervised internship in school- and community-based settings involved in career, vocational, and transition services.

SPED 6996. Teaching Internship in Transition Special Education. 3-6 Credits.

Supervised teaching internship; seminar required. Permission of the instructor required prior to enrollment. Material fee.

SPED 6997. Internship in Teaching Culturally and Linguistically Diverse Students with Disabilities. 3-6 Credits.

Supervised internship and weekly seminar. A full-time, field-based teaching experience working with students with disabilities who are English language learners. Writing an appropriate IEP, interacting with families and communities, and planning and implementing instructional approaches and strategies. Material fee.

SPED 8100. Selected Topics. 1-12 Credits.

Topics and fees announced in the Schedule of Classes.

SPED 8101. Research and Independent Study. 1-3 Credits.

Individual research under guidance of a staff member. Program and conferences arranged with program advisor.

SPED 8301. Research Seminar in Special Education. 1-12 Credits.

Participation in a small group with a selected faculty member; research on and discussion of an area of common interest. Permission of the instructor required prior to enrollment.

SPED 8303. Administration and Supervision of Special Education. 3 Credits.

Philosophy and nature of special education; program organization, administration, and development. Surveying local needs; program evaluation and supervision. Permission of the instructor required prior to enrollment. Material fee.

SPED 8304. Research and Trends in Special Education. 3 Credits.

Emphasis on topical research issues, problems of conducting research, and research syntheses. Material fee.

SPED 8305. Foundations of Neuroscience in Special Education. 3 Credits.

Develops understanding of the neurological bases of sensation and perception, object recognition, control of motor action, learning and memory, emotion and language, attention, consciousness and cognitive control, and social cognition.

SPED 8306. Advanced Study in Development Science and Variance I: The Early Years. 3 Credits.

Consideration of cognitive neuroscience research on developmental issues of infancy and early years; assessment, identification, and related prevention and intervention. Prerequisite: SPED 8305.

SPED 8308. Preparation for the Professoriate in Special Education. 3 Credits.

Philosophical, ethical, and methodological aspects of personnel preparation in university and field-based programs; opportunities for practice in pedagogical design and delivery. Material fee.

SPED 8310. Advanced Study in Development Science and Variance II: The Later Years. 3 Credits.

Consideration of cognitive neuroscience research on adolescent development, including executive functioning, self-regulation, atypicality in learning, social and emotional behavior, motivation, and attention. Prerequisite: SPED 8306.

SPED 8311. Doctoral Proseminar: Scholarly Writing in Applied Settings. 3 Credits.

Professional writing enrichment course that builds upon recent approaches to scholarly writing instruction and adapts them to the level of skill required of graduate and advanced graduate students. Prerequisite: SPED 8310.

SPED 8343. Psychoeducational Diagnosis in Special Education. 3 Credits.

The range of diagnostic and intervention strategies applicable to the student who presents psychosocial and related learning difficulties. Permission of the instructor required prior to enrollment. Material fee.

SPED 8345. Consultation and the Change Process. 3 Credits.

Consultation models from organizational development, organizational psychology, and mental health applied to professional practice in education and special education. Material fee.

SPED 8352. Disability and Public Policy. 3 Credits.

Overview of current legislation and public policy affecting education, employment, and civil rights of individuals with disabilities. The evolution of disability policies and their relationship to principles of social justice. Material fee.

SPED 8353. Post-Master's Internship in Special Education. 1-6 Credits.

Supervised professional internship in college teaching, administration, supervision, research, or policymaking. Internships are individually arranged. Permission of the instructor required prior to enrollment.

SPED 8354. Doctoral Internship: Special Education. 1-6 Credits.

Supervised professional internship in research college teaching, administration, policymaking, or private agency function. Permission of the advisor required prior to enrollment.

SPED 8360. Interdisciplinary Techniques in the Diagnostic Process in Special Education. 3 Credits.

Application of theoretical concepts of assessment; development of assessment programs; interpretation and application of interdisciplinary diagnostic evaluations. Material fee. Prerequisites: SPED 6260 and permission of the instructor.

SPED 8998. Doctoral Seminar in Special Education. 3-6 Credits.

Review of literature in a topical area; preparation of a dissertation proposal and a manuscript of publishable quality. Permission of the instructor and major advisor required prior to enrollment. Material fee.

SPED 8999. Dissertation Research. 3,6 Credits.

Prerequisite: SPED 8998.

SPEECH AND HEARING SCIENCE (SPHR)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SPHR 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SPHR 1011. Voice and Diction. 3 Credits.

Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance. Laboratory fee.

SPHR 1071. Foundations of Human Communication. 3 Credits.

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SPHR 1071W. Foundations of Human Communication. 3 Credits.

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SPHR 1072. Multicultural Issues in Human Communication. 3 Credits.

The influences of culture and bilingualism on language development and use, and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society.

SPHR 1081. American Sign Language I. 3 Credits.

Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills.

SPHR 1082. American Sign Language II. 3 Credits.

Continuation of SPHR 1081. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1081.

SPHR 1084. Perspectives in Deaf Culture. 3 Credits.

Introduction to the Deaf community as a linguistic and cultural minority group. The roles of deaf people in the larger society, including political activism. Generational differences concerning education, socioeconomic status, medical issues, and language.

SPHR 1099. Variable Topics. 1-36 Credits.

SPHR 2083. American Sign Language III. 3 Credits.

Continuation of SPHR 1082. Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: SPHR 1082.

SPHR 2101. Research Methods. 3 Credits.

Introduction to fundamental research principles (e.g., hypothesis testing, sampling, validity and reliability), designs (e.g., experiments, case studies), and methods (e.g., behavioral observations, acoustic and physiologic measurements, neuro-imaging) used in the study of speech, language, and hearing. Prerequisites: SPHR 1071.

SPHR 2102. Neural Substrates-SpHr & Lang. 3 Credits.

SPHR 2104. Speech and Language Disorders. 3 Credits.

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment.

SPHR 2104W. Speech and Language Disorders. 3 Credits.

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SPHR 2105. Anatomy and Physiology for Speech and Hearing. 3 Credits.

Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; cranial nerves.

SPHR 2106. Neural Substrates of Speech, Language, and Hearing. 3 Credits.

Neuroanatomy and neurophysiology for speech, language and hearing. Anatomy of the auditory and vestibular systems; physiology of hearing.

SPHR 2107. Acoustics. 3 Credits.

This course focuses on speech acoustics, with emphasis on how the speech signal is produced and the elements of speech important for speech perception. Recommended background: Prior or concurrent registration in SPHR 2105 and SPHR 2136. Credit cannot be earned for this course and SLHS 2107.

SPHR 2108. Introduction to Audiology. 3 Credits.

Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. SPHR 2106 may be taken as a corequisite. Laboratory fee. Prerequisites: SPHR 2106 and SPHR 2107.

SPHR 2117. Hearing and Perception. 3 Credits.

Consideration of the psychoacoustics of the normal auditory system in terms of auditory sensitivity, loudness, pitch, masking, and binaural hearing. Topics in speech perception that build upon psychoacoustics and speech acoustics. Prerequisite: SPHR 2108.

SPHR 2130. Phonetics and Phonological Development. 3 Credits.

Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. SPHR 2105 may be taken as a corequisite. Laboratory fee. Prerequisite: SPHR 2105.

SPHR 2131. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisite: SPHR 2135.

SPHR 2132. Literacy. 3 Credits.

An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Prerequisites: SPHR 1071 or SPHR 1071W.

SPHR 2133. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SPHR 2135. Language: Structure, Meaning, and Use. 3 Credits.

A survey of basic linguistic terminology and the components of language structures. Major topics include language structure (syntax, morphology, phonology), meaning (semantics), and the use of language as a means of communication among individuals (pragmatics). Credit cannot be earned for this course and LING 3603.

SPHR 3099. Variable Topics. 1-12 Credits.

SPHR 3109. Auditory Learning/Aural Rehabilitation. 3 Credits.

Introduction to theories and procedures used to provide aural and audiological (re)habilitation to children and adults who have hearing loss and to provide concomitant services to their family members; assessment and prosthetic management of children and adults with hearing loss; effects of hearing loss on conversational fluency and everyday speech communication; and means for developing aural rehabilitation plans and assessing their effectiveness. Corequisite: SPHR 2108. Prerequisite: none. Recommended background: major in speech, language and hearing sciences.

SPHR 3116. Brain and Language. 3 Credits.

How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. SPHR 2106 may be taken as a corequisite. Prerequisite: SPHR 2106.

SPHR 3199. Selected Topics. 3 Credits.

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

SPHR 4118. Senior Seminar. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Laboratory fee. Prerequisite: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4118W. Senior Seminar. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Laboratory fee. Prerequisites: SPHR 1071 or SPHR 1071W or SPHR 2104 or SPHR 2104W.

SPHR 4119. Principles and Methods in Speech-Language Pathology. 3 Credits.

Survey of evaluation and treatment of communication disorders across the lifespan, including: ethics, test administration, interpretation, intervention procedures, and clinical writing. Emphasis on clinical scenarios and practice. Restricted to seniors majoring in speech, language and hearing sciences. Laboratory fee. Restricted to seniors majoring in speech, language and hearing sciences.

SPHR 4120. Senior Research Seminar in Speech, Language, and Hearing Sciences. 3 Credits.

Introduction to the speech, language, and hearing sciences (SLHS) research literature and how to critically evaluate it; the process of scientific writing and analysis; the creation of presentations for different audiences on research-based topics; and how SLHS research can be applied in a variety of research and clinical domains. Restricted to seniors in the speech, language, and hearing sciences program, neuroscience of language and communication and language across cultures and the life span concentrations. Prerequisites: SPHR 1071 or SPHR 1071W, SPHR 2101, and SPHR 2104 or SPHR 2104W.

SPHR 4120W. Senior Research Seminar in Speech, Language, and Hearing Sciences. 3 Credits.

Introduction to the speech, language, and hearing sciences (SLHS) research literature and how to critically evaluate it; the process of scientific writing and analysis; the creation of presentations for different audiences on research-based topics; and how SLHS research can be applied in a variety of research and clinical domains. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Restricted to seniors in the speech, language, and hearing sciences program, neuroscience of language and communication and language across cultures and the life span concentrations. Prerequisites: SPHR 1071 or SPHR 1071W, SPHR 2101, and SPHR 2104 or SPHR 2104W.

SPHR 4196. Independent Study. 1-6 Credits.

Independent research and special projects. Before students are permitted to register for SPHR 4196, they must submit a written proposal of the plan of study and obtain approval of the staff member who directs the study and of the department chair.

SPHR 4201. Early Social and Cognitive Development. 3 Credits.

Infants' understanding of social concepts and how these concepts influence the development of memory, attention, and executive functions; children's ability to imitate across different domains and how children's social concepts and social learning abilities underlie language and culture. Prerequisites: SPHR 1071 or SPHR 1071W.

SPHR 4221. Language and Communication in Aging. 2 Credits.

Communication and swallowing abilities in older adults; distinguishing the normal changes of aging from pathological symptoms to better assess older patients' capabilities and provide more effective intervention.

SPHR 5099. Variable Topics. 1-99 Credits.

SPHR 6201. Clinical Practicum in Speech-Language Pathology. 1-6 Credits.

Supervised clinical practice in the evaluation and treatment of speech and language disorders; counseling of clients and families; development of treatment plans and writing of evaluation and progress reports. Permission of the instructor required prior to enrollment. May be repeated for up to 6 credits.

SPHR 6202. Clinical Practicum in Audiology. 1-6 Credits.

Supervised clinical practice in behavioral and electrophysiologic assessment of hearing, hearing aid assessment and fitting, and aural rehabilitation; counseling clients and families; writing evaluation and progress reports. Permission of the instructor required prior to enrollment. May be repeated, but may not be taken for more than 6 credits.

SPHR 6205. Professional and Clinical Issues in Speech and Hearing. 1 Credit.

SPHR 6207. Diagnostic Procedures in Speech and Hearing. 3 Credits.

Fundamental philosophical and conceptual issues in the assessment of speech-language functioning across a wide range of disorders and diverse populations. Consideration of how assessment procedures guide treatment decisions.

SPHR 6210. Research in Communication Sciences and Disorders. 1,3 Credit.

Fundamental issues and methods in clinical research; group and single-subject experimental designs; application of clinical research methodology and findings to assessment and treatment. Non-thesis students register for 3 credits; thesis students register for 1 credit concurrent with SPHR 6211. Restricted to graduate students in the speech and hearing science program.

SPHR 6211. Preparing the Thesis Prospectus. 2 Credits.

For first-year graduate students. Introduction to the fundamentals of quantitative research design and procedures in the speech and hearing sciences. Critical evaluation of research in speech and hearing sciences; scientific writing skills; the process and expectations for conducting thesis research. Students register for SPHR 6210 for 1 credit. Restricted to speech and hearing sciences master's thesis students.

SPHR 6220. Disorders of Articulation and Phonology. 3 Credits.

Survey of the nature and causes of impairments of speech sound production in children and adults. Differential diagnosis of oral motor versus phonological disorders; treatment approaches; identification and modification of regional dialects and foreign accents. Laboratory fee.

SPHR 6221. Neurodevelopmental Disorders of Speech Production. 2 Credits.

Evaluation and treatment of infants and children with neurodevelopmental speech disorders, including cerebral palsy. Emphasis on management of prespeech oral motor and feeding impairments. Laboratory fee.

SPHR 6222. Acquired Neuromotor Disorders of Speech Production. 2 Credits.

Examination of the neuroanatomical and neurophysiological bases and acoustic and perceptual characteristics of acquired dysarthrias and apraxia of speech. Evidence-based approaches to the assessment, differential diagnosis, and treatment of these disorders. Laboratory fee.

SPHR 6230. Pediatric Language and Speech Disorders I. 3 Credits.

Survey of current approaches for assessing and treating language delays and disorders in infants, toddlers, preschoolers, school-age children, and adolescents. Review of standardized, observational, and ethnographic approaches used in language assessment; current models of intervention and service delivery. Laboratory fee.

SPHR 6231. Pediatric Language and Speech Disorders II. 3 Credits.

SPHR 6240. Neurogenic Communication Disorders. 3 Credits.

Differential diagnosis of acquired speech and language disorders, with an emphasis on the aphasia acquired in adulthood. Evidence-based approaches to the assessment and treatment of adult neurogenic language disorders. Laboratory fee.

SPHR 6241. Applied Neuroanatomy. 3 Credits.

Neuroanatomy and neurophysiology of systems underlying speech, language, and hearing. Neuroimaging techniques and investigations. Applications to the assessment and treatment of communication disorders. Laboratory fee.

SPHR 6250. Eval/Treatment-Speech Disorder. 3 Credits.

SPHR 6251. Seminar: Speech Fluency Disorders. 3 Credits.

Consideration of stuttering and other disorders of speech rate and rhythm from developmental, linguistic, physiological, and psychosocial points of view. Investigation of evidence-based approaches to assessment and treatment.

SPHR 6260. Voice Disorders: Evaluation and Treatment. 3 Credits.

Normal anatomy and physiology of the human vocal mechanism. Nature, causes, and clinical management of functional and organic voice disorders, including laryngectomy. Laboratory fee.

SPHR 6261. Seminar: Voice Disorders. 2 Credits.

SPHR 6276. Aural Rehabilitation. 3 Credits.

Habilitation/rehabilitation of the hearing impaired, including auditory training, speech reading, hearing aids, assistive listening devices, communication strategies, and counseling. Laboratory fee.

SPHR 6277. Psychoeducational Management of Children With Hearing Impairment. 3 Credits.

SPHR 6281. Dysphagia. 2 Credits.

Anatomy and physiology of normal swallowing. Nature and causes of dysphagia in adults. Assessment, including clinical examination and radiologic methods; treatment. Laboratory fee.

SPHR 6282. Augmentative Communication and Computer Applications in Communication Disorders. 2 Credits.

Principles of assessment, development, and selection of augmentative and alternative communication systems; application through case studies. Computer applications, including review of selected hardware and software and selection criteria. Laboratory fee.

SPHR 6283. Multicultural Perspectives in Communication Development and Disorders. 2 Credits.

Application of culturally appropriate and theoretically based speech and language procedures to clinical assessment and intervention with multilingual/multicultural populations.

SPHR 6284. Autism. 2 Credits.

The various facets of Autism Spectrum Disorder (ASD); clinical aspects and how speech-language pathologists are involved in the assessment, diagnosis, and treatment of ASD; the relationship between typical cognitive and brain development throughout the lifespan and how it is manifested in ASD. Restricted to graduate students.

SPHR 6290. Selected Topics in Clinical Audiology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues. May be repeated, but may not be taken for more than a total of 6 credits.

SPHR 6291. Selected Topics in Speech-Language Pathology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues regarding various aspects of practice in speech-language pathology. May be repeated but not for more than a total of 6 credits.

SPHR 6295. Independent Research in Speech, Language, and Hearing. 1-12 Credits.

SPHR 6998. Thesis Research. 2 Credits.

SPHR 6999. Thesis Research. 2 Credits.

SPEECH, LANGUAGE, AND HEARING SCIENCE (SLHS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work

- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SLHS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

SLHS 1011. Voice and Diction. 3 Credits.

Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance.

SLHS 1071. Foundations of Human Communication. 3 Credits.

Fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior.

SLHS 1071W. Foundations of Human Communication. 3 Credits.

Fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Credit cannot be earned for this course and SLHS 1071.

SLHS 1072. Multicultural Issues in Human Communication. 3 Credits.

The influences of culture and bilingualism on language development and use, and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society.

SLHS 1081. American Sign Language I. 3 Credits.

The purpose of this course is to enable students to begin acquiring proficiency in American Sign Language (ASL) through a linguistic, communicative, and cultural approach to language learning. Emphasis is placed on the development of receptive and expressive signing skills and on the acquisition of the fundamentals of applied grammar.

SLHS 1082. American Sign Language II. 3 Credits.

The purpose of this course is to enable students to enhance proficiency in American Sign Language (ASL) through a linguistic, communicative, and cultural approach to language learning. There is a continued emphasis on the development of receptive and expressive signing skills and on the acquisition of the fundamentals of applied grammar; cross-cultural understanding is fostered and real-life applications are emphasized throughout the course. Prerequisites: SPHR 1081.

SLHS 1084. Perspectives in Deaf Culture. 3 Credits.

Analysis and evaluation of the roles and impact of deaf people in various spheres, including history, education, communication, technology, political activism, and current events. Credit cannot be earned for this course and SPHR 1084.

SLHS 2083. American Sign Language III. 3 Credits.

We will focus mainly on grammatical features including non-manual signals (i.e., facial expression and inflection), semantics, and syntax. Through assignments inside and outside of classroom, cultural perspectives of the Deaf Community will be examined and discussed; this class is taught primarily in ASL. Prerequisites: SPHR 1082.

SLHS 2101. Research Methods. 3 Credits.

Introduction to fundamental research principles, designs, and methods used in the study of speech, language, and hearing. A related course in anthropology or psychology may be substituted for the prerequisite. Prerequisites: SPHR 1071 or SLHS 1071.

SLHS 2104. Speech and Language Disorders. 3 Credits.

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment.

SLHS 2104W. Speech and Language Disorders. 3 Credits.

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech-language impairment. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SLHS 2105. Anatomy and Physiology for Speech and Hearing. 3 Credits.

Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; cranial nerves.

SLHS 2106. Neural Substrates of Speech, Language, and Hearing. 3 Credits.

Neuroanatomy and neurophysiology for speech, language and hearing. Anatomy of the auditory and vestibular systems; physiology of hearing.

SLHS 2107. Acoustics. 3 Credits.

Speech acoustics, with emphasis on how the speech signal is produced and the elements of speech important for speech perception. The prerequisite courses may be taken concurrently. Recommended background: Prior completion of SLHS 2105 or SPHR 2105; and SLHS 3136, or SPHR 2136, or SPHR 3136. Credit cannot be earned for this course and SPHR 2107.

SLHS 2108. Introduction to Audiology. 3 Credits.

Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. SPHR 2106 may be taken as a corequisite. Laboratory fee. Prerequisites: SPHR 2106 and SPHR 2107.

SLHS 2131. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Prerequisite: SPHR 2135.

SLHS 2133. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SLHS 2135. Language: Structure, Meaning, and Use. 3 Credits.

Survey of basic linguistic terminology and the components of language structures. Language structure (syntax, morphology, phonology), meaning (semantics), and the use of language as a means of communication among individuals (pragmatics).

SLHS 2136. Phonetics. 2 Credits.

Overview of phonetics of American English and an introduction to sounds of languages of the world. General principles of phonetic description and analysis, speech production mechanisms, classification of consonants and vowels of English and other languages, suprasegmental aspects of speech, and acoustic characteristics of speech sounds. Allophonic variation and phonetic characteristics of connected speech and social and regional phonetic variation. Instruction and practice in transcription using the International Phonetic Alphabet.

SLHS 3108. Introduction to Audiology. 3 Credits.

Survey of the field of audiology, including the measurement of hearing, nature and causes of hearing impairment, hearing aids, and habilitation/rehabilitation of the hearing impaired. Corequisites: SLHS 2016.

SLHS 3109. Auditory Learning and Aural Rehabilitation. 3 Credits.

Introduction to the theories and procedures used to provide aural and audiological (re)habilitation to children and adults who have hearing loss, and to provide concomitant services to their family members. Credit cannot be earned for this course and SPHR 3109.

SLHS 3116. Brain and Language. 3 Credits.

How the brain operates for language production and understanding and how damage to the brain can interrupt neural processes with a variety of neurolinguistic consequences. Neuroimaging and behavioral research that informs the understanding of the bases of neurolinguistic communication disorders. Prerequisites: SLHS 2106 or SPHR 2106. Corequisites: SLHS 2106 may be taken concurrently. Credit cannot be earned for this course and PSYC 3116, SPHR 3116.

SLHS 3117. Hearing and Perception. 3 Credits.

Acoustics and anatomy/physiology of auditory mechanism and the psychoacoustics of the normal auditory system in terms of auditory sensitivity, loudness, pitch, masking, and binaural hearing. Psychoacoustics and speech acoustics and speech perception. Prerequisites: SLHS 2108 or SPHR 2108. Credit cannot be earned for this course and SPHR 2117.

SLHS 3131. Language Acquisition and Development. 3 Credits.

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Prerequisites: One of the following: SLHS 1071, SLHS 1071W, SPHR 1071, SPHR 1071W, SLHS 2135, or SPHR 2135.

SLHS 3132. Literacy. 3 Credits.

Overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Prerequisites: SLHS 1071 or SLHS 1071W or SPHR 1071 or SPHR 1071W. Credit cannot be earned for this course and SPHR 2132.

SLHS 3133. Autism. 3 Credits.

How the study of autism and related disorders may shed light on the characteristics of the mind. The broad characteristics of autism spectrum disorders, including cognitive, behavioral, and neural aspects; definitions of typical vs. atypical development; and difficulties associated with diagnosis and treatment.

SLHS 3136. Phonetics. 2 Credits.

Overview of phonetics of American English and an introduction to sounds of languages of the world. General principles of phonetic description and analysis, speech production mechanisms, classification of consonants and vowels of English and other languages, suprasegmental aspects of speech, and acoustic characteristics of speech sounds. Allophonic variation and phonetic characteristics of connected speech and social and regional phonetic variation. Instruction and practice in transcription using the International Phonetic Alphabet.

SLHS 3199. Selected Topics. 3 Credits.

Topic vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details.

SLHS 4118W. Senior Research Seminar in Communication Sciences and Disorders. 3 Credits.

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Restricted to students majoring in speech, language and hearing sciences with a concentration in communication sciences and disorders. Prerequisites: One of the following: SPHR 1071, SPHR 1071W,, SPHR 2104, or SPHR 2104W. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SLHS 4119. Principles and Methods in Speech-Language Pathology. 3 Credits.

Assessment of speaker-listener behavior; acoustic, behavioral, and linguistic properties of speaker intelligibility and credibility; observation, analysis, and modification of speech and language comprehension and expression. Restricted to department majors in their senior year.

SLHS 4196. Independent Study. 1-6 Credits.

Independent research and special projects. Prior to enrollment, students must submit a written proposal of the plan of study and obtain the approval of the staff member who directs the study and of the department chair.

SLHS 4201. Social Communication Development. 3 Credits.

Infants' understanding of social concepts such as agency, belief, goals, and relationships. How these social concepts develop in relationship with and independently of children's learning and communication skills. Children's ability to imitate across many different domains and tasks. Prerequisites: One of the following: SPHR 1071, SPHR 1071W, SLHS 1071, or SLHS 1071W.

SLHS 4221. Language and Communication in Aging. 2-3 Credits.

Aging from a variety of perspectives, including demographic descriptions of aging, the physiological and functional changes that happen as part of the aging process, considerations of end-of-life issues, and counseling the elderly. Same As: SLHS 6292. Credit cannot be earned for this course and SPHR 4221.

SLHS 6201. Clinical Practicum in Speech-Language Pathology. 1-6 Credits.

Supervised clinical practice in the evaluation and treatment of speech and language disorders; counseling of clients and families; development of treatment plans and writing of evaluation and progress reports. Permission of the instructor is required prior to enrollment. Restricted to graduate students in the speech-language pathology program.

SLHS 6205. Professional and Clinical Issues in Speech and Hearing. 1 Credit.

Current professional issues and leading edge research topics in the speech and hearing science field. Professional and clinical issues in the assessment and treatment of speech-language functioning relevant to a range of disorders across the life-span. Communication, ethics, and multicultural issues in communication and service delivery. Restricted to graduate students in the speech-language pathology program.

SLHS 6207. Diagnostic Procedures in Speech and Hearing. 3 Credits.

Fundamental philosophical and conceptual issues in the assessment of speech-language functioning across a wide range of disorders and diverse populations. Consideration of how assessment procedures guide treatment decisions. Restricted to graduate students in the speech-language pathology program.

SLHS 6210. Research in Communication Sciences and Disorders. 1,3 Credit.

Fundamental issues and methods in clinical research; group and single-subject experimental designs; application of clinical research methodology and findings to assessment and treatment. Students who are not writing a thesis register for 3 credits. Students who are writing a thesis register for 1 credit and register concurrently in SPHR 6211 for 2 credits. Restricted to graduate students in the speech-language pathology program.

SLHS 6211. Preparing the Thesis Prospectus. 2 Credits.

The fundamentals of quantitative research design and procedures in the speech and hearing sciences. Critical evaluation of research in speech and hearing sciences; scientific writing skills; process and expectations for conducting research. Restricted to graduate students in the speech-language pathology program. Corequisites: SPHR 6210 for 1 credit.

SLHS 6220. Disorders of Articulation and Phonology. 3 Credits.

Survey of the nature and causes of impairments of speech sound production in children and adults. Differential diagnosis of oral motor versus phonological disorders; treatment approaches; identification and modification of regional dialects and foreign accents. Restricted to graduate students in the speech-language pathology program.

SLHS 6222. Acquired Neuromotor Disorders of Speech Production. 2 Credits.

Examination of the neuroanatomical and neurophysiological bases and acoustic and perceptual characteristics of acquired dysarthrias and apraxia of speech. Evidence-based approaches to the assessment, differential diagnosis, and treatment of these disorders. Restricted to graduate students in the speech-language pathology program.

SLHS 6230. Pediatric Language and Speech Disorders I. 3 Credits.

Current approaches for assessing and treating language delays and disorders in infants, toddlers, preschoolers, school-age children, and adolescents. Standardized, observational, and ethnographic approaches used in language assessment and current models of intervention and service delivery. Restricted to graduate students in the speech-language pathology program.

SLHS 6231. Pediatric Language and Speech Disorders II. 3 Credits.

Advanced study of selected theoretical and clinical issues relevant to various aspects of practice in speech-language pathology involving pediatric populations. Medically complex acquired and developmental school age and adolescent language disorders and their educational and life care planning impacts. Restricted to graduate students in the speech-language pathology program.

SLHS 6240. Neurogenic Communication Disorders. 3 Credits.

Differential diagnosis of acquired speech and language disorders, with an emphasis on the aphasia acquired in adulthood. Evidence-based approaches to the assessment and treatment of adult neurogenic language disorders. Restricted to graduate students in the speech-language pathology program.

SLHS 6241. Applied Neuroanatomy. 3 Credits.

Neuroanatomy and neurophysiology of systems underlying speech, language, and hearing. Neuroimaging techniques and investigations. Applications to the assessment and treatment of communication disorders. Restricted to graduate students in the speech-language pathology program.

SLHS 6251. Speech Fluency Disorders Seminar. 3 Credits.

Consideration of stuttering and other disorders of speech rate and rhythm from developmental, linguistic, physiological, and psychosocial perspectives. Investigation of evidence-based approaches to assessment and treatment. Restricted to graduate students in the speech-language pathology program.

SLHS 6260. Voice Disorders: Evaluation and Treatment. 3 Credits.

Normal anatomy and physiology of the human vocal mechanism. Nature, causes, and clinical management of functional and organic voice disorders, including laryngectomy. Restricted to graduate students in the speech-language pathology program.

SLHS 6276. Aural Rehabilitation. 3 Credits.

Habilitation/rehabilitation of the hearing impaired, including auditory training, speech reading, hearing aids, assistive listening devices, communication strategies, and counseling. Prerequisites: graduate students in the speech-language pathology program.

SLHS 6281. Dysphagia. 2 Credits.

Anatomy and physiology of normal swallowing. Nature and causes of dysphagia in adults. Assessment, including clinical examination, and radiologic methods. Treatment. Restricted to graduate students in the speech-language pathology program.

SLHS 6282. Augmentative Communication and Computer Applications in Communication Disorders. 2 Credits.

Overview of augmentative and alternative communication systems (AAC) and the process of selecting and implementing these systems for children and adults. Basic processes; issues related to individuals with developmental disabilities who require AAC services; and AAC for those with acquired communication disabilities.

SLHS 6284. Autism. 2 Credits.

The various facets of Autism Spectrum Disorder (ASD); clinical aspects and how speech-language pathologists are involved in the assessment, diagnosis, and treatment of ASD. The relationship between typical cognitive and brain development throughout the lifespan and how it is manifested in ASD. Restricted to graduate students in the speech-language pathology program.

SLHS 6291. Special Topics in Speech-Language Pathology. 1-3 Credits.

Advanced study of selected theoretical and clinical issues related to aspects of practice in speech-language pathology. Topics vary by semester. May be repeated for a maximum total of 6 credits provided the topic differs. Consult the Schedule of Classes for more details.

SLHS 6292. Language and Communication in Aging. 2-3 Credits.

Aging from a variety of perspectives, including demographic descriptions of aging, the physiological and functional changes that happen as part of the aging process, considerations of end-of-life issues, and counseling the elderly. Same As: SLHS 4221. Credit cannot be earned for this course and SPHR 4221.

SLHS 6295. Independent Research in Speech, Language, and Hearing. 1-12 Credits.

Independent study under the guidance of a faculty advisor. May be repeated for credit.

SLHS 6998. Thesis Research. 2 Credits.

May be repeated for credit. Restricted to graduate students in the speech-language pathology program.

SLHS 6999. Thesis Research. 2 Credits.

May be repeated for credit. Restricted to graduate students in the speech-language pathology program.

SLHS 8100. Communication Disorders Across the Lifespan. 3 Credits.

The study of communication disorders across the lifespan. Communication, language, speech, cognition, and swallowing in developmental and acquired disorders. Restricted to doctoral students in the speech, language, and hearing sciences program.

SLHS 8200. Research Methods and Ethics and Grant Writing. 3 Credits.

Knowledge and skills related to development and dissemination of research and to grant writing and development in communication sciences and disorders.

SLHS 8201. Research Rotation. 2 Credits.

Students gain experience working in another laboratory and establish and cultivate professional collaborations. Students become involved in one of the research projects in the lab, playing a role in the research process. The expected outcome of the rotation is participation in a research project and submission of a presentation or paper on the project, as agreed upon by the research mentor and student, and approved by the student's advisory committee. Restricted to doctoral students in the speech, language, and hearing sciences program.

SLHS 8202. Teaching Rotation. 2 Credits.

Mentored teaching experience under the direction of faculty member in the Department of Speech, Language, and Hearing Sciences. Students give lectures, evaluate student performance, attend periodic discussions on pedagogy, and write a teaching philosophy. Restricted to doctoral students in the speech, language, and hearing sciences program.

SLHS 8203. Doctoral Seminar Leadership. 2 Credits.

Students are provided with opportunities for leadership within the department's research community. Students plan and carry out the department's monthly research seminar series, including inviting speakers, coordinating speaker visits, and advertising the presentations to the greater GW and DC communities. Students participate in faculty-led discussions on leadership topics and make presentations. Restricted to doctoral students in the speech, language, and hearing sciences program.

SLHS 8300. Statistical Applications for Translational Research. 3 Credits.

Interactive statistical analyses in the R programming environment with focus on research problems with psycholinguistics, speech perception, speech productions, language, and neuroimaging data, using approaches that include mixed models, generalized mixed models, nested model testing, and visualization through graphical facilities.

SLHS 8999. Dissertation Research. 3-9 Credits.

For students who have progressed to candidacy. Restricted to doctoral students in the speech, language, and hearing sciences program.

STATISTICS (STAT)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

STAT 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester; see department for more details.

STAT 1051. Introduction to Business and Economic Statistics. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, probability distributions, sampling, estimation, tests of hypotheses, regression and correlation, with applications to business. Credit cannot be earned for this course and STAT 1053, STAT 1111, STAT 1127.

STAT 1053. Introduction to Statistics in Social Science. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences. Credit cannot be earned for this course and STAT 1051, STAT 1111, STAT 1127.

STAT 1099. Variable Topics. 1-36 Credits.**STAT 1111. Business and Economic Statistics I. 3 Credits.**

Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression. Credit cannot be earned for this course and STAT 1051, STAT 1053, STAT 1127.

STAT 1127. Statistics for the Biological Sciences. 3 Credits.

Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal. Data analysis, inference, and experimental design. Credit cannot be earned for this course and STAT 1051, STAT 1053, STAT 1111.

STAT 1129. Introduction to Computing. 3 Credits.

Introduction to elements of computer programming and problem-solving using a computer programming language. Hands-on experience is acquired through computer programming projects, including some simple statistical applications.

STAT 2000. Sophomore Colloquium. 3 Credits.

Sophomore colloquia are small, seminar-type classes that deeply engage CCAS second-year students in a discipline, focus on a narrow issue of high interest and impact, and require independent research projects. May be repeated provided topic differs. Consult the Schedule of Classes for more details. Restricted to CCAS sophomores.

STAT 2112. Business and Economic Statistics II. 3 Credits.

Continuation of STAT 1111. Emphasis on techniques of regression, chi-square, nonparametric inference, index numbers, time series, decision analysis, and other topics relevant to economics and business. Prerequisites: STAT 1051 or STAT 1053 or STAT 1111.

STAT 2118. Regression Analysis. 3 Credits.

Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisites: STAT 1051, 1053 and STAT 1111.

STAT 2123. Introduction to Econometrics. 3 Credits.

Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisites: ECON 1011 or HONR 2043; and ECON 1012 or HONR 2044; and MATH 1221 or MATH 1231; and STAT 1051 or STAT 1053 or STAT 1111. Same As: ECON 2123.

STAT 2183. Intermediate Statistics Lab/Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Prerequisites: An introductory statistics course.

STAT 2183W. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisites: An introductory statistics course.

STAT 3099. Variable Topics. 1-12 Credits.**STAT 3119. Analysis of Variance. 3 Credits.**

Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: STAT 2118.

STAT 3187. Introduction to Sampling. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051 .

STAT 3187W. Introduction to Sampling. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistate designs; control of sampling and non-sampling errors. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: STAT 1051. Same As: STAT 3187.

STAT 4157. Introduction to Mathematical Statistics I. 3 Credits.

Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Prerequisite: MATH 1232 .

STAT 4158. Introduction to Mathematical Statistics II. 3 Credits.

Continuation of STAT 4157. Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisite: MATH 1232 .

STAT 4181. Applied Time Series Analysis. 3 Credits.

Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using statistical software. Prerequisites: STAT 4157 and STAT 4158 or STAT 2118.

STAT 4188. Nonparametric Statistics Inference. 3 Credits.

Statistical inference when the form of the underlying distribution is not fully specified. Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: STAT 1051.

STAT 4189. Mathematical Probability and Applications I. 3 Credits.

Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4190. Mathematical Probability and Applications II. 3 Credits.

Continuation of STAT 4189. Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: MATH 1232 .

STAT 4195. Reading and Research. 1-12 Credits.

May be repeated once for credit. Permission of the department chair required prior to enrollment.

STAT 4197. Fundamentals of SAS Programming for Data Management. 3 Credits.

Fundamentals of Statistical Analysis System (SAS) software for data management, statistical analysis, and report writing; data modification, programming, file handling, and macro writing. Students are expected to have knowledge of computer programming and to have completed an introductory statistics course. Credit cannot be earned for both STAT 4197 and STAT 6197.

STAT 4198. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

STAT 5099. Variable Topics. 1-99 Credits.**STAT 6104. Statistics in Management, Administration, and Policy Studies. 3 Credits.**

Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. May not be taken by graduate students in statistics.

STAT 6197. Fundamentals of SAS Programming for Data Management. 3 Credits.

Fundamentals of Statistical Analysis System (SAS) software for data management, statistical analysis, and report writing. Data modification, programming, file handling, and macro writing. Recommended background: An introductory statistics course and knowledge of computer programming. Credit cannot be earned for this course and STAT 4197.

STAT 6201. Mathematical Statistics I. 3 Credits.

Basic Probability theory, Random variables and transformations, Common families of distribution, Conditional expectations and distributions, Bivariate and Multivariate distributions and transformations, Sampling distributions. Prerequisites: MATH 2233 and MATH 2184.

STAT 6202. Mathematical Statistics II. 3 Credits.

Continuation of STAT 6201. Order Statistics, Convergence concepts, Sufficient and Complete statistics, Likelihood Principle, Point and Interval Estimation, Hypothesis Testing, Bayesian Tests and Intervals. Prerequisites: MATH 2233, MATH 2184 and STAT 6201.

STAT 6207. Methods of Statistical Computing I. 3 Credits.

Error analysis, computational aspects of linear models, sweep operator, random number generation, simulation, resampling. Optimization, numerical integration (Gaussian quadrature, Simpson's rule); E-M algorithm. Prerequisites: STAT 2118, STAT 4157 and STAT 4158; and MATH 2184; and knowledge of a programming language.

STAT 6208. Methods of Statistical Computing II. 3 Credits.

Numerical linear algebra, matrix decomposition and eigenvalue problems. Smoothing and density estimation. Graphics, interactive and dynamic techniques for data display. Object-oriented programming. Prerequisites: STAT 2118, STAT 4157 and STAT 4158; and MATH 2184; and knowledge of a programming language.

STAT 6210. Data Analysis. 3 Credits.

Review of statistical principles of data analysis, using computerized statistical procedures. Multiple regression and the general linear model, analysis of contingency tables and categorical data, logistic regression for qualitative responses. Prerequisites: STAT 2118 or STAT 4157 or STAT 6201; and STAT 2183.

STAT 6213. Intermediate Probability and Stochastic Processes. 3 Credits.

Discrete and continuous random variables and their distributions, conditional distributions and conditional expectation, generating functions and their applications, convergence of random variables; introduction to Brownian motion, homogeneous and nonhomogeneous Poisson processes and martingales. Prerequisites: STAT 6201 and STAT 6202.

STAT 6214. Applied Linear Models. 3 Credits.

Introduction to regression techniques for discrete and continuous response variables. The course includes a computing component using SAS and S> Prerequisite: MATH 2233 and MATH 2184.

STAT 6215. Applied Multivariate Analysis I. 3 Credits.

Statistical analysis of several variables, possibly dependent, following a joint normal distribution. matrix algebra and random vectors, multivariate sample geometry, multivariate normal distribution, inferences about a mean vector, and comparisons of several population means. Applications of multivariate techniques to the analysis of data from the behavioral, social, medical, and physical sciences. Prerequisites: STAT 4157 and STAT 4158; and MATH 2184.

STAT 6216. Applied Multivariate Analysis II. 3 Credits.

Continuation of STAT 6215. Statistical analysis of random vectors, following a multivariate normal distribution. multivariate linear regression models, principal components, factor analysis, inference for structured covariance matrices, canonical correlations, discrimination and classification, clustering and distance methods. Applications of multivariate techniques to the analysis of data from the behavioral, social, medical, and physical sciences. Prerequisites: STAT 3119, STAT 4157 and STAT 4158; and MATH 2184.

STAT 6217. Design of Experiments. 3 Credits.

Design and analysis of single- and multiple-factor experiments. Includes block designs, repeated measures, factorial and fractional factorial experiments, response surface experimentation. Prerequisites: STAT 4157 and STAT 4158; and MATH 2184.

STAT 6218. Linear Models. 3 Credits.

Theory of the general linear parametric model. Includes least squares estimation, multiple comparisons procedures, variance components estimation. Prerequisites: STAT 6201, STAT 6202, STAT 2118 and MATH 2184.

STAT 6223. Bayesian Statistics: Theory and Applications. 3 Credits.

An overview of Bayesian statistics, including its foundational issues, decision under uncertainty, linear models, expert opinion, and computational issues. Prerequisites: STAT 6201 and STAT 6202.

STAT 6225. Longitudinal Data Analysis. 3 Credits.

Introduction to the statistical models, estimation methods, and inferences for the analysis of longitudinal data; modern methods for the analysis of repeated measures as well as parametric and nonparametric regression models for longitudinal analysis. Restricted to master of science and doctoral program candidates. Prerequisites: Stat 2118, Stat 6201 and Stat 6202.

STAT 6227. Survival Analysis. 3 Credits.

Parametric and nonparametric methods for the analysis of events observed in time (survival data), including Kaplan-Meier estimate of survival functions, logrank and generalized Wilcoxon tests, the Cox proportional hazards model and an introduction to counting processes. Prerequisites: STAT 6201 and STAT 6202; or permission of the instructor.

STAT 6231. Categorical Data Analysis. 3 Credits.

A study of the theoretical bases underlying the analysis of categorical data. Measures and tests of association; Mantel-Haenszel procedure; weighted least squares and maximum likelihood estimators in linear models; generalized linear models including Poisson and logistic regression models, generalized estimating equations; random effects models. Prerequisites: Graduate level mathematical statistics courses - STAT 6201 and STAT 6202. Recommended background: Courses in Mathematical Statistics and Linear Models.

STAT 6233. Questionnaire Design. 3 Credits.

Questionnaire development from the perspective of cognitive techniques. Questionnaire issues range from choosing the mode of data collection (mail, telephone, or in-person) to selecting the respondent to the differences between asking attitude and factual questions. Pretesting the instrument chosen.

STAT 6234. Intermediate Statistical Laboratory: Statistical Computing Packages. 3 Credits.

Application of program packages (e.g., SAS, SPSS) to the solution of one-, two- and k-sample parametric and nonparametric statistical problems. Basic concepts in data preparation, modification, analysis and interpretation of results. This course is specifically designed for SDDA program
Prerequisites: An introductory statistics course.

STAT 6236. Applied Sampling Techniques. 3 Credits.

Problems of sampling and sample design. Simple random, stratified, systematic, cluster, and multistage designs; control of sampling and non-sampling errors. Prerequisite: STAT 1051.

STAT 6238. Survey Management. 3 Credits.

Tools used in the management of a survey operation from the initial customer contacts through training, fieldwork, data processing, data analysis, report writing, and presentation of results. Issues in budgeting, staffing, and scheduling, with emphasis on quality management.

STAT 6240. Statistical Data Mining. 3 Credits.

Introduction to basic data mining concepts and techniques for discovering interesting patterns hidden in large-scale data sets, focusing on issues relating to effectiveness and efficiency. Students are expected to be familiar with R programming. Restricted to statistics majors or with the permission of the instructor. Prerequisites: STAT 6201, STAT 6202, and STAT 6214 or equivalents. Recommended background: coursework in mathematical statistics, applied linear models, and multivariate statistics.

STAT 6242. Modern Regression Analysis. 3 Credits.

Methodology, major software tools and applications of modern nonparametric methods. Regularized regression: shrinkage, ridge and lasso; nonparametric regression: kernels and splines; nonparametric classification: K-Nearest Neighbors and Decision Trees; resampling methods: bootstrap, boosting and bagging. Prerequisites: STAT 6201 or STAT 6202 or STAT 6214 or STAT 6218.

STAT 6245. Statistical Consulting. 3 Credits.

This course focuses on the following themes: (i) understanding the statistical consulting process; (ii) developing effective verbal and written communication skills; (iii) comprehending consulting environments in different industries; and (iv) obtaining consulting experience through case studies. Prerequisites: STAT 6201, STAT 6202, STAT 6214 and STAT 6215. Recommended background: second-year status in the graduate statistics or biostatistics program.

STAT 6252. Statistical Methods in Bioinformatics and Computational Biology. 3 Credits.**STAT 6253. Legal Statistics. 3 Credits.****STAT 6254. Statistical Genetics. 3 Credits.**

Theories of population genetics and Mendelian genetics, Hardy-Weinberg equilibrium and linkage disequilibrium, statistical software (R or SAS) for linkage analysis and association analysis, research in statistical genetics. Prerequisites: STAT 6201 and STAT 6202.

STAT 6255. Clinical Trials. 3 Credits.

Introduction to the design and analysis of clinical trials. Clinical trials as a tool for medical research; phases and endpoints; the role of randomization, power, and sample size; statistical analysis of data; interim analysis and data monitoring. Recommended background: Knowledge of basic design of experiments, mathematical statistics (probability and inference), and familiarity with R and SAS.

STAT 6287. Sample Surveys. 3 Credits.

Application of statistical theory to the sampling of finite populations. Simple, stratified, cluster, double and subsampling. Special topics, including super-populations and randomized response. Prerequisites: STAT 4157 and STAT 4158.

STAT 6289. Topics in Statistics. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

STAT 6290. Principles of Demography. 3 Credits.

Introduction to basic demographic perspectives and data; methods for analysis of population size, distribution, and composition; determinants and consequences of population trends. Departmental prerequisite waived. Same as ECON 6290.

STAT 6291. Methods of Demographic Analysis. 3 Credits.

Basic methods for analysis of mortality, natality, and migration; population estimates and projections; estimation of demographic measures from incomplete data. Departmental prerequisite waived. Same as ECON 6291.

STAT 6295. Reading and Research. 3 Credits.

May be repeated once for credit.

STAT 6298. Seminar: Special Topics. 3 Credits.**STAT 6998. Thesis Research. 3 Credits.****STAT 6999. Thesis Research. 3 Credits.****STAT 8226. Advanced Biostatistical Methods. 3 Credits.**

Statistical methods for the analysis of longitudinal data: nonparametric, fixed effects, mixed effects, generalized estimating equations. Methods for the analysis of emerging data: group sequential analysis, Brownian motion, Bayesian methods, and stochastic curtailment. Other advanced topics of current research in biostatistics. Prerequisites: STAT 6201 and STAT 6202; or permission of the instructor.

STAT 8257. Probability. 3 Credits.

Probabilistic foundations of statistics, probability distributions, random variables, moments, characteristic functions, modes of convergence, limit theorems, probability bounds. Prerequisites: STAT 6201 and STAT 6202; and knowledge of calculus through functions of several variables and series.

STAT 8258. Distribution Theory. 3 Credits.

Special distributions of statistics, small and large sample theory, order statistics, and spacings. Prerequisite: STAT 8257.

STAT 8259. Advanced Probability. 3 Credits.

Conditional expectation and martingales; weak convergence in general metric spaces and functional central limit theorems for i.i.d. random variables and martingales; applications to biostatistics. Prerequisite: STAT 8257 or an equivalent measure-theoretic introduction to probability.

STAT 8262. Nonparametric Inference. 3 Credits.

Inference when the form of the underlying distribution is unspecified. Prerequisites: STAT 6201 and STAT 6202.

STAT 8263. Advanced Statistical Theory I. 3 Credits.

Decision theoretic estimation, classical point estimation, hypothesis testing. Prerequisites: STAT 6201 and STAT 6202.

STAT 8264. Advanced Statistical Theory II. 3 Credits.

Asymptotic theory, hypothesis testing, confidence regions. Prerequisites: STAT 8257 and STAT 8263.

STAT 8265. Multivariate Analysis. 3 Credits.

Characterization and properties of the multivariate normal distribution, conditional distributions, multiple correlation, partial correlation, estimation of the mean vector and the covariance matrix, Wishart and Hotelling distributions and applications to hypothesis testing, discrimination, classification, and principle component analysis. Prerequisites: STAT 6201 and STAT 6202.

STAT 8266. Topics-Multivariate Analysis. 3 Credits.

Multivariate analysis of variance, principal component analysis, canonical correlation, factor analysis. Prerequisites: STAT 6201, STAT 6202 and STAT 8265.

STAT 8271. Foundational and Philosophical Issues in Statistics. 3 Credits.

Axiomatic underpinnings of Bayesian statistics, including subjective probability, belief, utility, decision and games, likelihood principle, and stopping rules. Examples from legal, forensic, biological, and engineering sciences. Students are expected to have a background in computer science, economics, mathematics, or operations research. Prerequisites: STAT 6201 and STAT 6202.

STAT 8273. Stochastic Processes I. 3 Credits.

Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201 and STAT 6202.

STAT 8274. Stochastic Processes II. 3 Credits.

Continuation of STAT 8273. Fundamental notions of Markov chains and processes, generating functions, recurrence, limit theorems, random walks, Poisson processes, birth and death processes, applications. Prerequisites: STAT 6201 and STAT 6202.

STAT 8281. Advanced Time Series Analysis. 3 Credits.

Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate and multivariate time series. Statespace or Kalman filter models, spectral analysis of multiple time series. Theory and applications using the University computer. Prerequisites: MATH 2233, STAT 6201 and STAT 6202.

STAT 8288. Topics in Sample Surveys. 3 Credits.

Advanced topics and research in sample surveys. Prerequisite: STAT 6287.

STAT 8289. Seminar. 3 Credits.

Admission by permission of instructor. May be repeated for credit provided the content differs.

STAT 8375. Econometrics I. 3 Credits.

Statistical foundations for econometrics; standard methods of estimation and inference for classical and generalized regression models. Same as ECON 8375.

STAT 8376. Econometrics II. 3 Credits.

Topics may include asymptotic theory, statistical endogeneity, instrumental variables estimation, discrete and limited dependent variable models, and time-series models. Same as ECON 8376. Prerequisite: STAT 8375.

STAT 8998. Advanced Reading and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

STAT 8999. Dissertation Research. 3-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

STRATEGIC MANAGEMENT AND PUBLIC POLICY (SMPP)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SMPP 1099. Variable Topics. 1-36 Credits.**SMPP 4900. Special Topics. 1-3 Credits.**

Experimental offering; new course topics and teaching methods.

SMPP 4900W. Special Topics. 3 Credits.

Topics vary by semester. May be repeated for credit provided topics differ. Consult the Schedule of Classes for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

SMPP 4995. Independent Study. 1-12 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit.

SMPP 5099. Variable Topics. 1-99 Credits.**SMPP 6201. Business and Public Policy. 3 Credits.****SMPP 6202. Business-Government Relations. 3 Credits.**

Historical and philosophical foundations of the business-government relationship. Regulation, international trade, and corporate political activities. Public policy issues facing business and the business community's political response.

SMPP 6203. Federal Government Regulation in Society. 3 Credits.**SMPP 6205. Business Representation and Lobbying. 3 Credits.**

Strategies, tactics, and techniques used by business in representing itself to the legislative and executive branches and regulatory agencies of the federal government. Legal and practical constraints. Ethical considerations.

SMPP 6206. Applied Microeconomics. 3 Credits.

Applications of economic theory to public and private decisions with emphasis on public policy analysis. Focus on market structure and its implications. Imperfect information, common property, public goods and externalities. Economic analysis of government behavior and legal institutions. Prerequisites: ECON 6217 or ECON 6219; and MBAD 6222.

SMPP 6207. Environment, Energy, Technology, and Society. 3 Credits.

The identification, examination, and evaluation of how environment, energy, and technology are interrelated and how these interactions influence policy formulation and implementation at the international, national, regional, industrial, and organizational levels. Same as PPPA 6067.

SMPP 6208. Macroeconomic Policy and Business. 3 Credits.

Determination of national income, employment, inflation, and interest rates. The role of expectations in the economy. Impact of government purchases, tax policy, and deficits. Monetary policy institutions. The global economy and exchange rates. Prerequisites: ECON 6218 or ECON 6219; and MBAD 6222.

SMPP 6209. Seminar: Business Economics and Public Policy. 3 Credits.

Analysis and discussion of selected issues by students and representatives of government and business. Prerequisite: SMPP 6202 or MBAD 6284.

SMPP 6210. Strategic Environmental Management. 3 Credits.

Examination and analysis of the orientation and actions of private, public, and nonprofit sectors in relation to their natural environments. Emphasis on organizational interaction and effectiveness, particularly regarding business firms and industry, on issues of environmental quality and sustainability.

SMPP 6211. Corporate Environmental Management in Developing Nations. 3 Credits.**SMPP 6212. Business Law: Enterprise Org. 3 Credits.****SMPP 6213. Management of Strategic Issues. 3 Credits.**

The body of management theory and practice that has evolved to identify, analyze, and resolve strategic organizational issues. Methodology of the field; applications to critical issues in labor relations, energy and pollution, marketing and consumerism, business-government relations, and the global economy.

SMPP 6214. Consultative Processes. 3 Credits.

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as TSTD 6214.

SMPP 6215. Corporate Governance and Ethics. 3 Credits.

The theory, practice, and public policy environment of corporate governance. Purpose, functioning, and responsibilities of boards of directors. Power, control, and compensation of corporate management. Shareholders and stakeholders. Corporate governance in comparative national settings. Same as ACCY 6801.

SMPP 6216. Public Policy, Governance, and the Global Market. 3 Credits.

The socioeconomic foundations of government regulation and public policy cooperation for the governance of firms, markets and globalization. The evolution of national, transatlantic and multilateral frameworks for market and civil society governance, international competition policy cooperation, regulatory harmonization and industry standards. (Same as PPPA 6018).

SMPP 6218. Topics in Business and Society. 3 Credits.

Business engagement in policy making bodies through business organizations. Topics vary by semester. See department for more details.

SMPP 6241. Global Corporate Responsibility. 3 Credits.**SMPP 6271. Corporate Environmental Management and Policy. 1.5 Credit.****SMPP 6290. Special Topics. 3 Credits.**

Experimental offering; new course topics and teaching methods. May be repeated once for credit. Same As: ACCY 6900.

SMPP 6291. Ethics and Business. 3 Credits.

An in-depth, comprehensive exploration, analysis, and evaluation of specific for profit and nonprofit organization values, approaches, and outcomes related to multiple ethical ideals, systems, and practices.

SMPP 6292. Co-Curricular Activities in Responsible Management. 0 Credits.

Required for students in the graduate certificate in responsible management program. Students complete a project or case study on a relevant topic with an organization or faculty member; attend and submit written reports on a series of seminars, panel discussions, or other pre-approved events related to responsible management; and complete designated community service hours. Restricted to students in the graduate certificate in responsible management program.

SMPP 6293. American Business History. 3 Credits.

The history of American business institutions in manufacturing, distribution, transportation, and finance. Particular attention is given to the period since industrialization, with consideration of business institutions in their economic, legal, governmental, and social contexts. (Same as HIST 6322).

SMPP 6295. Intern Qual&Quant Analysis. 3 Credits.**SMPP 6297. International Management Experience. 1.5-4.5 Credits.**

Same as FINA/IBUS/Mgt/Mktg 6297. May be repeated for credit.

SMPP 6298. Directed Readings and Research. 1-6 Credits.

Supervised readings or research. Admission by prior permission of instructor. May be repeated once for credit.

SMPP 6299. Thesis Seminar. 3 Credits.**SMPP 6999. Thesis Research. 3 Credits.****SMPP 8311. Seminar: Public-Private Sector Institutions and Relationships. 3 Credits.**

An analysis and critique of alternative theoretical frameworks for describing, understanding, and predicting the nature, values, and actions of American public and private institutions. Problems, potentials, and alternatives for structuring public and private institutional arrangements to meet the needs of society. Restricted to doctoral candidates. Credit cannot be earned for this course and PPPA 8111.

SMPP 8321. Seminar in Strategic Management. 3 Credits.

Develops understanding of the major research streams in strategic management; exposure to theoretical research frameworks and methodological issues and approaches.

SMPP 8331. Doctoral Seminar. 3 Credits.

Designing sound theory-based, empirical research projects for the study of questions relevant to the field of strategic management.

SMPP 8391. Seminar: Business Management. 3 Credits.

Examination of major current issues, both theoretical and empirical, affecting the development of the business enterprise. Topics to be announced. Emphasis on policy and strategic issues affecting the total enterprise. (Offered as the demand warrants).

SMPP 8998. Advanced Readings and Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates preparing for the general examination.

SMPP 8999. Dissertation Research. 1-12 Credits.

May be repeated for credit. Restricted to doctoral candidates.

SUSTAINABILITY (SUST)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

SUST 1001. Introduction to Sustainability. 3 Credits.

The concept of sustainability is both broad and specific as it is applied to areas ranging from social systems to law, engineering, public health, and natural systems. The course considers goals, principles, and practical applications, with a multidisciplinary perspective on major environmental and social issues growing out of these concerns.

SUST 1099. Variable Topics. 1-36 Credits.**SUST 2002. The Sustainable City. 3 Credits.**

This course explores the connection between cities and sustainability. We consider sustainability from a variety of theoretical and practical perspectives and examine some of the most pressing and critical issues that must be addressed in order to create a sustainable city.

SUST 3003. World on a Plate. 3 Credits.

How dietary choices affect not just health, but the environment and those involved in the production of food as well; interdisciplinary perspective on the impact of food on the future of the environment, the economy, and society. Recommended background: Prior completion of SUST 1001.

SUST 3096. Research in Sustainability. 1-3 Credits.

Directed research under faculty supervision. The faculty member directing the research assigns work, such as papers and assigned reading, as appropriate. Prerequisites: SUST 1001.

SUST 3097. Culminating Experience in Sustainability. 3 Credits.

A paid or unpaid internship, fieldwork, directed research, or community service with an organization engaged in two or more of the three major goals of sustainability: economic development, social equality, or environmental protection. Students complete a series of reflection essays, career preparations, and other assignments throughout the semester. Some study abroad programs and some research or service courses at GW can be used to fulfill the outside work requirement for SUST 3097, but students may still be asked to register for 1 credit of SUST 3097 to complete the reflective essays, career preparations, and/or outreach assignments. These special arrangements must be approved in advance by the director of the minor. Prerequisites: SUST 1001.

SUST 5099. Variable Topics. 1-99 Credits.

TOURISM STUDIES (TSTD)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TSTD 1099. Variable Topics. 1-36 Credits.**TSTD 3001. Introduction to Tourism and Hospitality Management. 3 Credits.**

Historical overview and survey of the tourism and hospitality industry, with emphasis on the travel market, delivery of hospitality services, professional roles, and emerging trends.

TSTD 3002. Passenger Transportation System. 3 Credits.

Survey of passenger transportation modes. Emphasis on airline operations, marketing communications, and distribution channels.

TSTD 3101. Sport and Event Business Management. 3 Credits.

An overview of business opportunities related to sport and events. Emphasis on sport and event facilities and event management; product manufacturing, merchandising, and licensing; media and publications; and athlete representation.

TSTD 3102. Sport and Event Marketing. 3 Credits.

Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BADM 3401. Same As: TSTD 3102W.

TSTD 3102W. Sport and Event Marketing. 3 Credits.

Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Prerequisite: BADM 3401. Same As: TSTD 3102.

TSTD 3301. Hospitality Industry Management. 3 Credits.

Overview of the basic principles and practices involved in the management, operation, marketing, and financing of hotels, restaurants, and other hospitality goods and services.

TSTD 3302. Financial Management in Tourism and Hospitality. 3 Credits.

Basic principles of planning and managing tourism resources, developments, and facilities in relation to investment constraints and opportunities. Financial monitoring and control of hospitality facilities and related leisure services. Prerequisite: BADM 3501.

TSTD 3303. International Experiences. 1-6 Credits.

Travel to another country for study of a specific topic. May be repeated for credit with permission of the advisor.

TSTD 4101. Issues in Sport and Event Management. 3 Credits.

A discussion of policies, procedures, organizational structures, issues, and trends in sport and events, from amateur to professional.

TSTD 4102. Practicum. 1-3 Credits.

Fieldwork, internship, and/or instructional practice, including conference and/or seminar. Admission by permission of instructor. May be repeated once for credit with permission of advisor.

TSTD 4301. Travel Marketing Communication. 3 Credits.

Review of basic advertising, public relations, and sales techniques, applied to the tourism and hospitality industry. Current practices and case studies.

TSTD 4301W. Travel Marketing Communications. 3 Credits.

Introduction to current marketing communication theories and strategies used by destination marketing organizations. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

TSTD 4900. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

TSTD 4995. Independent Study. 1-3 Credits.

Assigned topics. Permission of the advisor required prior to enrollment. May be repeated once for credit.

TSTD 5099. Variable Topics. 1-99 Credits.**TSTD 6214. Consultative Processes. 1-6 Credits.**

Theories and methods of planning, introducing, and coping with change in management through the helping process. Intended both for managers seeking an understanding of the consultative approach to planned change and for persons in staff or consultative roles seeking understanding of the consultative process. Same as SMPP 6214.

TSTD 6220. International Hospitality Management. 3 Credits.

The study of multinational hospitality operations, with emphasis on U.S. corporate involvement in and planning for overseas expansions. Political, economic, cultural, financial, and legal aspects inherent in the international business environment.

TSTD 6221. Hospitality Market Analysis. 3 Credits.

Analysis of market demand and industry supply for accommodation in a tourism destination; valuation methods for determining market value of hospitality projects; project management for hospitality development.

TSTD 6230. Organization and Management of Airlines. 3 Credits.

Overview of domestic and international passenger air transportation systems. Analysis of planning, financing, operating, marketing, and evaluating airline transportation systems. Legal and regulatory aspects of airline operations. Development of infrastructure and related support services.

TSTD 6249. Sustainable Destination Development. 3 Credits.

Relationship of tourism and sustainable development; specific emphasis on cultural, environmental, and economic impacts and trends.

TSTD 6250. Destination Management. 1.5 Credit.

Organization and management concepts, theory, and issues, stressing application of theory through analysis of case examples drawn from the tourism and hospitality industry. Prerequisite: TSTD 3001 .

TSTD 6251. Applied Quantitative Methods. 3 Credits.

Application of quantitative methods to tourism, hospitality, sport, event, or related management. Procedures and methodology for collecting data, summarizing, analyzing, interpreting, drawing conclusions and making decisions based on data.

TSTD 6260. Tourism Economics. 3 Credits.

Tourism development approaches, contexts, and consequences for local, regional, and national destinations; evaluation of tourism as an economic activity; and economic aspects of strategic options in tourism development. Recommended background: Basic understanding of macroeconomics and microeconomics.

TSTD 6261. Tourism Policy and Planning. 3 Credits.

Critical analysis and evaluation of tourism policy and planning globally using perspectives of public and private sector stakeholders; historical review, case studies, and recent examples of destination and national developments. Recommended background: Prior coursework in business, tourism, international affairs, or hospitality management is beneficial, but not required.

TSTD 6262. Tourism Policy Analysis. 1.5 Credit.

Components of tourism policy, including development of tools for tourism policy analysis and description of tourism organizations in the government and private sector.

TSTD 6263. Destination Marketing. 3 Credits.

Concepts and techniques employed in marketing tourism industry services and development of the annual marketing plan.

TSTD 6264. Sport Marketing. 3 Credits.

Application of marketing theories to sport and events; case examples of marketing athletes, teams, facilities, sport products and organizations, as well as using sport or events as a marketing tool for products; writing sponsorship and endorsement proposals and incorporating sport into an integrated marketing plan.

TSTD 6265. Sport Law: Contracts and Negotiations. 3 Credits.

Examination of legislation and specific case law as related to professional and amateur athletes, sport events, licensed merchandise, broadcast and sponsorship rights. Topics include labor and anti-trust law; contract negotiation, specifications, and interpretation.

TSTD 6266. Sport and Event Facility Management. 3 Credits.

Financing, market analysis, design, operations, and marketing of sport and event facilities from stadiums and arenas to amphitheaters and convention centers.

TSTD 6267. Sport Media and Communications. 3 Credits.

Concepts and practices of sport public relations, media relations and management, the Internet, and other media utilized in sports. Press releases, publications, crisis management, and press operations.

TSTD 6270. Research Methods and Applications. 3 Credits.

Survey research methods and qualitative research methods and their applications to tourism, hospitality, sport, event, or related management. Previous coursework in business, tourism, development, or hospitality management; prior completion of TSTD 6251 also is useful.

TSTD 6276. Risk Management for Events and Meetings. 3 Credits.

Risk and liability issues that may arise in the planning and management of events, meetings, conventions, and exhibitions. Preventative and responsive measures designed to minimize adverse impacts on event stakeholders.

TSTD 6277. Event Management. 3 Credits.

An introduction to the theoretical and practical foundations of event management. Fundamentals of planning, budgeting, and evaluating events. Restricted to students in the MTA program or with permission of the instructor.

TSTD 6278. Conference and Exposition Management. 3 Credits.

Site selection, program planning and management, exhibits, selection and use of facility, volunteers, and budget management.

TSTD 6279. Event Entertainment Management. 3 Credits.

Event entertainment, including designing and planning the entertainment component of an event, as well as managing and marketing entertainers in an event context.

TSTD 6280. Advanced Workshop. 1-6 Credits.

Workshops with emphasis on contemporary issues and opportunities; development of advanced professional competencies. May be repeated for credit with permission of advisor.

TSTD 6282. International Experiences. 1-6 Credits.

Travel to another country for study of specific topics. May be repeated for credit with approval of advisor.

TSTD 6283. Practicum. 1-3 Credits.

For graduate students enrolled in a degree program or field offered through the department. Fieldwork, internship, and/or instructional practice, including conference and/or seminar. May be repeated once for credit with permission of advisor.

TSTD 6290. Special Topics. 1-3 Credits.

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

TSTD 6293. Independent Study. 1-6 Credits.**TSTD 6296. Hospitality Digital Marketing Strategies. 3 Credits.**

Current digital marketing strategies including social media marketing, search engine optimization, email marketing, and paid search marketing.

TSTD 6297. Advanced Topical Studies. 3 Credits.

Required capstone experience for tourism administration students who do not select the thesis option. Analysis of case situations involving policy formulation or management decision making; emphasis on applied strategic planning and management approaches.

TSTD 6298. Directed Reading and Research. 1-3 Credits.

Supervised readings or research. Permission of the instructor required prior to enrollment. May be repeated for credit.

TSTD 6998. Thesis Research. 3-6 Credits.**TSTD 6999. Thesis Research. 3 Credits.**

TRANSLATIONAL HEALTH SCIENCES (THS)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

THS 6101. Survey of Advanced Quantitative Methods for Health Services and Outcomes Research. 3 Credits.

Introduction of advanced quantitative methods frequently adopted for health services and outcomes research. Restricted to students in the graduate certificate in health services and outcome research program or with permission of the instructor. Prerequisites: HSCI 6263 and HSCI 6270.

THS 6102. Decision Making and Economic Evaluation in Health Care. 3 Credits.

Basic principles of economic evaluation methods. Familiarity with basic algebra is assumed. Restricted to students in the graduate certificate in health services and outcome research program or with the permission of the instructor. Prerequisites: HSCI 6263 and HSCI 6270.

THS 8101. Foundations in Translational Health Sciences. 3 Credits.

The study of translational research, implementation and dissemination science, and collaboration and team science within the context of current health legislation. Restricted to students in the PhD in translational health sciences program or with permission of the instructor.

THS 8103. Principles of Collaboration and Team Science. 3 Credits.

Foundational and practical principles of collaboration and team science. Restricted to students in the doctorate in occupational therapy and the PhD in the field of translational health sciences degree programs or with instructor's permission. Credit cannot be earned for this course and HSCI 6285.

THS 8105. Translational Health Sciences in Complex Health Systems. 3 Credits.

An analysis of health systems as complex adaptive systems, including barriers, facilitators, and opportunities for change and innovation. Restricted to PhD in the field of translational health sciences degree candidates; instructor's permission may be substituted.

THS 8107. Program Theory and Health Innovations. 3 Credits.

Program theory as the basis for designing health and educational innovations that can be tested using scientific methods, replicated in practice, and used to inform policy. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission. Credit cannot be earned for this course and OT 8274.

THS 8109. Implementation Science and Innovation Leadership. 3 Credits.

Introduction to implementation science, the study of processes affecting uptake of evidence into healthcare, with emphasis on innovation leadership for systemic change. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8121. Advanced Study Design for Translational Research. 3 Credits.

Advanced measurement and design topics needed for translational health science research. Restricted to students in the PhD in translational health sciences degree program in good standing or with the permission of the instructor.

THS 8123. Qualitative Methods in Translational Health Sciences. 3 Credits.

Qualitative methods and designs applicable to translational health science research problems; qualitative epistemology, methods, data collection, and data analysis. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission.

THS 8125. Advanced Statistical Methods for Clinical and Translational Research. 3 Credits.

Advanced data management and analytic techniques required for testing hypotheses in translational health research. Restricted to students in the PhD in translational health sciences degree program in good standing or with the permission of the instructor. Recommended background: Completion of graduate-level courses in epidemiology and biostatistics.

THS 8127. Systematic Reviews of Health Care Innovations. 3 Credits.

Students refine skills in developing a systematic review of the literature for healthcare innovations, including interventions, educational programs, and products. Restricted to students in the PhD in translational health sciences program or with permission of the instructor. Recommended background: Experience in quantitative research design.

THS 8201. Learning Theory and Models for Knowledge Translation in Health Systems I. 3 Credits.

Introduction to the theories and models of learning and knowledge translation to facilitate behavior change. Restricted to students in the PhD in translational health sciences degree program in good standing.

THS 8202. Knowledge Translation in Complex Health Systems. 3 Credits.

Theories, frameworks and models of knowledge translation used to facilitate knowledge use and change in complex health systems. Prerequisites: students in the PhD in translational health sciences program or with the approval of the instructor.

THS 8203. Bioethical Implications of Health Research. 3 Credits.

Role of ethics theories and bioethics principles in health research. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission. Credit cannot be earned for this course and MLS 6244.

THS 8205. Learning Theory and Models for Knowledge Translation in Health Systems II. 3 Credits.

Application of theories and models of learning and knowledge translation to the design and evaluation of interventions for learning and behavior change. Restricted to students in the PhD in translational health sciences degree program in good standing. Recommended background: Completion of THS 8201.

THS 8206. Translating Literature for Interdisciplinary Scholarship. 3 Credits.

The processes and methods for translating scholarly research to an interdisciplinary stakeholder group. Restricted to students in the PhD in the translational health sciences program or with the instructor's approval.

THS 8212. Teaching Strategies in the Health Professions. 3 Credits.

Teaching skills pertinent to the delivery of education in health professions. Course design illustrates teaching and learning practices grounded in andragogy, contributing to curriculum program objectives of enhancing teaching skills. Permission of the instructor is required prior to enrollment. Restricted to SMHS students. Credit cannot be earned for this course and HSCI 6212.

THS 8214. Information Literacy for Health Professionals. 3 Credits.

Enhancement of critical thinking abilities related to use of the literature to engage in a rigorous review of knowledge and evidence in self-identified translational health topic area. Permission of the instructor is required prior to enrollment. Restricted to students in the PhD in translational health sciences degree program or with the permission of the instructor. Recommended background: Basic skills in literature review.

THS 8221. Mixed Methods Research in Translational Health Sciences. 3 Credits.

Use of mixed methods as a legitimate design tradition to address translational research questions. Restricted to students in the PhD in translational health sciences degree program in good standing or with instructor's permission. Credit cannot be earned for this course and OT 8272.

THS 8223. Advanced Qualitative Methods. 3 Credits.

Data collection, management, analysis, and interpretation. Practical skill building in qualitative methods, with a particular focus on participatory action research and discourse analysis. Restricted to doctoral students in good standing in the translational health sciences program or in other GW doctoral programs with the instructor's approval. Prerequisites: Prior completion of 3 credits in an introductory qualitative methods course.

THS 8225. Grounded Theory Research. 3 Credits.

Introduction to grounded theory research, a qualitative research method reflected in social constructivism. Application of methods and techniques frequently used in such research; designing elements of a grounded theory study. Restricted to doctoral students in good standing in the translational health sciences program or in other GW doctoral programs with the instructor's approval. Prerequisites: Prior completion of 3 credits in an introductory qualitative methods course.

THS 8227. Survey Methods for Translational Health Sciences. 3 Credits.

Theory and practices behind survey research design, and application of this methodology to translational health science. Restricted to students in the PhD in translational health sciences program or with the instructor's approval.

THS 8961. Proposal Defense Preparation. 3 Credits.

PhD students prepare for successful completion of the proposal defense and dissertation process. Restricted to Candidates who have successfully passed comprehensive examinations.

THS 8992. Directed Study. 1 Credit.

May be repeated for credit. Restricted to students in the PhD in translational health sciences degree program.

THS 8996. Dissertation Seminar I. 3 Credits.

First in a three-course series. Candidates for the PhD in translational health sciences degree begin work on their dissertation. Restricted to those who have successfully passed comprehensive examinations and defended their dissertation proposal. Prerequisites: THS 8961.

THS 8997. Dissertation Seminar II. 3 Credits.

Second in a three-course series. Candidates for the PhD in translational health sciences degree continue work on their dissertation. Restricted to those who have successfully passed comprehensive examinations and defended their dissertation proposal. Prerequisites: THS 8996.

THS 8998. Dissertation Seminar III. 3 Credits.

Third in a three-course series. Candidates for the PhD in translational health sciences degree continue work on their dissertation. Restricted to those who have successfully passed comprehensive examinations and defended their dissertation proposal.

TURKISH (TURK)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

TURK 1001. Beginning Turkish I. 4 Credits.

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

TURK 1002. Beginning Turkish II. 4 Credits.

Continuation of TURK 1001. Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

TURK 1099. Variable Topics. 1-36 Credits.**TURK 2001. Intermediate Turkish I. 4 Credits.**

Further development of speaking, understanding, reading, and writing skills of Modern Standard Turkish. Laboratory fee. Prerequisites: TURK 1001 and TURK 1002.

TURK 2002. Intermediate Turkish II. 4 Credits.

Continuation of TURK 2001. Further development of speaking, understanding, reading, and writing skills of Modern Standard Turkish. Laboratory fee. Prerequisites: TURK 1001 and TURK 1002.

TURK 3001. Advanced Turkish. 3 Credits.

This course is designated to develop proficiency in Turkish at the advanced level. Instruction and class activities are oriented toward proficiency goals. In-class practice requires extensive student involvement in interactive activities with peers as well as preparation and homework assignments outside of class. Students in this class are afforded the opportunity to improve their writing skill, learn and use Turkish connectors, to construct cohesive paragraphs. They are also able to practice, speaking, listening, and reading Turkish in a variety of contexts and situations that they likely encounter in Turkey.

TURK 3099. Variable Topics. 1-12 Credits.**TURK 3302. Media Turkish. 3 Credits.**

This course exposes students to various types of mass media available in Turkey. Through this exposure, students learn to analyze and use the Turkish language in step with the linguistic realities of contemporary Turkey. Newspapers and magazine articles are read and analyzed for style and organization, and their contents are debated and scrutinized for hidden biases. Newscasts include current events, news bulletin, interviews, and documentaries.

TURK 5099. Variable Topics. 1-99 Credits.

UNIVERSITY COURSES (UNIV)

UNIV 1005. Social Interactions. 3 Credits.

This interdisciplinary course uses the methods of inquiry and analysis from the social science disciplines in order to interrogate key issues of political behavior, cultural formation, human interaction and communication, as well as historical change. While specific topics will vary each semester, in all cases this course will require that students engage scholarly literature on the topic, conduct guided research on the topic, and write several papers. Restricted to First year students. Prerequisite: no. Recommended background: none.

UNIV 1006. Questions of Culture. 3 Credits.

This interdisciplinary course uses the methods of inquiry and analysis from the disciplines of the arts and humanities in order to interrogate key issues of artistic and symbolic expression, religious beliefs, philosophy, and historical change. While specific topics will vary each semester, in all cases this course will require that students engage scholarly literature on the topic, conduct guided research on the topic, and write several papers.

UNIVERSITY WRITING (UW)

Explanation of Course Numbers

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UW 1010. College Academic English. 3 Credits.

UW 1015. Writing Seminar Summer Scholars. 3 Credits.

UW 1020. University Writing. 4 Credits.

University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Developing strategies to draft and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. For topics see <https://writingprogram.gwu.edu/uw1020-courses>. Credit cannot be earned for this course and HONR 1015.

UW 1099. Variable Topics. 1-36 Credits.

UW 2020. Advanced Topics in Writing. 3 Credits.

For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions.

UW 2020W. Advanced Topics in Writing. 3 Credits.

For a variety of purposes and audiences, students frame scholarly research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately. Focus on the norms of writing in particular fields, including rhetorical approaches and stylistic conventions. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

UW 2031. Equality and the Law. 3 Credits.

Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms.

UW 2031W. Equality and the Law. 3 Credits.

Introduction to how lawyers and legal scholars research and write about specific disputes that arise in the context of complex social issues. The institutional assumptions about the content and style of legal writings. Briefs, legal memoranda, law review articles, resolutions, and many other specialized legal writing forms. Include a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

UW 2111. Preparation for Peer Tutors in Writing. 3 Credits.

For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students.

UW 2111W. Preparation for Peer Tutors in Writing. 3 Credits.

For undergraduate students accepted as tutors in the Writing Center. Study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Corequisite: UW 2112. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

UW 2112. Preparation for Peer Tutors in Writing Lab. 1 Credit.

Through required hours scheduled at the Writing Center, students observe and interview peer tutors and conduct peer tutoring sessions to gain experience working with a range of student texts from multiple disciplines across the University, assist peer writers working on a variety of genres, and develop writing consulting techniques from best practices in the field. Concurrent enrollment in UW 2111W is required. Restricted to undergraduate students accepted as tutors in the Writing Center.

UW 6213. Theory and Practice of Teaching Writing. 3 Credits.

VIETNAMESE (VIET)

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

VIET 1001. Beginning Vietnamese I. 4 Credits.

Fundamentals of grammar and pronunciation, with an introduction to reading and writing.

VIET 1002. Beginning Vietnamese II. 4 Credits.

Continuation of VIET 1001. Fundamentals of grammar and pronunciation, with an introduction to reading and writing.

VIET 1003. Intermediate Vietnamese I. 4 Credits.

Continuation of grammar, with emphasis on speaking, reading, and writing.

VIET 1004. Intermediate Vietnamese II. 4 Credits.

Continuation of VIET 2003. Continuation of grammar, with emphasis on speaking, reading, and writing.

VIET 1099. Variable Topics. 1-36 Credits.

VIET 3099. Variable Topics. 1-12 Credits.

VIET 5099. Variable Topics. 1-99 Credits.

WOMEN AND LEADERSHIP PROGRAM (WLP)

COURSES

Explanation of Course Numbers

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WLP 1020. Writing, Literature, and Society. 3 Credits.

Critical reading skills, concepts of disciplinary, and processes of producing and legitimating knowledge. Writing intensive. Texts and emphasis vary according to cohort. Restricted to students in the women's leadership program with the permission of the instructor.

WLP 1110. Women and Leadership Symposium (I). 1 Credit.

A weekly symposium that includes a wide variety of leadership-building workshops, cultural events of cross-disciplinary interest, and guest speakers.

WLP 1111. Women and Leadership Symposium (II). 1 Credit.

A weekly symposium that includes a wide variety of leadership-building workshops, cultural events of cross-disciplinary interest, and guest speakers.

WLP 4198. WLP Independent Study. 3 Credits.

WOMEN'S, GENDER, AND SEXUALITY STUDIES (WGSS)

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- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

WGSS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details.

WGSS 1020. Approaches to Women's History. 3 Credits.

Introduction to major methodological and conceptual debates in women's and gender history, focusing on the United States. (Same as HIST 1020).

WGSS 1099. Variable Topics. 1-36 Credits.

WGSS 2120. Introduction to Women's, Gender, and Sexuality Studies. 3 Credits.

Key concepts, theories, and perspectives in women's studies, placing women's experiences at the center of interpretation; historical and contemporary perspectives on women's lives, experiences, and thoughts and how gender interacts with race, class, religion, sexual orientation, culture, and politics. Same As: WGSS 2120W.

WGSS 2120W. Introduction to Women's, Gender, and Sexuality Studies. 3 Credits.

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women, gender and sexuality in different cultures. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: WGSS 2120.

WGSS 2121. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. (Same as ANTH 2501).

WGSS 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisites: WGSS 1020 or WGSS 2120. Same As: AMST 2125.

WGSS 2135. A Study of Women and Media. 3 Credits.

The role media plays in women's lives; limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film; how women have attempted to articulate a culture that serves their personal, political, and social interests.

WGSS 2145. Space, Place, and Gender Identity. 3 Credits.

Space and place as socially-constructed structures; politics of space and bodies from the perspective of gender and sexual minorities; analysis of gender relations through spatial practices; identity-based inequality in the use of space and place.

WGSS 2225. Philosophy of Race And Gender. 3 Credits.

Differing theoretical perspectives on how race, sexuality, gender, class, and ethnicity inform (and re-form) individual as well as group identities; consequences of being marginalized because one is associated with an allegedly inferior race, sex, and/or gender. (Same as PHIL 2125).

WGSS 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. (Same as AMST 2380, HIST 2380).

WGSS 2385. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Same As: AMST 2385.

WGSS 2385W. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: AMST 2385W. Same As: AMST 2385W.

WGSS 2710. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Same As: ENGL 2710.

WGSS 3099. Variable Topics. 1-12 Credits.

WGSS 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Conducted in English. (Same as CHIN 3136).

WGSS 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Taught in English. (Same as CHIN 3136W, WGSS 3136).

WGSS 3170. Special Topics in Women's, Gender, and Sexuality Studies. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

WGSS 3170W. Selected Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3195. Undergraduate Research. 1-3 Credits.

A written proposal approved by the faculty member who supervises the research is required prior to registration.

WGSS 3235. Women and the Law. 3 Credits.

Contemporary legal issues that affect women in the United States; theories and documents relevant to issues such as violence against women, marriage and divorce, employment, immigration, and reproductive rights.

WGSS 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

WGSS 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3353. U.S. Women's History II. 3 Credits.

Continuation of WGSS 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. (Same as AMST 3353, HIST 3353).

WGSS 3362. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. (Same as AMST 3362, AMST 3362W, HIST 3362, HIST 3362W, WGSS 3362W).

WGSS 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 3362W, AMST 3362W).

WGSS 3410. Lesbian History and Culture. 3 Credits.

Examination of lesbian identity, community, and legal rights from a scholarly feminist perspective.

WGSS 3435. Queer Politics. 3 Credits.

The history of lesbian, gay, bisexual, transgender, and queer (LGBTQ) politics in the United States; influences and intersections of race and ethnicity, class, gender identity and expression, sexuality, sex, and age; contemporary policy debates relevant to queer politics.

WGSS 3470. Sexuality and the Law. 3 Credits.

Exploration of the ways in which the law has affected individuals' ability to express their sexuality, with a primary focus on sexual orientation and issues such as marriage, adoption, voting rights, sexual harassment, and military service.

WGSS 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. (Same as REL 3481).

WGSS 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. (Same as WGSS 3530W, HIST 3530, HIST 3530W).

WGSS 3530W. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as WGSS 3530, HIST 3530, HIST 3530W).

WGSS 3730. Topics in Global Postcolonial Literature and Film. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: ENGL 3730.

WGSS 3820. Global Domestic Labor. 3 Credits.

Consideration of women's paid and unpaid domestic labor, including care work, in the context of global and globalizing political and cultural economies.

WGSS 3845. Global Women's Prison. 3 Credits.

Examination of women's confinement and incarceration in the context of global and globalizing political and cultural economies.

WGSS 3881. Women, Gender, and Religion in China. 3 Credits.

Historical introduction to women and men as gendered subjects and the construction of gender and power in Chinese religions. May be taken for graduate credit with extra work assigned. (Same as EALL 3881, REL 3881).

WGSS 3890W. Black Women in the Twenty-First Century. 3 Credits.

An interdisciplinary approach to critical inquiry into the scholarship on, and status of, Black women in North America, the Caribbean, Latin America, and Africa in the twenty-first century; historical, national, and transnational linkages between Black women; responses to intersectionality; analyses, strategies, and actions being deployed by and about Black women in action and scholarship. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3981. Women in Western Religion. 3 Credits.

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity. Special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. (Same as REL 2981).

WGSS 4183. Practicum in Women's, Gender, and Sexuality Studies. 3 Credits.

Study of the changing status of women, gender, sexuality and social change through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required.

WGSS 4199. Senior Seminar. 3 Credits.

Examination and analysis of the writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Restricted to juniors and seniors.

WGSS 5099. Variable Topics. 1-99 Credits.

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WGSS 6220. Fundamentals of Feminist Theory. 3 Credits.

Historical theories significant to feminist thought, such as liberalism, socialism, evolution, psychoanalysis, and gendered spheres of social action; how these theories were revived and revised by the second wave of feminism since the 1960s; brief examination of postmodernist and third-wave feminist theorizing.

WGSS 6221. Research Issues in Women's, Gender, and Sexuality Studies. 3 Credits.

The contribution of feminist or gender-relations perspectives from humanities and social science disciplines to the issues and methods of social research, policy, and practice; feminist frameworks; critique and re-evaluation of traditional academic disciplines; and analysis of current research on women, gender, and sexuality.

WGSS 6225. Contemporary Feminist Theory. 3 Credits.

Recent developments in feminist theory, with a primary focus on feminism in the United States and its relationship to queer theory and sexuality studies.

WGSS 6230. Global Feminisms. 3 Credits.

The individuals, groups, and policies that shape global agenda for women; local and international fora in which global feminisms are forged.

WGSS 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Prerequisites: PHIL 2125 or PHIL 2131. (Same as PHIL 6238).

WGSS 6240. Gender and Public Policy. 3 Credits.

Analysis of gender-related policy issues, primarily in the United States, such as domestic violence, military service, abortion rights, equal employment opportunity, child and dependent care, welfare, social security, and international development assistance.

WGSS 6241. Gender, Law, and Politics. 3 Credits.

The treatment of gender in U.S. law and its implications for public policy; factors that influence the ways in which individuals view and encounter the law; discrimination in the workplace and educational institutions, single-sex education, domestic violence, same-sex marriage, and reproductive rights and responsibilities; legal analysis, and public policy writing. Restricted to graduate students; open to upper-level undergraduates on a case-by-case basis.

WGSS 6251. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture.

WGSS 6257. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender; postcolonialism, sexuality, and literary representations of gender. (Same as ANTH 6501).

WGSS 6265. Women, Welfare, and Poverty. 3 Credits.

How the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. (Same as SOC 6265).

WGSS 6266. Gender and Criminal Justice. 3 Credits.

How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. (Same as SOC 6266).

WGSS 6268. Race, Gender, and Class. 3 Credits.

How social structures are constructed through race, gender, and class and how they shape experience; the intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. (Same as SOC 6268).

WGSS 6270. Seminar: Selected Topics. 3 Credits.

Investigation of a current policy issue of particular concern to women, or consideration of women's status in a particular social system. Topics have included women and health; sexualities; women and Judaism; black women; gender, race, and class. May be repeated for credit. Credit cannot be earned for this course and AMST 6190, PSYC 8279.

WGSS 6271. Gender and Society. 3 Credits.

Current empirical and theoretical work on gender as an organizing principle of social relations; the relationship of gender to sex and sexuality. (Same as SOC 6271).

WGSS 6280. Independent Study. 3 Credits.

May be repeated for credit. Arrangements must be made with sponsoring faculty member prior to registration.

WGSS 6283. Practicum in Women's, Gender and Sexuality Studies. 3,6 Credits.

Study of the changing status of women, gender, sexuality, and social change through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Placement arrangements must be made the semester prior to registration; departmental permission is required. Graduate students may take the course for either 3 or 6 credits, with substantial additional research and writing of a case study required for 6 credits. (Same as WGSS 4183).

WGSS 6295. Independent Research in Women's Studies. 1-3 Credits.

Individual library or field research. Arrangements must be made with the sponsoring faculty member prior to registration; a written proposal is required.

WGSS 6299. Capstone Research Seminar. 3 Credits.

Designed primarily to ready students for their next pursuit, whether it is academic or non-academic. Assists students in making progress on theses and/or develops a case study related to practicum placement. Restricted to graduate students in the women's, gender, and sexuality studies program. Prerequisites: successful completion of all WGSS core courses and degree requirements.

WGSS 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

WGSS 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of WGSS 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ HIST 6431.

WGSS 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST6435/HIST 6435.

WGSS 6560. Postcolonialism. 3 Credits.

Exploration of aesthetics and politics through global and postcolonial literature and cinema, primarily from the twentieth and twenty-first centuries. Includes legal, theoretical, literary, and film texts. Restricted to graduate students and junior and senior undergraduate students. Same As: ENGL 6560.

WGSS 6998. Thesis Research. 3 Credits.

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WGSS 6999. Thesis Research. 3 Credits.

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WGSS 8275. Women and Health. 3 Credits.

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. (Same as PSYC 8275).

Courses

WGSS 1000. Dean's Seminar. 3 Credits.

The Dean's Seminars provide Columbian College first-year students focused scholarship on specific intellectual challenges. Topics vary by semester. Consult the Schedule of Classes for more details.

WGSS 1020. Approaches to Women's History. 3 Credits.

Introduction to major methodological and conceptual debates in women's and gender history, focusing on the United States. (Same as HIST 1020).

WGSS 1099. Variable Topics. 1-36 Credits.

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WGSS 2120. Introduction to Women's, Gender, and Sexuality Studies. 3 Credits.

Key concepts, theories, and perspectives in women's studies, placing women's experiences at the center of interpretation; historical and contemporary perspectives on women's lives, experiences, and thoughts and how gender interacts with race, class, religion, sexual orientation, culture, and politics. Same As: WGSS 2120W.

WGSS 2120W. Introduction to Women's, Gender, and Sexuality Studies. 3 Credits.

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women, gender and sexuality in different cultures. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same As: WGSS 2120.

WGSS 2121. The Anthropology of Gender: Cross-Cultural Perspectives. 3 Credits.

Anthropological representations of gender relations in "other" cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. (Same as ANTH 2501).

WGSS 2125. Varieties of Feminist Theory. 3 Credits.

Classical and contemporary texts on feminist explanations of women's status. Relationships within the sex/gender system and arrangements based on class and race. Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisites: WGSS 1020 or WGSS 2120. Same As: AMST 2125.

WGSS 2135. A Study of Women and Media. 3 Credits.

The role media plays in women's lives; limits and effects of a "dominant" media; representations of women in print media and television, especially advertising, and in books and film; how women have attempted to articulate a culture that serves their personal, political, and social interests.

WGSS 2145. Space, Place, and Gender Identity. 3 Credits.

Space and place as socially-constructed structures; politics of space and bodies from the perspective of gender and sexual minorities; analysis of gender relations through spatial practices; identity-based inequality in the use of space and place.

WGSS 2225. Philosophy of Race And Gender. 3 Credits.

Differing theoretical perspectives on how race, sexuality, gender, class, and ethnicity inform (and re-form) individual as well as group identities; consequences of being marginalized because one is associated with an allegedly inferior race, sex, and/or gender. (Same as PHIL 2125).

WGSS 2380. Sexuality in U.S. History. 3 Credits.

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. (Same as AMST 2380, HIST 2380).

WGSS 2385. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Same As: AMST 2385.

WGSS 2385W. Sex and Citizenship. 3 Credits.

How gender and sexuality have shaped Americans' understanding of citizenship; the state regulation of marriage, reproduction, military service, immigration, and access to other government resources and benefits; the cultural representation of women, LGBTQ individuals, and other sexual and gender minorities as second-class citizens; and the efforts of women, LGBTQ groups, and others to claim full equality in American culture and politics. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Same AMST 2385W. Same As: AMST 2385W.

WGSS 2710. Postcolonialism, Race, and Gender in Global Anglophone Literature and Film. 3 Credits.

How race and gender shaped empire and nationalism in international Anglophone literature and cinema from 1857 to 1960. Feminist, postcolonial, and critical race theory, engaged with modern literature, graphic narratives, and film. Same As: ENGL 2710.

WGSS 3099. Variable Topics. 1-12 Credits.

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WGSS 3136. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Conducted in English. (Same as CHIN 3136).

WGSS 3136W. Chinese Women in Myth, Literature, and Film. 3 Credits.

Women's position in Chinese cultural and political life from prehistoric myth to the present. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. Taught in English. (Same as CHIN 3136W, WGSS 3136).

WGSS 3170. Special Topics in Women's, Gender, and Sexuality Studies. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. See department for more details.

WGSS 3170W. Selected Topics. 1-3 Credits.

Topics vary by semester. May be repeated for credit provided topic differs. See department for more details. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3195. Undergraduate Research. 1-3 Credits.

A written proposal approved by the faculty member who supervises the research is required prior to registration.

WGSS 3235. Women and the Law. 3 Credits.

Contemporary legal issues that affect women in the United States; theories and documents relevant to issues such as violence against women, marriage and divorce, employment, immigration, and reproductive rights.

WGSS 3352. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352).

WGSS 3352W. U.S. Women's History to 1865. 3 Credits.

History of women in the Americas and in the United States from trans-Atlantic encounters through the Civil War. (Same as HIST 3352, WGSS 3352) Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3353. U.S. Women's History II. 3 Credits.

Continuation of WGSS 3352. History of women in the Americas and in the United States from trans-Atlantic encounters from 1877 to present. (Same as AMST 3353, HIST 3353).

WGSS 3362. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. (Same as AMST 3362, AMST 3362W, HIST 3362, HIST 3362W, WGSS 3362W).

WGSS 3362W. African American Women's History. 3 Credits.

The history of African American women's labor, cultural expression, institution-building, activism, and strategies to combat oppression from the antebellum period through the late 20th century; the intersection of race, gender, and class as it has shaped U.S. society, racism, the black freedom movement, and African American women's experiences. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as HIST 3362W, AMST 3362W).

WGSS 3410. Lesbian History and Culture. 3 Credits.

Examination of lesbian identity, community, and legal rights from a scholarly feminist perspective.

WGSS 3435. Queer Politics. 3 Credits.

The history of lesbian, gay, bisexual, transgender, and queer (LGBTQ) politics in the United States; influences and intersections of race and ethnicity, class, gender identity and expression, sexuality, sex, and age; contemporary policy debates relevant to queer politics.

WGSS 3470. Sexuality and the Law. 3 Credits.

Exploration of the ways in which the law has affected individuals' ability to express their sexuality, with a primary focus on sexual orientation and issues such as marriage, adoption, voting rights, sexual harassment, and military service.

WGSS 3481. Women in Islam. 3 Credits.

The ways in which Islam has articulated gender identity and male-female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. (Same as REL 3481).

WGSS 3530. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. (Same as WGSS 3530W, HIST 3530, HIST 3530W).

WGSS 3530W. Women in Africa. 3 Credits.

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement. (Same as WGSS 3530, HIST 3530, HIST 3530W).

WGSS 3730. Topics in Global Postcolonial Literature and Film. 3 Credits.

Topics vary by semester. May be repeated for credit provided the topic differs. Consult the Schedule of Classes for more details. Same As: ENGL 3730.

WGSS 3820. Global Domestic Labor. 3 Credits.

Consideration of women's paid and unpaid domestic labor, including care work, in the context of global and globalizing political and cultural economies.

WGSS 3845. Global Women's Prison. 3 Credits.

Examination of women's confinement and incarceration in the context of global and globalizing political and cultural economies.

WGSS 3881. Women, Gender, and Religion in China. 3 Credits.

Historical introduction to women and men as gendered subjects and the construction of gender and power in Chinese religions. May be taken for graduate credit with extra work assigned. (Same as EALL 3881, REL 3881).

WGSS 3890W. Black Women in the Twenty-First Century. 3 Credits.

An interdisciplinary approach to critical inquiry into the scholarship on, and status of, Black women in North America, the Caribbean, Latin America, and Africa in the twenty-first century; historical, national, and transnational linkages between Black women; responses to intersectionality; analyses, strategies, and actions being deployed by and about Black women in action and scholarship. Includes a significant engagement in writing as a form of critical inquiry and scholarly expression to satisfy the WID requirement.

WGSS 3981. Women in Western Religion. 3 Credits.

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity. Special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. (Same as REL 2981).

WGSS 4183. Practicum in Women's, Gender, and Sexuality Studies. 3 Credits.

Study of the changing status of women, gender, sexuality and social change through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required.

WGSS 4199. Senior Seminar. 3 Credits.

Examination and analysis of the writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Restricted to juniors and seniors.

WGSS 5099. Variable Topics. 1-99 Credits.

.

WGSS 6220. Fundamentals of Feminist Theory. 3 Credits.

Historical theories significant to feminist thought, such as liberalism, socialism, evolution, psychoanalysis, and gendered spheres of social action; how these theories were revived and revised by the second wave of feminism since the 1960s; brief examination of postmodernist and third-wave feminist theorizing.

WGSS 6221. Research Issues in Women's, Gender, and Sexuality Studies. 3 Credits.

The contribution of feminist or gender-relations perspectives from humanities and social science disciplines to the issues and methods of social research, policy, and practice; feminist frameworks; critique and re-evaluation of traditional academic disciplines; and analysis of current research on women, gender, and sexuality.

WGSS 6225. Contemporary Feminist Theory. 3 Credits.

Recent developments in feminist theory, with a primary focus on feminism in the United States and its relationship to queer theory and sexuality studies.

WGSS 6230. Global Feminisms. 3 Credits.

The individuals, groups, and policies that shape global agenda for women; local and international fora in which global feminisms are forged.

WGSS 6238. Feminist Ethics and Policy Implications. 3 Credits.

Feminist critiques of traditional ethical reasoning; alternative feminist ethical frameworks examined and applied to contemporary social problems (e.g., respecting cultural differences, dependency, disability). Prerequisites: PHIL 2125 or PHIL 2131. (Same as PHIL 6238).

WGSS 6240. Gender and Public Policy. 3 Credits.

Analysis of gender-related policy issues, primarily in the United States, such as domestic violence, military service, abortion rights, equal employment opportunity, child and dependent care, welfare, social security, and international development assistance.

WGSS 6241. Gender, Law, and Politics. 3 Credits.

The treatment of gender in U.S. law and its implications for public policy; factors that influence the ways in which individuals view and encounter the law; discrimination in the workplace and educational institutions, single-sex education, domestic violence, same-sex marriage, and reproductive rights and responsibilities; legal analysis, and public policy writing. Restricted to graduate students; open to upper-level undergraduates on a case-by-case basis.

WGSS 6251. Women and Writing. 3 Credits.

Selected topics in the traditions, theory, and texts of women's literary production and culture.

WGSS 6257. Gender and Sexuality. 3 Credits.

Study of new theoretical and methodological approaches developed in the anthropology of gender; postcolonialism, sexuality, and literary representations of gender. (Same as ANTH 6501).

WGSS 6265. Women, Welfare, and Poverty. 3 Credits.

How the causes and consequences of poverty differ for women and men; how race, class, and gender shape policy responses to poverty. The history of family assistance policy in the United States and the impact of various welfare reform efforts. (Same as SOC 6265).

WGSS 6266. Gender and Criminal Justice. 3 Credits.

How understandings, practices, and theories of gender shape the workings of criminal justice systems, including issues of criminality and responses to crime, victimization and violence, and definitions of illegal behaviors. (Same as SOC 6266).

WGSS 6268. Race, Gender, and Class. 3 Credits.

How social structures are constructed through race, gender, and class and how they shape experience; the intersections of race, gender, and class in education, science, politics, labor markets, and social welfare policies. (Same as SOC 6268).

WGSS 6270. Seminar: Selected Topics. 3 Credits.

Investigation of a current policy issue of particular concern to women, or consideration of women's status in a particular social system. Topics have included women and health; sexualities; women and Judaism; black women; gender, race, and class. May be repeated for credit. Credit cannot be earned for this course and AMST 6190, PSYC 8279.

WGSS 6271. Gender and Society. 3 Credits.

Current empirical and theoretical work on gender as an organizing principle of social relations; the relationship of gender to sex and sexuality. (Same as SOC 6271).

WGSS 6280. Independent Study. 3 Credits.

May be repeated for credit. Arrangements must be made with sponsoring faculty member prior to registration.

WGSS 6283. Practicum in Women's, Gender and Sexuality Studies. 3,6 Credits.

Study of the changing status of women, gender, sexuality, and social change through supervised placement in public and private agencies engaged in policymaking, education, political action, and research. Placement arrangements must be made the semester prior to registration; departmental permission is required. Graduate students may take the course for either 3 or 6 credits, with substantial additional research and writing of a case study required for 6 credits. (Same as WGSS 4183).

WGSS 6295. Independent Research in Women's Studies. 1-3 Credits.

Individual library or field research. Arrangements must be made with the sponsoring faculty member prior to registration; a written proposal is required.

WGSS 6299. Capstone Research Seminar. 3 Credits.

Designed primarily to ready students for their next pursuit, whether it is academic or non-academic. Assists students in making progress on theses and/or develops a case study related to practicum placement. Restricted to graduate students in the women's, gender, and sexuality studies program. Prerequisites: successful completion of all WGSS core courses and degree requirements.

WGSS 6430. Gender, Sexuality, and American Culture I. 3 Credits.

The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. Pre-colonial to 1877. (Same as HIST 6430, WGSS 6430).

WGSS 6431. Gender, Sexuality, and American Culture II. 3 Credits.

Continuation of WGSS 6430. The changing social organization, cultural representation, and meaning of gender and sexuality in the United States, with emphasis on their relationship to race, class, region, nationality, empire, and globalization. 1877 to present. Same as AMST 6431/ HIST 6431.

WGSS 6435. Readings on Women in American History. 3 Credits.

Important works in American women's history; evolution of the field in historiographical context. Same as AMST6435/HIST 6435.

WGSS 6560. Postcolonialism. 3 Credits.

Exploration of aesthetics and politics through global and postcolonial literature and cinema, primarily from the twentieth and twenty-first centuries. Includes legal, theoretical, literary, and film texts. Restricted to graduate students and junior and senior undergraduate students. Same As: ENGL 6560.

WGSS 6998. Thesis Research. 3 Credits.

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WGSS 6999. Thesis Research. 3 Credits.

.

WGSS 8275. Women and Health. 3 Credits.

Theoretical and empirical analyses of women's health: how women's health is constructed by medical, psychological, and critical theorists; how sexism, racism, and classism contribute to women's health problems; and identification of conditions that lead to optimal health and well-being. (Same as PSYC 8275).

YIDDISH (YDSH)

Explanation of Course Numbers

- Courses in the 1000s are primarily introductory undergraduate courses
- Those in the 2000s to 4000s are upper-division undergraduate courses that can also be taken for graduate credit with permission and additional work
- Those in the 6000s and 8000s are for master's, doctoral, and professional-level students
- The 6000s are open to advanced undergraduate students with approval of the instructor and the dean or advising office

YDSH 1001. Yiddish for Reading and Conversation I. 3 Credits.

Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.

YDSH 1002. Yiddish for Reading and Conversation II. 3 Credits.

Continuation of YDSH 1001. Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.

YDSH 1099. Variable Topics. 16 Credits.

YDSH 5099. Variable Topics. 1-99 Credits.

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Japanese (JAPN)	1671	Leadership Development, Graduate Certificate	674
Japanese Language and Literature, Bachelor of Arts	214	Leadership Education and Development (LEAD)	1674
Japanese Language and Literature, Minor	219		
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Leadership Education and Development, Master of Arts	364	Master of International Studies	1034
Leadership for Emergency Action and Disaster Response, Bachelor of Science in Health Sciences	1063	Master of Public Administration	447
Leadership in Clinical Practice and Education, Doctor of Health Sciences	1088	Master of Public Health: MPH@GW	1357
Legislative Affairs (LGAF)	1675	Master of Public Policy	448
Legislative Affairs, Master of Professional Studies	1164	Master of Science in Information Systems and Technology	581
LGBT and Sexuality Studies, Minor	515	Master of Tourism Administration	584
LGBT Health Policy and Practice, Graduate Certificate	419	Master's Programs	571
Lifestyle, Sport, and Physical Activity (LSPA)	1676	Master's Programs	634
Linguistics (LING)	1679	Master's Programs	1070
Linguistics, Minor	68	Master's Programs	1127
Literacy Education, Graduate Certificate	674	Master's Programs	1329
Logic, Minor	383	Maternal and Child Health, Master of Public Health	1350
Long-Term Care, Graduate Certificate	1392	Mathematics	323
M		Mathematics, Bachelor of Arts	329
Management	543	Mathematics, Bachelor of Science	331
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Management (MGT)	1679	Mathematics, Master of Arts	334
Management of Health Informatics and Analytics, Master of Science	1364	Mathematics (MATH)	1687
Management of Technology and Innovation, Graduate Certificate ..	595	Mathematics, Minor	336
Managing the Digital Organization, Graduate Certificate	596	Mechanical and Aerospace Engineering	731
Marketing	546	Mechanical and Aerospace Engineering, Doctor of Philosophy	816
Marketing and Brand Management, Graduate Certificate	596	Mechanical and Aerospace Engineering (MAE)	1692
Marketing, Bachelor of Science	566	Mechanical and Aerospace Engineering, Master of Science	804
Marketing, Minor	571	Mechanical Engineering, Aerospace Option, Bachelor of Science ...	765
Marketing (MKTG)	1682	Mechanical Engineering, Bachelor of Science	764
Master in Management	572	Mechanical Engineering, Bachelor of Science and Master of Science	783
Master of Accountancy	573	Mechanical Engineering, Biomechanical Option, Bachelor of Science	767
Master of Business Administration	574	Mechanical Engineering, Medical Preparation Option, Bachelor of Science	768
Master of Business Administration (MBAD)	1684	Mechanical Engineering, Minor	787
Master of Business Administration, Security Technology Transition Concentration	577	Mechanical Engineering, Patent Law Option, Bachelor of Science ...	770
Master of Business Administration (STEM)	575	Mechanical Engineering, Robotics Option, Bachelor of Science	771
Master of Forensic Sciences	275	Media and Public Affairs	336
Master of Health Administration	1331	Media and Strategic Communication, Master of Arts	346
Master of Health Administration (MHA@GWU)	1333	Medical Laboratory Science, Bachelor of Science in Health Sciences	1064
Master of Human Resource Management	578	Medical Laboratory Science, Master of Science in Health Sciences .	1077
Master of Interdisciplinary Business Studies	579	Medical Laboratory Science (MLS)	1699
Master of Interdisciplinary Business Studies (STEM)	579	Medical Laboratory Science, Post-baccalaureate Certificate	1099
Master of International Policy and Practice	1032	Medical Laboratory Sciences and Molecular Diagnostic Sciences, Bachelor of Science in Health Sciences and Master of Science in Health Sciences	1068
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Microbiology and Immunology, Doctor of Philosophy	159
Microbiology for Medical Laboratory Science, Post-baccalaureate Certificate	1099
Microbiology, Immunology, and Tropical Medicine (MICR)	1704
Middle East Specialization	1025
Middle East Studies, Bachelor of Arts	907
Middle East Studies, Master of Arts	1012
Milken Institute School of Public Health	1178
Mind-Brain Studies, Minor	383
Molecular Diagnostic Science, Master of Science in Health Sciences	1078
Molecular Diagnostic Sciences and Clinical Microbiology, Bachelor of Science in Health Sciences and Master of Science in Health Sciences	1069
Molecular Diagnostic Sciences, Bachelor of Science in Health Sciences	1066
Molecular Diagnostic Sciences, Post-baccalaureate Certificate	1100
Molecular Medicine (MMED)	1705
Museum Collections Management and Care, Graduate Certificate ..	350
Museum Education, Master of Arts in Teaching	656
Museum Studies	348
Museum Studies and Jewish Cultural Arts, Master of Arts and Graduate Certificate	204
Museum Studies, Graduate Certificate	350
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Nursing, Bachelor of Science	1124

Nursing, Doctor of Philosophy	1136
Nursing Leadership and Management, Master of Science in Nursing	1129
Nursing (NURS)	1705
Nursing Practice, Doctor of Nursing Practice	1134
Nutrition Science and Public Health Nutrition, Bachelor of Science and Master of Public Health	1327
Nutrition Science, Bachelor of Science	1316
Nutrition Science, Minor	1328
Nutrition Science, Pre-Medical Professions Concentration, Bachelor of Science	1319

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Philosophy (Public Affairs Focus) and Public Policy, Philosophy and Social Policy, Bachelor of Arts and Master of Arts	380	Portuguese (PORT)	1749
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Political Science	393	Psychiatric Mental Health Nurse Practitioner, Master of Science in Nursing	1130
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